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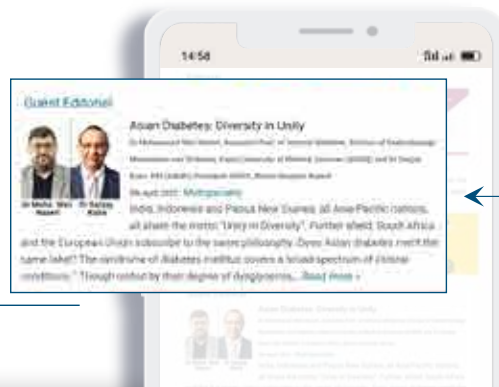
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Round Table Environment Expert Zoom Meeting on "Summer Action Plan to Control Air Pollution in Cities"

- Air pollution issues are very critical in cities throughout the year; the situation worsens during winters.
- According to the last report released by CREA (Centre for Research on Energy and Clean Air) in March 2025, Delhi was the most polluted city in last winter.
- Delhi is in a geographically disadvantageous location in Indo-Gangetic plain. Other factors such as population density, unplanned city also contribute to the year-round air pollution.
- This year, the Air Quality Index (AQI) was poor even in summer. On 16th May, the Commission for Air Quality Management (CAQM) imposed Graded Response Action Plan (GRAP) 1 restrictions to control air pollution in Delhi-NCR. This has happened for the first time in summer months.
- The main reason for the current situation is the long range transport of dust caused by substantial wind speed, from Rajasthan and also from Pakistan.
- The biggest problem in summer, particularly in the northern region, is that of dust. It is connected with wind speed, which is high during the summers.
- Other reasons are local air pollution sources, which include construction dust, resuspended road dust, and open waste burning. Another important cause these days is the dust from desilting material, which is left on the road and not picked up.
- Road dust contributes to particulate matter (PM_{2.5} and PM₁₀).
- The major sources of road dust are construction sites, vehicle movement, and collected debris. Seasonal impact is also one of the sources, when it becomes very hot in the pre-monsoon months; dust storms are common and the high wind speeds generate lot of road dust.
- Urban factors for road dust include poorly maintained roads, heavy traffic, poorly cleaned roads; major portion of the roads are encroached by vehicles (parking) and vendors, which precludes mechanical sweeping. Also, mechanical sweeping is not possible in small lanes.
- Ongoing construction activity, transport (Delhi has the highest vehicle density) all play a major role because of which PM is 30%-50% higher in Delhi due to road dust. This leads to respiratory problems, eye irritation, asthma, cardiovascular diseases.
- The Central Road Research Institute (CRRI) has advised authorities to do continuous water sprinkling. Pavements should be made green wherever possible. Construction activities should be regulated.
- The Delhi government has become strict on emission policy. Green hydrogen is the latest; it's much better than e-vehicles. The concept of segregated waste in public spaces needs to be propagated to increase awareness among the masses.

- Working hours, including school time, should be changed during summers.
- Because of traffic congestion, we are exposed to heat and dust for a longer period of time.
- An action plan to reduce vehicle congestion on the roads is needed.
- Waste sites should be covered. Plantation islands or mini forests can be planned. Develop fountains near colonies, which can be turned on for freshness and dust suppression.
- Air pollution has three definite sources: point sources, line sources, and atmospheric (geography). Delhi lies in the arid zone.
- While many efforts have been made for diverting traffic under urban extension ring roads, outer roads, there has not been any focus on developing the buffer zone with forests, green cover.
- Government has not focused on acquiring land for developing green belt to curb the dust or air pollution coming from outer areas to the national capital.
- Point sources in Delhi are clearly defined and include large polluted river beds, large polluted dumping grounds, incinerators, boilers, crushers, brick kilns. All waste to energy plants and such point sources should be shifted out of Delhi.
- Segregation of waste at source should be incentivized.
- The large dumping grounds should be converted to green islands.
- Line sources are the river beds. Drains should be covered with green cover using the Miyawaki afforestation method.
- All road medians should be owned by RWAs (Residents' Welfare Associations) for the purpose of tree plantation.
- Action plans mainly address dust control, waste management and encourage use of public transport. There is however delay in implementation of recommendations.
- Instead of a proactive approach, we have a reactionary approach.
- We are not able to focus on the root causes of pollution.
- Pollution Under Control (PUC) for vehicles should not be a formality; it should be checked with precision.
- Drones can be used to identify the sources of pollution.
- Waste recycling and construction activity and its waste management need high technology.
- Pollution in Delhi-NCR should be tackled as one project on a war footing. We have to think big, instead of adopting short-term measures such as mechanical road sweeping.

■ ■ ■ ■

Empowering Voices: The Role of Patient Advocacy in Kidney Transplantation

VASUNDHARA RAGHAVAN*, MERLYN PAUL†, SOURABH SHARMA‡

INTRODUCTION: THE NEED FOR PATIENT ADVOCACY IN TRANSPLANTATION

Kidney transplant, considered the best life-saving treatment, has seen a year-on-year increase, but continues to face challenges in gaps of awareness, accessibility and donor availability. To ensure equitable access, timely interventions, and ethical practices in kidney transplantation, observation of the Indian Organ Donation Day on 3rd August should highlight the areas for patient advocacy to play a pivotal role in shaping a better transplant ecosystem.

UNDERSTANDING PATIENT ADVOCACY IN KIDNEY TRANSPLANTATION

Patient advocacy in transplantation should encompass a wide spectrum of activities, including educating potential recipients about best practices of transplant, expectations of life expectancy, treatment options and their rights to influence policy changes that enhance organ donation and allocation¹⁻³. Advocacy efforts must ensure that patients receive holistic post-transplant care, minimizing financial burdens, and combating misinformation².

THE INDIAN LANDSCAPE: BARRIERS AND OPPORTUNITIES

Despite commendable strides in organ donation policies, India faces challenges such as organ shortages, socio-economic disparities, and limited awareness⁴. Advocacy initiatives can help address myths surrounding organ

donation, push for better insurance coverage, and streamline the listing process to reduce delays. The recent policy discussions, including “One Nation, One Policy”, provide a unique opportunity to strengthen patient-centered transplantation frameworks⁵.

PATIENT CHAMPIONS: THE POWER OF LIVED EXPERIENCES

Transplant recipients, donor families, and caregivers can be powerful advocates. Their relatable experiences through shared stories inspire others, dispel fears, and highlight the potential of life-saving organ donation. Structured patient advocacy groups can facilitate peer support, guide newly diagnosed patients, and contribute to policy dialogues, ensuring the patient perspective is always considered⁶.

BRIDGING THE GAP: THE ROLE OF HEALTH CARE PROFESSIONALS AND POLICYMAKERS

Patient advocacy is most effective when health care professionals and policymakers collaborate. Clinicians can empower patients through shared decision-making, while policymakers can integrate patient-driven feedback into transplant regulations.

Initiatives such as patient advisory boards and public-private partnerships can enhance advocacy efforts, making kidney transplantation more inclusive and accessible⁷.

MEASURES FOR ENABLING IMPROVED ORGAN DONATIONS

Identifying gaps and creating changes in laws to improve access to those underserved will be the underlying objective. Working within a collaborative framework is important. Policymakers and health care professionals must accept, acknowledge, and appreciate feedback from persons living with donated organs, and those who have donated their organs. Such initiatives will need collective and conclusive decision-making, leading to deployment of capital resource, and creating registries to secure interests of those affected.

*CEO, Kidney Warriors Foundation, Mumbai, Maharashtra, India

†Kidney Transplant Recipient; Patient Advocate for Research, Kidney Warriors Foundation, Mumbai, Maharashtra, India

‡Assistant Professor, Dept. of Nephrology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

Address for correspondence

Dr Sourabh Sharma

Room No. 239, Superspeciality Block

Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

Email: drsourabh05@gmail.com

THE ROAD AHEAD: STRENGTHENING ADVOCACY FOR BETTER OUTCOMES

A multi-stakeholder approach, integrating patients, health care providers, policymakers, and non-governmental organizations, is essential for sustainable transplant reforms. Digital platforms, patient support groups, and awareness campaigns should be leveraged to create a robust advocacy movement⁸. The future of kidney transplantation in India depends not just on medical advancements but also on ensuring that patient voices are heard, respected, and acted upon. Patient advocacy can assist in the following areas:

- Donor protection for donors to make informed decisions and ensure their health is also a priority to health care professionals.
- Strict adherence to protocols for transplant procedures in newly established transplant centers.
- Develop strategy for better access to children and women with compromised health conditions. The Living Donor Navigator Program demonstrates that enhanced advocacy and systems training can significantly increase living donor screenings and approvals, potentially mitigating racial disparities. Developing a similar model for India to improve access for women and children may be appropriate⁹.
- The Donor Action initiative successfully increased organ donation rates by 70% to 160% over 3 years in multiple countries by identifying system weaknesses and implementing targeted improvements. Given the organ shortage in India, adopting this proven model can optimize donation practices, enhance staff training, and drive sustainable growth. Implementing Donor Action in India will ensure a structured, data-driven approach to maximize organ donation potential and save countless lives¹⁰.
- Peer-to-Peer Mentoring in Patient Advocacy highlights the effectiveness of peer support in helping patients make informed treatment decisions. In the Indian context, patient advocates would need peer-to-peer mentor training, develop donor-patient testimonials, and integrate it to improved quality of life with a transplant. This would reduce the burden on dialysis and show care improved quality of life of the patients. The limited cadaveric organ donations in the country could be strengthened¹¹.
- Advocacy efforts should focus on raising awareness about brain death, encouraging greater involvement,

and guiding individuals through hospital processes using visual aids or structured information systems.

- Promoting the establishment of trauma centers can help save more lives by ensuring timely medical intervention, facilitating the safe and efficient transition of cadaver donations, and providing essential family counseling.
- Despite educational campaigns, organ donation rates have not significantly increased, prompting exploration of alternative approaches. The American Medical Association supports research into donor motivation, including the potential use of financial incentives for cadaveric donation, which are currently prohibited by federal law¹².

CONCLUSION: A CALL TO ACTION

As we celebrate Indian Organ Donation Day, let this be a reminder that patient advocacy is not just a concept but a necessity. By strengthening patient engagement, we can build a more transparent, equitable, and efficient kidney transplantation system, ultimately saving more lives and improving post-transplant quality of life.

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Traditional Medicine and Natural Products in Modern Health Care: Scientific Insights and Applications

AKHTER RASOOL*, NIKHATH NASHEE†

ABSTRACT

Natural products have played a central role in health care across human history, forming the basis of traditional medicine systems. This article explores the historical relevance and modern scientific significance of traditional medicine in the context of drug discovery, therapeutic application, and disease prevention. Systems such as Ayurveda, Siddha, and Unani are examined alongside their integration with modern pharmacology. Medicinal plants and their bioactive compounds are highlighted for their contributions to managing chronic diseases and emerging health threats, including the COVID-19 pandemic. Recent advances in analytical technologies, omics sciences, and nanomedicine have expanded our understanding and application of traditional remedies. The convergence of traditional wisdom and modern evidence-based medicine holds promise for sustainable, accessible, and holistic health care solutions. Rigorous scientific validation is essential to ensure the safe and effective use of traditional remedies.

Keywords: Extracts, ethno-medicine, herbs, traditional medicine, therapeutics

Natural products have been employed in the treatment of diseases since the earliest human civilizations. The observation of beneficial effects from plant-based remedies laid the foundation for formal systems of traditional medicine. Over time, indigenous knowledge systems evolved into structured frameworks for diagnosing and treating illness. Today, a significant portion of the global population, particularly in developing countries, continues to rely on traditional medicine for primary health care. The continued relevance of these practices is a testament to their perceived efficacy, accessibility, and alignment with cultural beliefs. Traditional medicine encompasses diverse systems including Ayurveda, Siddha, Unani, Traditional Chinese Medicine, and Kampo. These systems emphasize a holistic understanding of

health and wellness, often integrating herbal remedies, dietary regulation, and lifestyle practices.

TRADITIONAL MEDICINE SYSTEMS

In India, the AYUSH framework includes Ayurveda, Yoga, Unani, Siddha, and Homeopathy. Among these, Ayurveda is the most ancient and widely practiced, dating back to the pre-Vedic period around 4000-1500 BCE. The term "Ayurveda" means "Science of Life", emphasizing the balance of body, mind, and spirit. The foundational concepts of Ayurveda revolve around the three doshas—*Vata*, *Pitta*, and *Kapha*—each governing distinct physiological functions. Classical Ayurvedic texts such as the *Charaka Samhita* and *Sushruta Samhita* describe hundreds of medicinal plants and their uses. Siddha medicine, another ancient Indian system, views health as the equilibrium of physical, psychological, and spiritual components. It emphasizes alchemical preparations and mineral-based drugs in addition to herbal therapies. The Unani system, rooted in Greco-Arabic traditions, is based on the humoral theory. It explains health as a balance among four humors—blood, phlegm, yellow bile, and black bile—corresponding to the four elements¹. These traditional frameworks continue to influence modern therapeutic practices and have found institutional support through research, education, and public health integration.

*PhD Scholar, Dept. of Animal Reproduction, Gynecology and Obstetrics, Southern Regional Station of National Dairy Research Institute, Bengaluru, Karnataka, India

†Doctor of Pharmacy, Rajiv Gandhi University of Health Sciences, Bengaluru, Karnataka, India

Address for correspondence

Dr Akhter Rasool

Southern Regional Station of National Dairy Research Institute, Hosur Rd, Ayappa Garden, Adugodi, Bengaluru, Karnataka - 560 030, India

E-mail: mirakhter1312@gmail.com; dr.akhterrasool@rediffmail.com

CONTRIBUTIONS TO MODERN MEDICINE

Many of today's pharmacologically active compounds originate from plants used in traditional medicine. Historical examples include the isolation of morphine from opium by Friedrich Sertürner in the 19th century and quinine from Cinchona bark for malaria treatment. In India, the pioneering work of Sir Ram Nath Chopra highlighted the medicinal potential of indigenous plants such as *Rauwolfia serpentina*, used for treating hypertension and mental illness². Numerous plant-derived compounds have been developed into modern drugs. Artemisinin, extracted from *Artemisia annua*, revolutionized malaria treatment and earned Youyou Tu the Nobel Prize in 2015. Paclitaxel, isolated from *Taxus brevifolia*, is a powerful chemotherapeutic agent³. Berberine, found in *Berberis* species, has been shown to improve insulin sensitivity and lipid metabolism, making it relevant in the treatment of metabolic disorders⁴. Curcumin from *Curcuma longa* (turmeric) exhibits anti-inflammatory and antioxidant properties and is widely studied for its role in chronic disease management⁵. Similarly, ginkgolides from *Ginkgo biloba* support cognitive function and vascular health⁶. The broad pharmacological spectrum of traditional remedies continues to inspire the discovery of new drugs, with a growing emphasis on scientific validation and standardization.

PHYTOCOMPOUNDS WITH ANTIVIRAL PROPERTIES

The COVID-19 pandemic spurred global efforts to identify effective therapeutics, including repurposing existing drugs and exploring herbal alternatives. Several synthetic agents such as remdesivir, methylprednisolone, and hydroxychloroquine were deployed with varying degrees of success and safety concerns. Concurrently, interest surged in natural products traditionally used for respiratory infections and immune support. Extracts from *Andrographis paniculata* (Kalmegh) and *Tinospora crispa* (Makabuhay) were studied for their potential antiviral effects^{7,8}. Common household remedies like turmeric, ginger, garlic, neem, and lemon were popularly promoted despite limited clinical evidence. Some bioactive plant compounds have demonstrated promising antiviral properties *in vitro*. Lycorine from *Lycoris radiata* has been shown to inhibit severe acute respiratory syndrome coronavirus (SARS-CoV) replication⁹. Flavonoids such as herbacetin and quercetin derivatives can target coronavirus. Hesperetin, a flavonoid in citrus fruits, has been identified as an inhibitor of SARS-CoV 3CL protease¹⁰. Licorice-derived glycyrrhizin has exhibited antiviral effects across

several studies^{11,12}. Black cumin seeds (*Nigella sativa*), widely used in folk medicine, contain thymoquinone, a bioactive compound with potent anti-inflammatory and neuroprotective properties. Thymoquinone could potentially be used as an adjunctive treatment alongside repurposed or investigational antivirals and supportive care¹³. These findings point to the therapeutic potential of phytochemicals, though large-scale human trials remain necessary.

APPLICATIONS IN METABOLIC AND CHRONIC DISEASES

Traditional medicine also plays a crucial role in managing chronic conditions such as diabetes, dyslipidemia, and obesity. Herbal drugs that modulate metabolic pathways offer alternatives or adjuncts to synthetic drugs. Berberine has been extensively studied for its effects on insulin secretion, lipid metabolism, and gut microbiota composition. It has shown promise in lowering fasting blood glucose and glycated hemoglobin (HbA1c) levels, improving insulin sensitivity, and reducing hepatic fat accumulation^{14,15}. *Picrorhiza kurroa*, long used in Ayurveda for liver disorders, exhibits hepatoprotective properties and has been commercialized as picroliv¹⁶. *Pterocarpus marsupium* (Vijayasar) has documented antidiabetic activity through pancreatic beta-cell regeneration¹⁷. These examples highlight the utility of traditional remedies in addressing modern health challenges, particularly in resource-limited settings where access to conventional medicine may be constrained.

The diverse therapeutic applications and potential benefits of traditional herbal formulations are depicted in Figure 1.

EMERGING RESEARCH AND TECHNOLOGICAL INTEGRATION

The integration of traditional medicine into mainstream health care is supported by advances in analytical chemistry, biotechnology, and pharmacology. High-performance liquid chromatography (HPLC), nuclear magnetic resonance (NMR), and liquid chromatography-mass spectrometry (LC-MS) allow for precise characterization and quality control of herbal compounds¹⁸. Omics technologies, including genomics, proteomics, and metabolomics, help elucidate the mechanisms of action and therapeutic targets of plant-derived compounds¹⁹. Nanotechnology-based drug delivery systems enhance bioavailability and targeted action, addressing issues of poor solubility and absorption common with some herbal drugs²⁰. These innovations

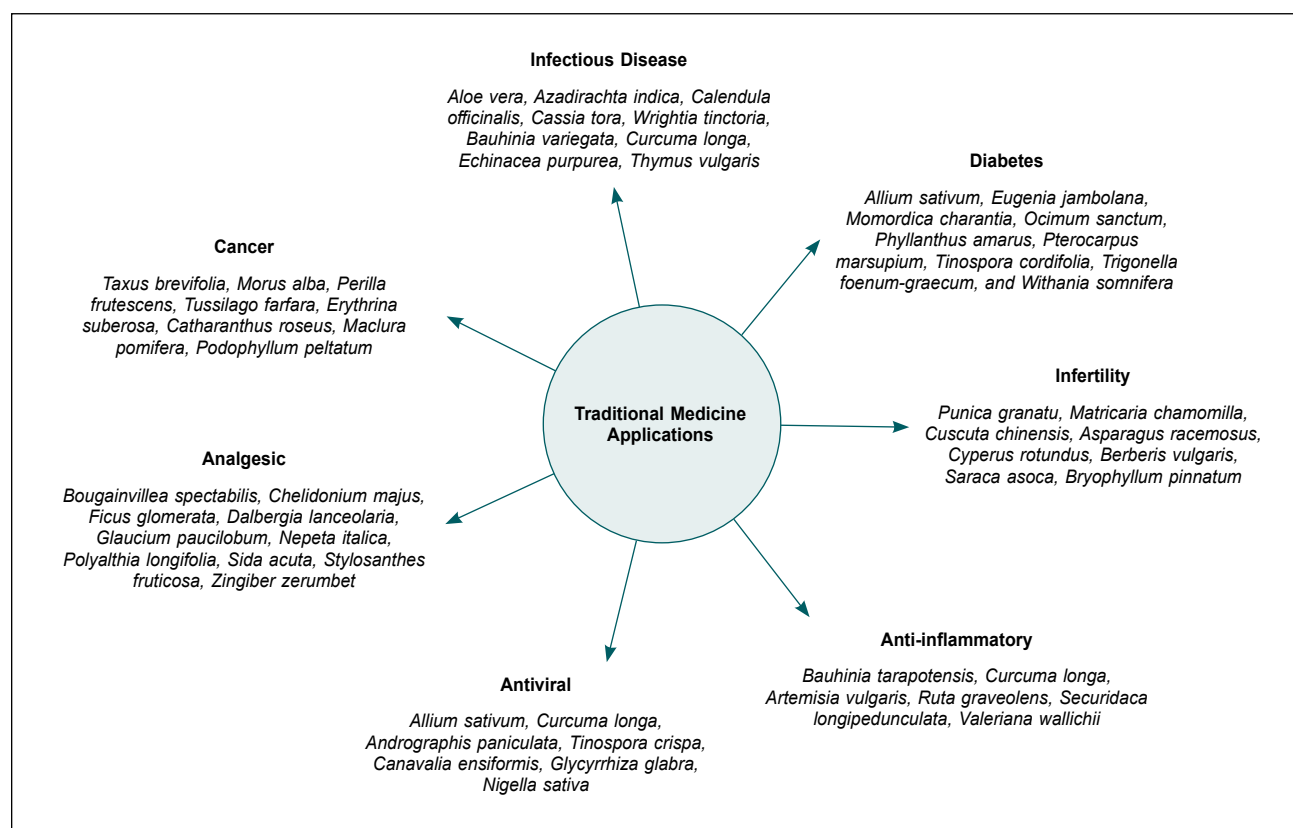


Figure 1. Applications of traditional medicine in various diseases.

not only validate traditional knowledge but also refine it into reproducible, standardized, and safe formulations. For example, *Boswellia serrata*, traditionally used for inflammation, has been developed into effective anti-arthritic formulations²¹. The Regional Research Laboratory (RRL), Jammu, successfully commercialized its gum resin as a nonsteroidal anti-inflammatory agent²². Such achievements demonstrate how scientific inquiry can bridge the gap between traditional wisdom and contemporary clinical practice.

CONCLUSION

Traditional medicine represents a valuable and often underutilized resource in global health care. Its rich repository of plant-based remedies, when studied and applied scientifically, can contribute meaningfully to the prevention and management of diseases. The integration of traditional practices with modern medicine fosters a more holistic, personalized, and culturally sensitive approach to health. Continued research, policy support, and interdisciplinary collaboration are essential to fully harness the potential of natural products. As the world seeks sustainable, accessible, and safe medical solutions, the fusion of ancient knowledge with modern science offers a promising path forward.

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Vaginal Estrogen Therapy in Postmenopausal Overactive Bladder

MANIDIP PAL*, T DEB†

ABSTRACT

Objective: To assess the efficacy of vaginal estrogen therapy in postmenopausal overactive bladder (OAB). **Study design:** It is an OPD (outpatient department) based prospective study. Postmenopausal women attending gynecology OPD with complaint of OAB were enrolled for the study. Women fulfilling the criteria for the study were given estradiol 2 mg vaginal tablet everyday for 2 weeks, then weekly twice for 10 weeks. Patients were assessed by 3-day bladder diary, Patient Global Impression scale, before and after the therapy. **Results:** Ninety-three patients completed the study. Increased frequency of micturition was cured in 92.5% cases; urgency and urge incontinence was cured in 74.2% cases. Patient's subjective feeling of improvement scale revealed only 12.9% women felt either no change or little better; rest all were happy. **Conclusion:** Local estrogen therapy in postmenopausal women with OAB resulted in a good outcome.

Keywords: Overactive bladder, estrogen, vaginal

Menopause causes different types of morbidity in women's lives – urinary incontinence is one of them. Postmenopausal women many a times complain of frequency, urgency, urge incontinence (overactive bladder or OAB). While evaluating them, ruling out infectious etiology (urinary tract infection) is very important. Next to infection, hypoestrogenism is thought to be the major etiological factor. The present study evaluates the efficacy of local estrogen in treating postmenopausal OAB.

MATERIAL AND METHODS

The study was conducted in the Dept. of Obstetrics and Gynecology, College of Medicine and JNM Hospital, Kalyani, Nadia, West Bengal. It was an OPD (outpatient department) based prospective study. Postmenopausal women attending gynecology OPD with complaint of OAB were enrolled for the study.

Inclusion criteria were – 1) Patient should be at least 1 year postmenopausal; 2) increased frequency of micturition

and nocturia (normal voiding habits ≤ 8 episodes/day and ≤ 2 episodes/night)¹; 3) urgency of urination $\pm$ urge incontinence. Exclusion criteria were – 1) Undiagnosed vaginal bleeding; 2) endometrial hyperplasia, and other estrogen-dependent disease, especially malignancy; 3) hypertension (blood pressure systolic >160 mmHg, diastolic >100 mmHg); 4) previous thromboembolic episodes; 5) liver disease; and 6) estrogen therapy within last 6 months.

Informed consent was obtained from all patients. All patients underwent a detailed history and clinical examination including breast, per abdominal, per vaginal examination, blood pressure measurement, etc. Complete blood count, liver and renal function tests, coagulation profile, Pap smear, pelvic ultrasonography were done for all the cases. Mid-stream urine culture and sensitivity was done routinely before starting estrogen therapy. If infection was present, it was cured with respective sensitive antibiotic. After that also, if OAB symptoms persisted then only vaginal estrogen therapy was started. Urodynamic study could not be done as there is no such facility in our setup. Patients were asked to maintain a 3-day bladder diary before starting therapy and also at the end of the therapy at 12 weeks. Estradiol vaginal tablet 2 mg was inserted in the posterior fornix every night for first 2 weeks; followed by weekly twice for 10 weeks. Total 12 weeks therapy was given. The effect of treatment on patients' perception of urgency was evaluated by asking each

*Associate Professor, Dept. of Obstetrics and Gynecology

†Assistant Professor, Dept. of Pharmacology

College of Medicine and JNM Hospital, Kalyani, Nadia, West Bengal, India

Address for correspondence

Dr Manidip Pal

Associate Professor, Dept. of Obstetrics and Gynecology

College of Medicine and JNM Hospital, Kalyani, Nadia, West Bengal, India

E-mail: manideep2b@yahoo.com

patient to complete a three-point urgency perception scale at baseline and 12 weeks following treatment.

Patients described their experience when they felt the desire to urinate. The response options included: 1) Unable to hold urine; 2) Usually able to hold urine until I reach the toilet if I go immediately; and 3) Usually able to finish my work before going to the toilet². Patient's feelings were also assessed by Patient Global Impression (PGI) scale³. At the starting of the study, PGI of Severity (PGI-S) scale measured the severity of the disease. The woman was asked to check the one number that best described how her urinary tract condition was now – 1) Normal, 2) mild, 3) moderate, and 4) severe. It is a scale which measures the patient's subjective feeling about the severity of her condition. Result of the treatment is assessed by PGI of Improvement (PGI-I) scale at 12 weeks. This scale measures the patient's feeling of her OAB condition after the treatment – whether improved or not. Again she was asked to check the one number that best described how her urinary tract condition was now, compared with how it was before she began

taking medication in this study – 1) Very much better; 2) much better; 3) a little better; 4) no change; 5) a little worse; 6) much worse; and 7) very much worse.

RESULT

Hundred women were enrolled for the study. Four were unfit for estrogen therapy after investigations. Three were lost to follow-up. Total 93 women completed the trial. At the beginning of the study, increased frequency of micturition >20 times was present in 15.6% cases, nocturia in 17.7% cases, and nocturnal enuresis in 5.2% cases. Eighty-four (87.5%) patients had urge incontinence. Patient's subjective feeling revealed that 21.9% had severe problem.

At the end of 12 weeks of vaginal estrogen therapy, 92.5% women had no more increased frequency of micturition. There was no case of nocturnal enuresis. Urgency and urge incontinence was cured in 74.2% cases. Patient's subjective feeling of improvement scale revealed only 12.9% women felt either no change or little better; rest all were happy (Tables 1-3).

Table 1. Frequency of Micturition, Nocturia and Nocturnal Enuresis Before and After Therapy

Frequency of micturition	No.	%	Nocturia	No.	%
At starting			At starting		
9-15 times	38	39.6	3-4 times	13	13.5
16-20 times	43	44.8	5-6 times	4	4.2
>20 times	15	15.6	Total	17	17.7
Total	96		After 12 weeks of therapy		
After 12 weeks of therapy			3-4 times	2	11.8 (2/17)
≤8 times	86	92.5	Nocturnal enuresis		
9-15 times	7	7.5	At starting	5	5.2
Total	93		After 12 weeks of therapy	0	0

Table 2. Urgency and Urge Incontinence

	No.	%
At starting		
I am usually not able to hold urine	84	87.5
I am usually able to hold urine until I reach the toilet if I go immediately	12	12.5
I am usually able to finish my work before going to the toilet	0	0
Total	96	100
After 12 weeks of therapy		
I am usually not able to hold urine	23	24.7
I am usually able to hold urine until I reach the toilet if I go immediately	1	1.1
I am usually able to finish my work before going to the toilet	69	74.2
Total	93	100

Table 3. Patient Global Impression Scale

	No.	%
Patient Global Impression of Severity (PGI-S) scale (at the beginning)		
Normal	0	
Mild	19	19.8
Moderate	56	58.3
Severe	21	21.9
Total	96	100
Patient Global Impression of Improvement (PGI-I) scale (after 12 weeks of therapy)		
Very much better	69	74.2
Much better	12	12.9
A little better	7	7.5
No change	5	5.4
A little worse		
Much worse		
Very much worse		
Total	93	100

DISCUSSION

Local estrogen therapy in postmenopausal women resulted in a good outcome in relation to their improvement in OAB problem.

Hypoestrogenism affects the sensory threshold of the urinary tract, and this reduces the volume and time needed to change the first sensation to void into the feeling of imminent micturition, and in some subjects causes involuntary detrusor contraction⁴. This could be the reason why estrogen therapy helped in reducing the OAB symptoms in postmenopausal women.

Various studies have demonstrated that estrogen replacement can improve, or even cure, urinary stress and urge incontinence. High-dose estrogen can decrease the total number of voids in a 24-hour span, including nocturnal voids⁵. Cochrane database review also revealed that estrogen therapy can cure or improve urinary incontinence in women, especially urge incontinence⁶.

In evaluation of estradiol absorption from vaginal tablets in postmenopausal women, it was found that absorption of the drug is not so high to cause systemic side effect. Over 12 weeks of therapy also, absorption patterns remained consistent, and there were no accumulations of circulating E2⁷.

Cardozo et al⁸ had performed a systematic review of the effects of estrogen therapy on symptoms suggestive of OAB in postmenopausal women. Eleven randomized trials were identified where total of 430 subjects were included. Estrogen (estriol, estradiol, conjugated estrogens or combination of estradiol and estriol) systemic or local vs. placebo was reviewed.

Overall, all of the outcome variables, which included diurnal and nocturnal frequency, urgency, number of incontinence episodes, first sensation to void and bladder capacity, were significantly improved in patients given active treatment compared with those taking placebo. When the authors analyzed data separately for systemic and local therapies; however, they found that only numbers of incontinence episodes and first sensation to void were significantly improved in patients taking systemic treatment, whereas local treatments had beneficial effects on all outcomes. Based on these findings, it was concluded that estrogen therapy may be effective in relieving the symptoms suggestive of OAB, but local administration may be the most effective route of administration.

In light of available evidence, it seems preferable to use vaginal estrogens rather than systemic for the management of menopause-related bladder problems⁹.

In our study, though 100 patients were initially recruited, 93 could complete the whole course. Other studies on effect of vaginal estrogen on urinary incontinence in postmenopausal women had sample sizes of 40 (Enzelsberger et al¹⁰, used estriol cream 1 mg/day, 3 mg/day), 59 (Nelken et al¹¹, estradiol vaginal ring vs. oral oxybutynin), 110 (Cardozo et al,¹² used 17-beta estradiol tablet) cases.

CONCLUSION

The bladder and its surrounding structures are rich in estrogen receptors and there are demonstrable physiological and anatomical changes that occur around and immediately after menopause. The prevalence of many bladder symptoms, such as frequency, urgency and incontinence (OAB) does seem to increase around menopause. Hence estrogen therapy, especially vaginal therapy which has less systemic side effects than oral form, appears to be helpful in managing such situation.

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Hematological Parameters in HIV Patients: Association with CD4 Count

ASHUTOSH KUMAR KARN*, ANJUM PARVEZ†, HS KHAN†

ABSTRACT

Background: Around 2.1 million people are currently living with human immunodeficiency virus (HIV) infection in India. Hematological parameters have been proposed as alternative markers of HIV infection in areas with limited resources. This study aimed to describe hematological parameters in patients with HIV infection and to determine their association with CD4 cell counts. **Methods:** This cross-sectional study assessed 100 HIV patients on antiretroviral therapy (ART). Their blood samples were collected to measure complete blood count (CBC) and CD4 count. Patients with known hematological disorders, critically ill patients, and those not willing to give informed consent were excluded. The Chi-square test was used to find the association between hematological parameters and CD4 counts. **Results:** Most patients with HIV infection had anemia (85%), followed by thrombocytopenia (42%) and neutropenia (36%). There was a statistically significant association between the number of patients having anemia and CD4 cell counts. **Conclusion:** Hematological changes are common in HIV patients. Hematological parameters should be routinely monitored and managed to reduce morbidity. Also, patients with unexplained low blood counts should be screened for underlying HIV infection.

Keywords: HIV, anemia, CD4 count

Around 2.1 million people in India are estimated to have human immunodeficiency virus (HIV)¹. According to National AIDS Control Organization (NACO), the national prevalence is 0.22% (0.17%-0.29%)². A higher prevalence of 7% has been reported in high-risk groups¹.

HIV attacks the immune system of the body. Opportunistic infections can take advantage of a weakened immune system and cause fatal health problems³. The concentration of HIV RNA and CD4 count are important biomarkers of disease progression⁴⁻⁶. Total lymphocyte count, white blood cell (WBC) count, and hemoglobin concentration have been proposed as alternative markers of HIV infection, especially in developing countries with limited financial resources⁷.

This study aimed to describe the hematological parameters in patients with HIV infection and to determine their association with CD4 cell counts.

METHODS

This cross-sectional study was conducted at a tertiary care teaching hospital in North India after approval from the Institutional Ethics Committee. Informed consent was obtained from all participants. One hundred patients coming to the ART Unit of Medicine OPD over 6 months were included in the study. Patients with known hematological disorders, critically ill patients, and those not willing to give informed consent were excluded.

A semi-structured proforma was used to gather relevant information. Patient's blood samples were taken to measure their complete blood count (CBC) and CD4 counts. All patients were on ART at the time of taking their blood samples. Anemia, thrombocytopenia, leukopenia, neutropenia, and lymphopenia were looked for in CBC. Their association with CD4 cell counts was determined.

Operational Definitions

Anemia was defined as hemoglobin <13 g/dL in males and <12 g/dL in females. Leukopenia was defined as WBC <4,000/ μ L. Thrombocytopenia was defined as a platelet count of <1,00,000/ μ L. Neutropenia was defined as an absolute neutrophil count of <1,500/ μ L. Lymphopenia was defined as a total lymphocyte count of <1,000/ μ L⁸.

*Senior Medical Officer, Dept. of Medicine, Dr. RML Hospital, New Delhi, India

†Professor, Dept. of Medicine, JLN Medical College, AMU, Aligarh, Uttar Pradesh, India

Address for correspondence

Dr Ashutosh Kumar Karn

C-101, Saraswati Apartment, River View Enclave, Sector 4, Gomti Nagar Extension, Lucknow - 226 010, Uttar Pradesh, India

E-mail: ashukarn@gmail.com

Sample Size Calculation

Open Epi software was used to calculate the sample size⁹. Taking anticipated frequency as 0.22², within 1% confidence limits and 95% confidence level, the sample size was calculated as 85.

Data Analysis

SPSS version 20.0 was used for statistical analysis. Descriptive statistics were used to analyze socio-demographic variables. The Chi-square test was used to determine the association between hematological parameters and CD4 counts. P value <0.05 was considered statistically significant.

RESULTS

We assessed 100 patients with HIV infection. There were 50 males and 50 females. They were in the age group 18 to 60 years with a mean age of 29.9 years. Most patients presented with fatigue (69 patients, 69%), fever (61 patients, 61%) and weight loss (44 patients, 44%). Other symptoms observed were cough (22 patients, 22%), and diarrhea (10 patients, 10%).

Anemia was the most common hematological abnormality seen in 85 patients (85%), followed by thrombocytopenia in 42 patients (42%) and leukopenia in 11 patients (11%). Neutropenia was seen in 36 patients (36%), whereas only 9 patients (9%) had lymphopenia. Sixty-eight out of 85 (80%) patients had normocytic normochromic anemia, whereas 7 (8%) had microcytic hypochromic anemia.

Sixty-four patients had CD4 cell count ranging from 201 to 500 cells/ μ L. Twenty-five patients had ≤ 200 CD4 cells/ μ L. Eleven patients had more than 500 CD4 cells/ μ L.

We found a statistically significant association between CD4 cell counts and the number of patients having anemia and neutropenia (Table 1). With a decrease in CD4 cell counts, more patients were found to have anemia and neutropenia.

DISCUSSION

This study was planned to describe hematological parameters in patients having HIV infection and to determine their association with CD4 cell counts.

We found anemia in 85% of HIV patients in our study. Our finding was similar to that reported by Parinitha et al. They assessed 250 HIV patients in Karnataka and found anemia in 210 of them (84%). Normocytic normochromic was the most common type of anemia,¹⁰ as was also the case in our study.

Anemia in HIV infection has varied causes. High viral load, opportunistic infections like *Mycobacterium avium* complex (MAC), inflammatory cytokines and malignancy play important roles. Also, zidovudine can cause myelosuppression and lead to macrocytic anemia. Defective iron metabolism, reutilization, and vitamin B12 deficiency are other causes^{10,11}.

Hemoglobin concentration has been proposed as an alternative marker of HIV prognosis, especially in resource-poor developing countries.⁷ Durandt et al have discouraged this practice as few other causes like nutritional deficiencies, are independent causes for anemia and are unrelated to HIV infection¹². But in the absence of better markers for disease progression in resource-poor areas, we the severity of anemia may be used as an indicator of disease progression.

We found neutropenia in 36% of patients. Also, there was a statistically significant association between CD4 cell counts and the number of patients having neutropenia. High viral load, low CD4 cell counts and use of drugs like sulfamethoxazole + trimethoprim are responsible for neutropenia in patients with HIV infection¹².

High viral load directly affects hematopoiesis and leads to thrombocytopenia, leukopenia and lymphopenia, in addition to anemia and neutropenia^{10,12}. But we did not find a significant association of CD4 cell counts with the number of patients having thrombocytopenia,

Table 1. Association Between Hematological Parameters and CD4 Cell Counts

Parameter	CD4 cell count (per μ L) ≤ 200 (n = 25)	CD4 cell count (per μ L) 201-500 (n = 64)	CD4 cell count (per μ L) >500 (n = 11)	Chi-square statistic (P value)
Anemia (No. of cases)	23	51	11	26.063 (0.02)
Thrombocytopenia (No. of cases)	11	28	3	8.962 (0.06)
Leukopenia (No. of cases)	5	5	1	17.946 (0.22)
Neutropenia (No. of cases)	4	28	4	15.924 (0.04)
Lymphopenia (No. of cases)	6	3	0	13.965 (0.08)

leukopenia or lymphopenia. While for thrombocytopenia, statistical significance just missed the mark, p values were much higher for leukopenia and lymphopenia. The smaller sample size may have contributed to this statistical nonsignificance in our study. Future studies with larger sample sizes may give a better idea of the association between the two.

We propose regular monitoring and management of hematological changes in HIV patients to reduce morbidity. All patients who were identified to have hematological changes in our study, were requested to follow-up every 4 weeks for monitoring of CBC. As oral iron therapy takes 2 to 3 weeks to show its effects, we decided to monitor CBC at an interval of 4 weeks. But any further data was not collected as it was beyond the scope of this study.

Also, a progressive decline in all cell lines may indicate disease progression. Future longitudinal studies may be able to throw a better light on frequency of monitoring of these hematological parameters as a marker of disease progression.

Fatigue has been reported as the most common symptom of HIV infection^{13,14}. It was also the most common presenting symptom in our study. Chronic ongoing inflammatory processes within the cardiovascular system and brain may be responsible for fatigue in HIV patients¹⁵. Fever also occurs, mostly due to superimposed opportunistic infections like tuberculosis and MAC¹⁶. Most opportunistic infections occur when CD4 cell count is <500 cells/mm³¹⁷. Also, weight loss of even 5% has been associated with an increased risk of developing opportunistic infections in HIV patients¹⁸.

Eighty-nine of 100 patients in our study had CD4 cell count <500 cells/mm³. This may have contributed to the high prevalence of fever and weight loss in our study. The causes of these symptoms need to be looked for and managed effectively to give patients a better quality of life.

CONCLUSION

Anemia and neutropenia are most commonly associated with a decrease in CD4 counts in HIV patients.

Our study had a small sample size of 100 patients. This is a limitation of our study. Convenience sampling was used instead of random sampling. Also, this study had a cross-sectional design. All these factors may affect its generalizability.

Despite certain limitations, our study recommends that patients with unexplained low blood counts should

be screened for HIV infection, especially in high-risk populations and areas where the prevalence of HIV is higher.

It also invites the attention of researchers to explore this aspect further. Longitudinal studies with larger sample sizes will be beneficial in describing the course and progression of hematological changes in HIV patients. They can also guide in formulating recommendations related to the frequency of monitoring of hematological parameters.

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From Chaos to Clarity: Optical Coherence Tomography-Guided Thromboaspiration in a Complex In-Stent Restenosis Chronic Total Occlusion – The “Tidy the Tunnel” Approach

SAI DEVVRAT*, TANUJ BHATIA*, ABHISHEK RASTOGI*, MOHD KAZIM*, DEVENDRA SINGH BISHT†

ABSTRACT

This case report details the management of a 54-year-old male with refractory angina due to in-stent restenosis (ISR) within a chronic total occlusion (CTO) of the right coronary artery (RCA). Despite multiple prior percutaneous coronary interventions (PCIs) and maximal medical therapy, symptoms persisted. Optical coherence tomography (OCT)-guided PCI, augmented by the Penumbra CAT RX mechanical thromboaspiration system, revealed heterogeneous neoatherosclerosis and organized thrombus (Wataru-Yamamoto Type 4 ISR). The sustained negative suction of the Penumbra device (–29 mmHg), excellent trackability, and maneuverability enabled the effective debulking of late thrombus, restoring distal flow and OCT clarity. This facilitated tailored therapy: a drug-eluting stent for fibroatheroma, a drug-eluting balloon for neointimal hyperplasia, and high-pressure post-dilation for underexpansion. The case challenges the assumption of the absence of thrombus in CTOs. It underscores the value of the “P-OCT” protocol (Prepare with thromboaspiration, Optimize imaging, Characterize pathology, Treat mechanistically) in ISR-CTO.

Keywords: Penumbra CAT RX, in-stent restenosis, chronic total occlusion, optical coherence tomography, percutaneous coronary intervention

In-stent restenosis (ISR) and chronic total occlusions (CTOs) represent complex challenges in interventional cardiology. ISR, often driven by neointimal hyperplasia (NIH) or neoatherosclerosis, is compounded in CTOs by fibrocalcific remodeling and organized thrombus. Traditional angiographic guidance often fails to accurately delineate the underlying plaque morphology, resulting in suboptimal stent deployment and a higher incidence of recurrent events.

Optical coherence tomography (OCT), with its high-resolution cross-sectional imaging, has emerged as a critical tool for characterizing ISR-CTO pathology. However, thrombus remains a persistent barrier to

optimal visualization. The Penumbra CAT RX system¹, a mechanical thromboaspiration device, is traditionally reserved for acute thrombotic lesions.

This case illustrates its innovative application in a troponin-negative ISR-CTO, integrated with OCT-guided stratification using the Wataru-Yamamoto classification², to achieve a patient-specific therapeutic approach.

CASE REPORT

A 54-year-old male with a history of hypertension and multivessel coronary artery disease underwent multiple percutaneous coronary interventions (PCIs) on the following dates: right coronary artery (RCA) in 2012 and 2019, left anterior descending artery and diagonal bifurcation in 2019, and left circumflex artery in 2019. Despite receiving maximum antianginal therapy—including isosorbide mononitrate and metoprolol, he experienced 6 months of refractory angina, classified as Canadian Cardiovascular Society Class III.

Diagnostic evaluations revealed T-wave inversions in lead I, aVL, and V5-V6 on the electrocardiogram, indicating

*Dept. of Cardiology, Shri Guru Ram Rai Institute of Medical & Health Science, Dehradun, Uttarakhand

†Dept. of Cardiology, Ojas Hospital, Panchkula, Haryana, India

Address for correspondence

Dr Devendra Singh Bisht

Dept. of Cardiology, Ojas Hospital, Panchkula, Haryana, India

E-mail: bisht2416@gmail.com

lateral ischemia. A transthoracic echocardiogram showed severe left ventricular dysfunction, with an ejection fraction of 35%, global hypokinesia, prominent anterior wall involvement, and Grade I diastolic dysfunction. High-sensitivity troponin I levels were nondiagnostic at 0.01 ng/mL.

Coronary angiography revealed a CTO in the RCA, with retrograde collaterals from the left coronary system. This was classified with a Japanese CTO (J-CTO)³ score of 3 because of factors such as calcification, a blunt stump, and a bending angle exceeding 45 degrees (Fig. 1).

The procedural strategy employed a retrograde approach using a Fielder XT-A wire and Finecross microcatheter, achieving true lumen re-entry after initial subintimal tracking. Predilation with a 2.0 mm semi-compliant balloon failed to restore distal flow (TIMI-1), prompting suspicion of neoatherosclerotic debris or thrombus.

The 5.3 Fr catheter's sustained negative suction (−29 mmHg) and exceptional trackability enabled seamless navigation through the previously stented RCA, aspirating dense, organized thrombus despite the lesion's chronicity. Its maneuverability proved critical in traversing calcified segments, achieving TIMI-2 flow post-aspiration. Subsequent OCT imaging (Ultrason 2.0) revealed layered, heterogeneous tissue in the proximal RCA (Wataru-Yamamoto Type 4 ISR) with invisible struts and neointimal rupture, indicative of organized

thrombus. Distally, fibroatheroma with minimal calcification (Gonzalo's classification: heterogeneous, non-calcified) was identified. Tailored therapy included deployment of a 3.0 × 28 mm drug-eluting stent (DES) at the fibroatheroma site, application of a 4.0 × 35 mm drug-eluting balloon (DEB) to the NIH-dominant segment, and high-pressure post-dilation with a 4.5 mm noncompliant balloon.

The final OCT confirmed TIMI-3 flow and a significant increase in the minimum lumen area from 2.79 to 7.81 mm² (Fig. 2).

DISCUSSION

This case challenges the traditional dogma that CTOs lack thrombotic components. Histopathological studies have demonstrated that ISR-CTOs frequently harbor organized thrombus beneath layered plaques, driven by chronic endothelial injury and inflammation. The “Tidy the Tunnel” philosophy—preparing the lesion with thromboaspiration before OCT—proved pivotal. Thrombus, often dismissed in CTOs, obscured critical details of neointimal rupture and layered plaque.

Penumbra's aspiration “cleared the path”, enabling OCT to classify the ISR as Wataru-Yamamoto Type 4 (heterogeneous tissue, invisible struts) and Gonzalo's heterogeneous noncalcified plaque, which guided the selection

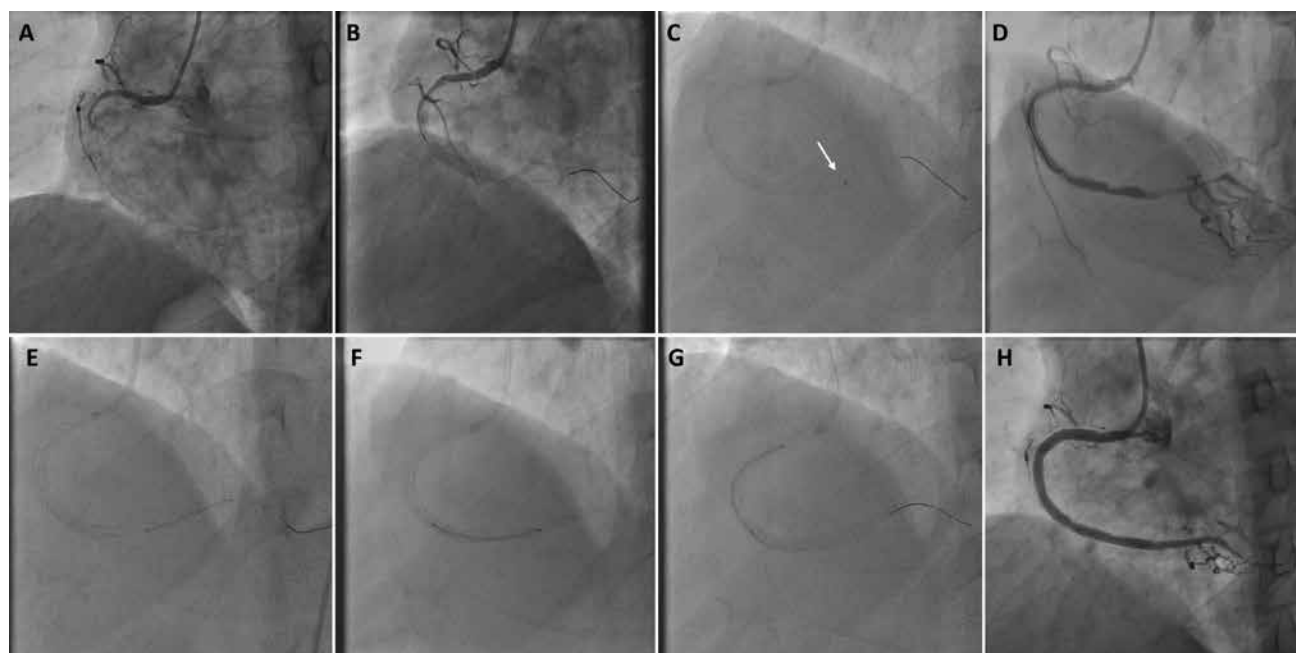


Figure 1. Angiographic images (A to H) illustrate the procedure as follows: (A) Baseline RCA showing 100% in-stent restenosis, (B) no-reflow phenomenon following balloon dilation, (C) Penumbra-guided thromboaspiration, (D) improved distal flow, (E & F) drug-eluting stents placement in the distal and mid segments, (G) drug-eluting balloon treatment in the proximal segment based on optical coherence tomography findings, and (H) the final angiographic outcome of the RCA.

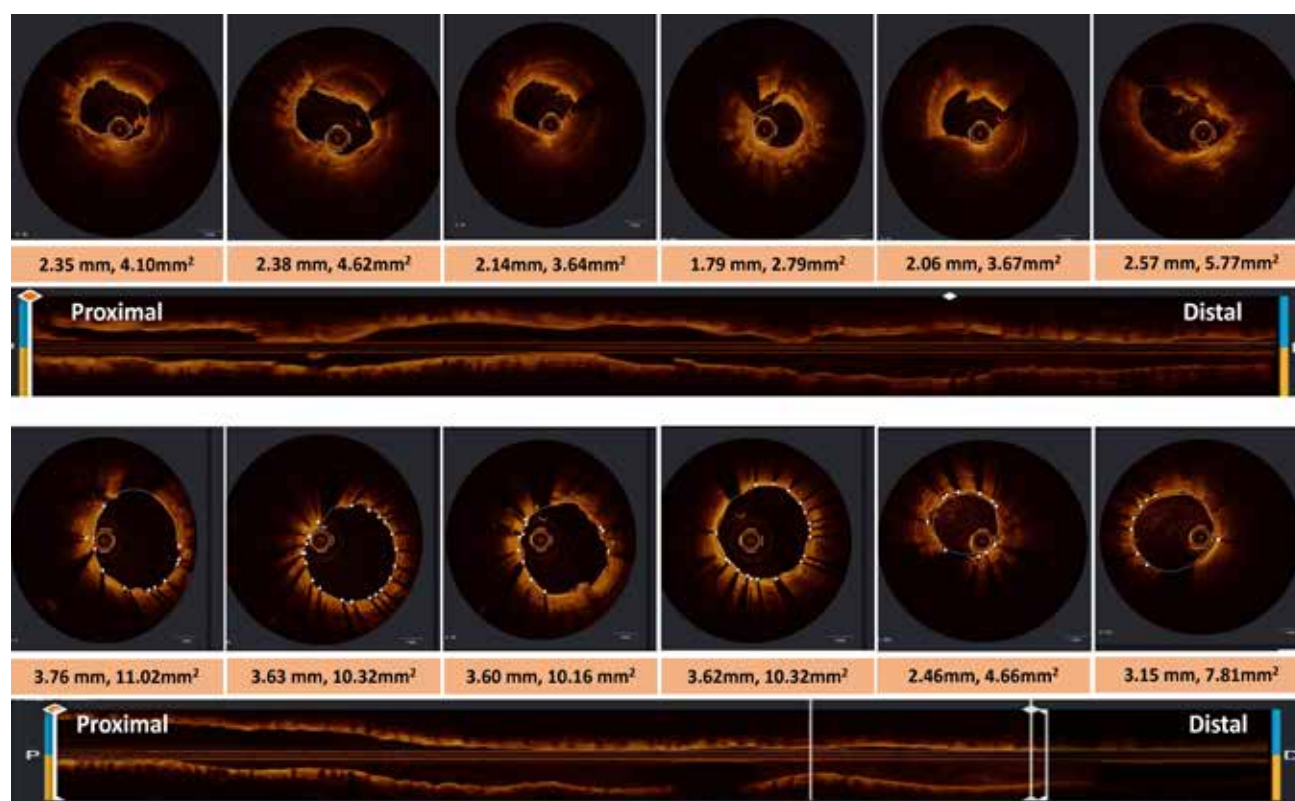


Figure 2. OCT images acquired after Penumbra-guided thromboaspiration (*upper panel*) and final OCT images following stent placement (*lower panel*).

of DES/DEB. The Wataru-Yamamoto classification, which integrates OCT findings, provides granular insights into ISR morphology. In this case, Type 4 ISR (heterogeneous tissue with invisible struts)⁴ correlated with prolonged stent duration and thrombotic remnants, necessitating a multifaceted approach to treatment.

The Penumbra system's mechanical thromboaspiration uniquely addresses both soft atheroma and organized thrombus, debulking lesions resistant to conventional predilation. This contrasts with rheolytic or ultrasound-based devices, which risk distal embolization in calcified CTOs. Prior studies, such as the TROFI trial⁵, have linked residual thrombus to higher rates of major adverse cardiovascular events (MACE), justifying its use even in non-acute settings.

OCT-guided stratification further allowed differentiation of fibroatheroma (targeted with DES) from NIH (treated with DEB), aligning with the “P-OCT” protocol (Prepare with thromboaspiration, Optimize imaging, Characterize pathology, Treat mechanistically). This approach aligns with recent guidelines recommending OCT for stent optimization in complex lesions.

The Wataru-Yamamoto classification² revealed neointimal rupture, a feature exclusive to Type 4 ISR—prompting

DES deployment. Conversely, NIH-dominated regions received DEB, avoiding unnecessary stenting. This precision, unattainable angiographically, underscores the role of OCT in personalizing ISR therapy.

CONCLUSION

This case redefines ISR-CTO management by integrating advanced thromboaspiration and OCT stratification. The Penumbra CAT RX's mechanical efficacy in chronic thrombus debulking, coupled with the Wataru-Yamamoto classification, enables a shift from blind stenting to pathology-driven therapy. The “Tidy the Tunnel” approach—preparing the lesion before imaging or intervention—should be prioritized in complex ISR cases to mitigate under sizing, residual thrombus, and MACE.

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Renal Sarcoidosis: A Rare Masquerader of Asthma

SIDDHARTH RAJ YADAV*, SOURABH SHARMA†, SUBANKAR CHAKRABORTY‡, NITIN GOEL*, HIMANSHU VERMA#

ABSTRACT

Background: Sarcoidosis is a systemic granulomatous disease with a predilection for pulmonary involvement, while renal sarcoidosis remains rare and under-recognized. The protean manifestations, particularly in the kidneys, often lead to misdiagnosis and delayed treatment. **Case presentation:** We report the case of a 38-year-old female with persistent respiratory symptoms initially misdiagnosed and treated as bronchial asthma for over a year. Further evaluation revealed chronic kidney disease with elevated serum creatinine and imaging suggestive of mediastinal lymphadenopathy. Endobronchial ultrasound-guided lymph node biopsy demonstrated noncaseating granulomas, and a renal biopsy confirmed granulomatous interstitial nephritis. A diagnosis of multisystem sarcoidosis with renal and pulmonary involvement was made. The patient responded favorably to corticosteroid therapy, with significant improvement in both renal function and pulmonary parameters over a 3-month follow-up period. **Conclusion:** This case highlights the importance of maintaining a high index of suspicion for sarcoidosis in young patients with unexplained respiratory symptoms and renal dysfunction. Early renal biopsy and histological confirmation are crucial to prevent irreversible organ damage. Multidisciplinary collaboration is essential for accurate diagnosis and optimal management.

Keywords: Asthma, chronic kidney disease, granuloma, granulomatous interstitial nephritis, lymphadenopathy, pulmonary function test, sarcoidosis

Sarcoidosis is a multisystem disease caused by noncaseating granulomas in multiple organs¹. The causes of sarcoidosis are still unknown; an interaction between several genetic variants and environmental exposures is thought to trigger and sustain granulomatous inflammation and clinical disease. The annual incidence of sarcoidosis varies between 1 and 15 per 1,00,000 depending on the region. The rates are lowest in Eastern Asian countries (0.5-1 per 1,00,000)^{2,3}, higher in North America and Australia⁴, and highest in Northern European (Scandinavian) countries⁵. Although sarcoidosis patients predominantly present

with pulmonary symptoms, there may be features of other system involvement like lymph nodes, hepatic, cardiac, and central nervous system. Renal involvement in sarcoidosis can occur but rarely. Renal manifestations of sarcoidosis can be vague and can vary according to the underlying pathological mechanism. The diagnosis considering its rarity can be very challenging at times. It has a wide spectrum of presentation including abnormal calcium metabolism, nephrolithiasis, nephrocalcinosis, and acute tubulointerstitial nephritis with or without granulomas^{6,7}.

CASE SUMMARY

A 38-year-old female presented to the outpatient department with shortness of breath for 1.5 years and a cough lasting 1 year. Her shortness of breath was intermittent, worsening in winter, and accompanied by wheezing. She experienced a predominant dry cough, particularly in winter, triggered by dust and smoke. Additionally, she had a brief exposure to pigeons for 3 to 4 months a year ago. Initially diagnosed with asthma, she was treated with inhalers but experienced only partial symptom relief. Over the last 4 months, she reported a loss of appetite and a weight loss of 4 kg. She was referred to our center for management of

*Associate Professor, Dept. of Pulmonary Medicine, Vallabhbhai Patel Chest Institute, Delhi, India

†Assistant Professor, Dept. of Nephrology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

‡Senior Resident, Dept. of Pulmonary Medicine, Vallabhbhai Patel Chest Institute, Delhi, India

#Professor, Dept. of Nephrology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

Address for correspondence

Dr Sourabh Sharma

Room No. 239, Superspeciality Block

Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

E-mail: drsourabh05@gmail.com

uncontrolled asthma. Upon further probing, there was no history of allergies or family history of respiratory illness. Notably, she had pulmonary tuberculosis (on clinicoradiological basis) 21 years prior, treated with antitubercular drugs for 6 months. She also reported unexplained fatigue for the past 5 months. Initial blood tests revealed a normal hemogram (Hemoglobin [Hb] 13.2 g/dL, total leukocyte count [TLC] 7.07 K, absolute eosinophil count [AEC] 337 cells) and normal liver function tests; but kidney function tests were abnormal (urea 60.9 mg/dL, creatinine 2.43 mg/dL).

For deranged kidney function tests (KFT), urine routine microscopy was done, which was normal (pH 6.0, protein, RBC, sugar - nil, epithelial cells - 2-4 cells/HPF, pus cells - 1-2 cells/HPF). Ultrasound KUB (kidney, ureter, bladder) showed normal sized kidneys with mildly increased bilateral cortical echogenicity. Contrast-enhanced computed tomography (CECT) thorax was not feasible as creatinine was high, so noncontrast computed tomography (NCCT) thorax was done which showed multiple enlarged mediastinal and hilar lymph nodes with minimal thickening of interlobular and intralobular septae in both lungs with areas of ground-glass opacities and diffuse centrilobular nodules (Figs. 1 and 2). Interstitial lung disease work up sent, which showed rheumatoid arthritis and antinuclear antibodies (hep2), C-reactive protein, anti-cyclic citrullinated peptide - negative, serum angiotensin-converting enzyme (ACE)

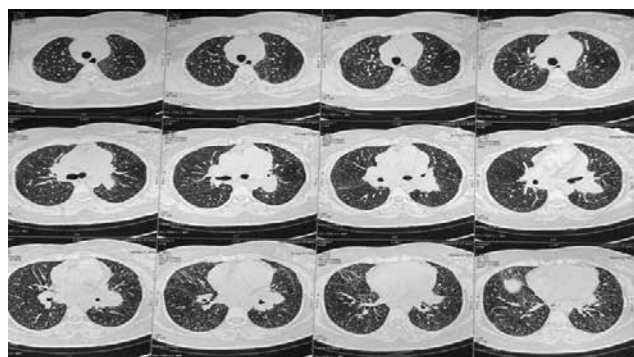


Figure 1. NCCT Thorax - Centrilobular nodules and septal thickening in parenchymal window.

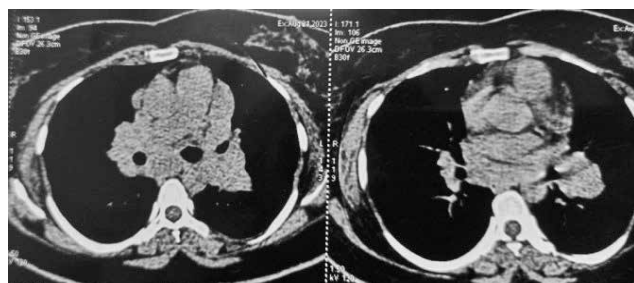


Figure 2. NCCT Thorax - Mediastinal lymphadenopathy.

90 (cut-off <68). C-antineutrophil cytoplasmic antibodies (ANCA), p-ANCA was also negative. Pulmonary function tests (PFT) showed restrictive disorder (Table 1) and 6-minute walk distance of 420 meter without significant desaturation.

Endobronchial ultrasound (EBUS) was done which showed enlarged station 4R, 4L, 7, 10R and 10L. EBUS-TBNA (transbronchial needle aspiration) done from all lymph node stations sequentially. EBUS-FNA (fine-needle aspiration) cytology showed well-formed epithelioid granuloma; acid-fast bacilli (AFB) stain was negative. EBUS core biopsy sample also showed ill-defined noncaseating granuloma; AFB stain was negative, and *Mycobacterium tuberculosis* was not detected by GeneXpert. Patient was also referred to Nephrologist for opinion due to deranged KFT. The patient underwent renal biopsy, which showed features of granulomatous interstitial nephritis. Focal glomerulosclerosis and mild interstitial fibrosis with tubular atrophy (15%) seen along with evidence of tubular injury (Figs. 3 and 4). So, a final diagnosis of sarcoidosis with both lung and renal involvement was made.

The patient was started on oral prednisolone at a dose of 0.5 mg/kg body weight, and gradually tapered down. After 1 month of treatment patient was symptomatically improved. Blood parameters showed Hb 12 mg/dL, TLC 11K, with marked improvement of KFT, urea 47, and creatinine 1.14. At present patient completed 3 months of oral steroid. Repeat PFT showed significant improvement in forced expiratory volume in 1 second (FEV1) (Table 2).

Table 1. Complete Pulmonary Function Test

Parameters	Pred	LLN	Best	% Pred	Z score
FVC (L)	2.28	1.76	1.37	60	-2.90
FEV1 (L)	1.80	1.32	1.08	60	-2.49
FEV1/FVC (%)	78.7	70.3	79.2	101	0.09
Parameters	Pred	LLN	Result	% Pred	Z score
VC (L)	2.28	1.76	1.21	53	-3.40
FRC mb (L)	2.10	1.35	1.03	49	-2.33
RV mb (L)	1.13	0.60	0.49	43	-2.00
TLC mb (L)	3.48	2.57	1.70	49	-3.22
RV/TLC mb (%)	31.9	22.3	28.6	90	-0.56

Pred = Predicted; LLN = Lower limit of normal; FVC = Forced vital capacity; FEV1 = Forced expiratory volume in 1 second; VC = Vital capacity; FRC = Functional residual capacity; RV = Residual volume; TLC = Total lung capacity.

CASE REPORT

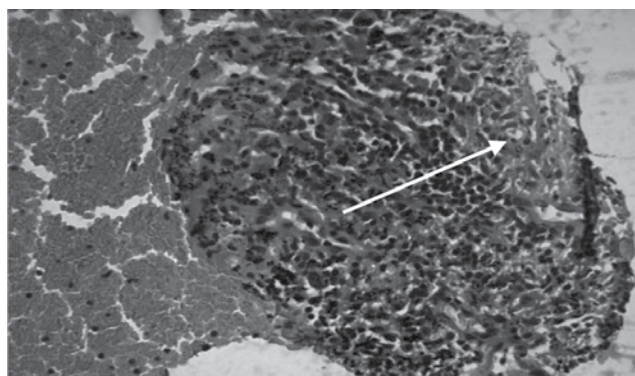


Figure 3. EBUS-FNA: Well-formed noncaseating epithelioid granuloma (white arrow).

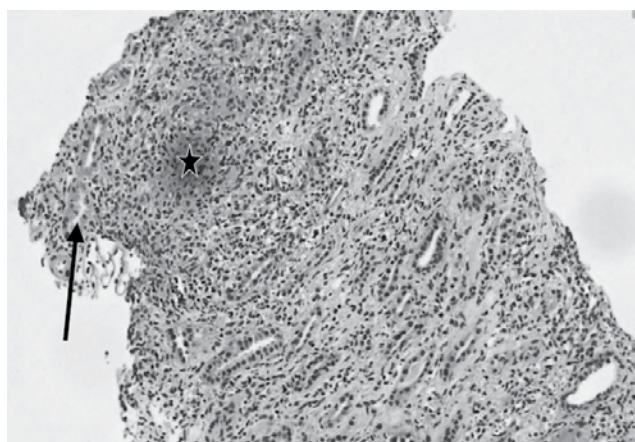


Figure 4. Renal biopsy: Granulomatous interstitial nephritis (tubular injury- arrow, ill-defined granuloma- star).

Table 2. Follow-up Spirometry after 3 Months Treatment

Parameters	Pre	Best	% Pred	Post	% Pred
FVC (L)	2.33	1.71	73	1.79	77
FEV1 (L)	2.00	1.57	79	1.50	75
FEV1/FVC (%)		92%		84%	

DISCUSSION

Historically, renal involvement is considered infrequent in sarcoidosis with an incidence of 0.7% and is seldom the presenting feature of the illness. However, recent evidence suggests that renal involvement in sarcoidosis might be underestimated. A retrospective study reports that 32% of 78 patients with sarcoidosis were diagnosed with renal failure⁸. Dysregulated calcium metabolism is commonly seen in sarcoidosis, and it often manifests as nephrolithiasis and nephrocalcinosis secondary to hypercalcemia, which rarely leads to clinically significant kidney disease. The histopathological hallmark of renal sarcoidosis is

granulomatous interstitial nephritis, which may be found in 30% to 78.7% of renal sarcoidosis cases^{9,10}. But in some studies, nongranulomatous tubulointerstitial nephritis is the most common histological entity (44%), followed by granulomatous interstitial nephritis (30%), IgA-GN (26%), and nephrocalcinosis (11%)¹¹. In our case, it was granulomatous interstitial nephritis. Some of the rare manifestations include amyloid A (AA) amyloidosis, urinary tract obstruction with renal masses, and glomerular diseases such as proliferative or crescentic glomerulonephritis, and focal segmental glomerulosclerosis¹²⁻¹⁴.

In our case, high serum creatinine, an elevated ACE and histologically proven non-necrotizing granuloma from EBUS-guided FNA and biopsy, granulomatous acute interstitial nephritis on renal biopsy made the diagnosis of sarcoidosis likely. Nevertheless, other etiologies of granulomatous interstitial nephritis had to be excluded. In addition to sarcoidosis, the most frequent causes are drugs, infections (such as tuberculosis or syphilis), Wegener's disease and tubulointerstitial nephritis and uveitis¹⁵⁻¹⁷. Our patient denied any prescribed or over-the-counter medication. Tuberculosis, syphilis, and granulomatosis with polyangiitis (Wegener's disease) was unlikely with the patients' clinical presentation and laboratory parameters.

This case is particularly interesting for its atypical presentation as the patient was initially misdiagnosed and treated as bronchial asthma for more than 1 year due to similar clinical presentation. Although acute renal injury (which is rare in the context of acute granulomatous interstitial nephritis) and mediastinal lymphadenopathy stands out to be the clinical differentiator. Two studies showed renal function improvement after oral corticosteroids treatment, as observed in our patient^{11,18}. There was also significant improvement in pulmonary function as evidenced by repeat spirometry after 3 months.

CONCLUSION

Renal sarcoidosis, though rare, poses a significant diagnostic challenge due to its nonspecific presentation and low prevalence. This case underscores the need to consider sarcoidosis in the differential diagnosis of young patients presenting with unexplained renal dysfunction, especially when accompanied by systemic symptoms such as weight loss, fatigue, or persistent respiratory complaints misattributed to asthma. Early histopathological diagnosis through renal and lymph node biopsy, along with the exclusion of other granulomatous diseases, is imperative. Prompt initiation of

corticosteroid therapy can lead to significant clinical and biochemical improvement, as demonstrated in this case. Raising awareness about atypical presentations of sarcoidosis can help avoid delays in diagnosis and reduce long-term morbidity.

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The Sarpanch Syndrome and Sociobesity: Social Norms for Healthy Weight

SANJAY KALRA*, MADHUR VERMA†, NITIN KAPOOR‡

NORMALITY AND SOCIAL NORMS

Each society has different norms for beauty and health. This is especially true in relation to body habitus and weight. The definition of a 'beautiful' woman, for example, varies from culture to culture. In fact, this definition can change over time, even within a particular society¹. There is increasing awareness and appreciation of the adverse effects of obesity on human health. Our understanding of central obesity and normal weight obesity has also improved. This is reflected in recent statements clarifying that obesity is a disease², and in guidance, which gives weight management equi-status with glucose control in diabetes care³.

While physicians work to translate these recommendations in practice, they face significant social challenges. Social perception of obesity as a sign of health, or mark of prosperity, is one such challenge⁴.

THE SARPANCH SYNDROME

We have noticed one specific group in our diabetes practice, which requests for weight gain, even if already obese (KgA1c paradox)⁵. These are the sarpanches or elected village chiefs. The Sarpanch wields significant power and has immense responsibility, in the Indian context. This is even more true in African and Pacific Island societies, where the village chief or headman is the top authority of the clan. To exert this authority, and to meet the demands of their job, they have to appear physically strong.

Working in traditional environments, these officials feel that the respect they get is directly proportional to their weight, or body mass index. Therefore, while seeking diabetes therapy, they specifically request for weight gain, rather than weight optimization or loss. We term this as the Sarpanch syndrome.

SOCIOBESITY

The Sarpanch syndrome is clinically significant, as it hampers efforts to reduce weight and optimize cardiovascular outcomes. It is also noted in persons from other walks of life, such as policemen, government officials, and community leaders (personal communication). We term this phenomenon as sociobesity. Sociobesity can be used to describe the endemic nature of obesity in a particular society (*"This region has sociobesity; overweight is endemic here"*) or the social desirability of obesity in community (*"Obese grooms are prized; their phenotype guarantees that they have enough grain to feed their wife-to-be"*).

OPPORTUNITY FOR HEALTH EDUCATION

The Sarpanch syndrome, and its underlying sociobesity needs to be addressed. The individuals involved are societal leaders, and can act as ambassadors of health⁶. It is imperative that they receive the right health messages, so that these can be disseminated to the rest of society. At the same time, it is necessary that their concerns and needs are acknowledged and addressed, in a person-centered manner. The Sarpanch syndrome can be viewed as an opportunity to discuss the importance of improving muscle mass, so as to increase body weight in a healthy manner. The difference between visceral fat and subcutaneous fat can also be explained.

SPORTS AND HEALTH

One way of highlighting the concept of optimum weight is to share rules from kabaddi. It is a popular game, especially in rural South Asia, and is respected as a metaphor for agility and fitness⁷.

The rules of Kabaddi mandate a maximum weight of 85 kg for men, 75 kg for women and boys, and 65 kg for

*Treasurer, International Society of Endocrinology (ISE); Vice President, South Asian Obesity Forum (SOF); Bharti Hospital, Karnal, Haryana, India

†Dept. of Community/Family Medicine, All India Institute of Medical Sciences, Bathinda, Punjab, India

‡Dept. of Endocrinology, Diabetes and Metabolism, Christian Medical College, Vellore, Tamil Nadu, India; Noncommunicable Disease Unit, Baker Heart and Diabetes Institute, Melbourne, Victoria, Australia

Address for correspondence

Dr Madhur Verma

Dept. of Community/Family Medicine, All India Institute of Medical Sciences, Bathinda, Punjab, India

E-mail: drmadhurverma@gmail.com

girls. This information can be shared with sarpanches, to encourage them to aim for a healthy, rather than heavy weight. Kabaddi players and other athletes can also be used as ambassadors to promote the cause of metabolic well-being. It is important that we explain the methods of achieving this as well. All patients must be informed about the socially acceptable, feasible and effective means of exercise⁸. Sensitization about the utility of games such as Akhara wrestling, and tools such as Mugdars (the Indian club bell) encourage their use at a mass level.

THE WAY FORWARD

Educational strategies such as this are required to make a difference in social preferences and practices. Effective use of these methods should create a novel Sarpanch syndrome, defined as the phenomenon in which a healthy Sarpanch, leading by example, is able to make his or her co-villagers healthy as well. This, in turn, should aim to make sociobesity a term of the past.

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Death: A Sacred Ritual

NARENDRA KOTWAL

The transition of death from a deeply personal and spiritual event to an institutionalized and clinical one reflects profound changes in societal priorities, advancements in medical science, and our evolving relationship with mortality.

DEATH IN EARLIER TIMES: A SACRED RITUAL

Historically, death occurred at home, surrounded by family, community, and familiar surroundings. It was marked by rituals, prayers, and practices rooted in the culture and faith of the individual. The presence of loved ones and the environment of prayer provided comfort to the dying person and those left behind. Death was seen not as an end, but as a passage to another realm—a sacred moment of transition. Earlier societies had a closer relationship with death, seeing it as a natural part of life. The rituals helped the bereaved cope and ensured the communion of the departing soul with the Almighty¹⁻³.

MODERN ERA: DEATH IN HOSPITALS

With the advancement of medical technology, the focus has shifted to prolonging life at all costs. Death is no longer seen as inevitable but as something to be delayed, even if it means invasive procedures. Hospitals, with their sterile environments, often isolate the dying from their loved ones. The cacophony of machines and glaring lights depersonalize the experience. Death, therefore, has become medicalized. The monetization of health care has introduced bureaucracy into the process of dying. Legal formalities, bills, and the handing over of mortal remains have made death seem like a transaction rather than a sacred event.

THE SOUL'S PERSPECTIVE

Spiritual traditions often emphasize that the soul's liberation is its ultimate goal. Perhaps the worldly setting—home or hospital—is less important than the inner state of acceptance and peace. If the departing soul could reveal its feelings, it might express discontent at the lack of familiar faces or gratitude for efforts to sustain life. The soul's journey, however, transcends

the physical and may be indifferent to the setting. Detachment, however, may not come so easily to the family members of the departing soul.

A BALANCED VIEWPOINT

Modern health care does save lives, and many find solace in knowing everything possible was done to help their loved ones. For some, the hospital's clinical setting provides a sense of security and hope. However, the very advancements meant to improve life have, in some cases, robbed death of its sanctity. The soul's departure, an event of profound significance, is often reduced to clinical parameters and legal formalities. Efforts should be made to bring the personal and spiritual back into modern health care. Palliative care and hospice services are examples where the focus shifts from curing to comforting. Families and caregivers can strive to incorporate rituals and prayers even in a hospital setting, creating a sacred space for the departing soul. Strengthening the role of community and family in the process of death can restore some of the intimacy and sanctity of earlier times.

CONCLUSION

The modern era demands a balance between the benefits of medical advancements and the timeless need for spiritual and emotional connection at the time of death. While hospitals may have become the new "homes" for death, the essence of a meaningful departure lies in the love, prayers, and presence of those who matter—regardless of the setting. Ultimately, the way we handle death reflects the way we value life. By reclaiming the sacredness of this inevitable event, we honor not just the departing soul but also the humanity in all of us. The human touch must be brought back into health care.

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Dept. of Endocrinology, Paras Hospital, Panchkula, Haryana, India

Bringing Lipid Conversations to Center Stage

SANJAY KALRA*, SOURABH SHARMA†, MADHUR VERMA‡, BHUPINDER SINGH#, AMANDEEP SINGH¥, NITIN KAPOOR§

ABSTRACT

Atherosclerotic cardiovascular disease (ASCVD) is the leading cause of mortality across the world. Though effective drugs are available for management of dyslipidemia, our achievement of lipid targets is far from optimal. In this multidisciplinary opinion piece, we call for greater attention to lipid health in metabolic care. We suggest various reasons, both patient-centric and physician-centric, which must be tackled to improve lipid care. Social marketing, strengthening of primary health care, continuing medical education, user-friendly teaching, and motivational therapeutics may help improve lipid management. “Lipid conversations”, such as this communication, will help improve the lipid legacy, or lipid karma, of our population, and contribute to “Lipid longevity”.

Keywords: ASCVD, atherosclerosis, cardiovascular disease, cholesterol, dyslipidemia, LDL cholesterol

LIPID LADEN CHALLENGE

Atherosclerotic cardiovascular disease (ASCVD) is the leading cause of mortality across the world¹. Ischemic heart disease and stroke are now the top two causes of death in most countries. Dyslipidemia is one of the major determinants of these conditions. While the concepts of “hit early, hit hard” and glycemic legacy are well acknowledged and appreciated, the adverse effects of cumulative low-density lipoprotein (LDL) exposure are not widely understood, and are therefore underrated. Data from across the world shows suboptimal prescription of statins, and far from optimal achievement of LDL targets². This state of affairs is true not only for general practices, but also for specialist care, which focuses on people living with diabetes or with high-risk ASCVD patients.

The INTER-HEART and INTERSTROKE studies demonstrated that lipid abnormalities are a much stronger

contributor to acute myocardial infarction and stroke than other diseases such as diabetes, hypertension, and obesity^{3,4}. Unfortunately, less attention is paid to lipid health in metabolic circles. Relatively more emphasis is laid on glucose, blood pressure, and weight in the metabolic clinic. This is a paradox, because dyslipidemia is generally considered an easier disease to tackle, and eulipidemia, an easier target to achieve.

DECIPHERING THE DISCORDANCE

This may be explained by various biopsychosocial factors. The asymptomatic nature of ASCVD (until the first vascular event occurs) differentiates it from hyperglycemia and hypertension, which present with multiple symptoms and signs. A diagnostic label of diabetes or heart failure generates various emotions, both positive and negative, which influence health care seeking and adhering behavior. Such emotions do not occur with dyslipidemia. Social factors play a role, too. There is a translation for sugar in every language of the world, but not for cholesterol. In Asian languages, therefore, high cholesterol is presented as an artificially constructed phrase, which may not have the desired impact. Even when cholesterol is discussed, it is considered part of nutritional counseling, rather than a pharmacological target⁵.

Biopsychosocial factors impact health care, too. The spirit of person-centered care is often used to focus on patient-expressed priorities⁶. Such priorities are usually linked to symptoms, such as pain or discomfort, or to readily identifiable disease states, like diabetes and obesity. Dyslipidemia does not lead directly to any of

*Treasurer, International Society of Endocrinology (ISE); Vice President, South Asian Obesity Forum (SOF); Bharti Hospital, Karnal, Haryana, India

†Dept. of Nephrology, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

‡Dept. of Community and Family Medicine, All India Institute of Medical Sciences, Bathinda, Punjab, India

#Dept. of Cardiology, All India Institute of Medical Sciences, Bathinda, Punjab, India

¥Dept. of Medicine, All India Institute of Medical Sciences, New Delhi, India

§Dept. of Endocrinology, Diabetes and Metabolism, Christian Medical College, Vellore, Tamil Nadu, India; Noncommunicable Disease Unit, Baker Heart and Diabetes Institute, Melbourne, Victoria, Australia

Address for correspondence

Dr Sanjay Kalra

Bharti Hospital, Karnal, Haryana, India

E-mail: brideknl@gmail.com

these. On the contrary, it is possible that conventional lipid-lowering therapy may cause discomfort, pain, or worsening of glucose control.

There is relatively less focus on lipid biology in continuing medical education programs. This may be because of competing topics, such as contemporary developments in obesity, diabetes, and cardio-reno-hepatic pharmacotherapeutics. These academic factors, coupled with personal and peer attitudes regarding the desirability of degree of lipid control, contribute to therapeutic inertia regarding lipid management. The everchanging definitions of eulipidemia, and controversies in risk stratification, add to the suboptimal treatment of lipid levels^{7,8}.

LIPID-SMART SOLUTIONS

Understanding the barriers to intensive lipid management is necessary if one has to build bridges to improve lipid health. Table 1 lists various reasons, both patient-centric and physician-centric, which influence attitudes towards metabolic health. These attitudes, in turn, inform our behaviors and choices.

MACRO LEVEL

Social marketing strategies are important in enhancing community awareness of lipid health. These should be clubbed with existing efforts at metabolic health optimization⁹. It may be prudent to list high cholesterol or abnormal cholesterol as a distinct disease, along with coronary artery disease, diabetes heart failure, and obesity, while crafting awareness campaigns. Community medicine specialists need to be involved

Table 1. Attitudes to Metabolic Therapy: An A-Plus Model

Person-Centered	Physician-Centered
Awareness of disease	Awareness of disease and therapy: Academic empowerment
Ability and alacrity in seeking health care	Appreciation of person-centered needs and preferences
Availability and affordability of resources	Affability and authenticity in communication
Anticipation of benefits	Ability to prescribe and monitor
Assistance (encouragement) from family and friends	Availability of assistance from peers, if needed
Agreement retarget and technique	
Adherence to therapy	

during such planning. This will also facilitate active usage of lipid-lowering drugs, such as statins, at primary health care level. These, and other strategies, are listed in Table 2. We need to create a lipid registry in high-risk population like individuals with diabetes, hypertension, cerebrovascular accident, coronary artery disease, and chronic kidney disease. Such registry can act as a critical tool to identify the management gaps, personalize the lipid care and strategize evidence-based policy reforms and quality improvements (Table 3).

Table 2. Suggested Strategies and Solutions for Lipid Advocacy

Macro Level

Social ecosystem

- Encourage discourse on lipid health and ill-health
- Use social marketing techniques to promote awareness of lipid health
- Find celebrity brand ambassadors to champion the cause of lipid health
- Discuss low-fat/low-cholesterol dietary options at appropriate platforms

Health care ecosystem

- Ensure inclusion of lipid-lowering drugs in lists of essential medicines
- Ensure listing of cholesterol assays, including point of care devices, in lists of essential diagnostics
- Create multidisciplinary lipid clinics in tertiary health care centers
- Spread community awareness about lipids and dyslipidemia
- Lipid registry

Meso Level

- Incorporate lipidology in curricula and continuing medical education agenda
- Explain the dynamic nature of definitions of eulipidemia, as well as risk stratification
- Create networking between all relevant disciplines, including cardiology, endocrinology, neurology, nephrology, and internal medicine

Micro Level

- Evaluate and discuss lipid levels with the patient and their caregiver
- Explain the importance of lipid-lowering for long-term health
- Highlight the contribution of lipid-lowering therapy towards holistic well-being
- Demonstrate the financial savings accrued by the prevention of vascular events
- Use person-friendly terms such as "lipid legacy" and "lipid longevity" to foster confidence in lipid-lowering therapy

Table 3. Conceptual Framework for Lipid Registry

	Lipid Registry
Definition	• A systematic, longitudinal database that collects real-world data on lipid profiles, treatment patterns, and clinical outcomes across diverse patient populations.
Objectives	• Track prevalence and treatment gaps in dyslipidemia across high-risk groups (CKD, diabetes, ASCVD, CVA, hypertension) • Monitor adherence to lipid-lowering therapies and clinical guidelines • Enable outcome-based quality improvement and benchmarking across centers
Genetic Integration	• Incorporation of genetic markers (e.g., ApoE, PCSK9, familial hypercholesterolemia mutations) • Personalized lipid management and risk stratification
Collaborations Required	• Multidisciplinary engagement (cardiologists, endocrinologists, nephrologists, geneticists, clinical labs) • Health informatics experts • National NCD programs • Biopharma partners for real-world evidence generation
Challenges	• Lack of standardized Electronic Medical Records in LMICs • Limited physician awareness or prioritization of lipids beyond cardiology • Inconsistent lipid testing and follow-up • Data privacy and interoperability issues • Funding and manpower for registry upkeep
Advantages	• Evidence-based, cross-specialty lipid management • Identifies undertreated high-risk patients and regional variations • Supports policy formulation, drug procurement, and clinical research • Acts as a platform for education, audit, and innovation in preventive care

CKD = Chronic kidney disease; ASCVD = Atherosclerotic cardiovascular disease; CVA = Cerebrovascular accident; ApoE = Apolipoprotein E; PCSK9 = Proprotein convertase subtilisin/kexin type 9; NCD = Noncommunicable disease; LMICs = Low- and middle-income countries.

MESO LEVEL

While social marketing is necessary to optimize societal attitudes at a macro level, medico-marketing is required to sensitize health care professionals to the need for lipid control. Lipid biology and lipid management should be discussed at all relevant continuing medical education programs.

These include those that cater not only to cardiology, endocrinology, and internal medicine, but neurology, nephrology and related specialties as well.

MICRO LEVEL

Lipid therapeutics can be made more interesting, and user-friendly, by using simple analogies and similes to explain lipid physiology and pathology. Proverbs and metaphors can be utilized to encourage timely usage of lipid-lowering therapy. We must remind ourselves that it is the vasculature, and its cholesterol layer, which links these seemingly disparate organs, in health as well as disease.

Best practices on motivational therapeutics may be taken from obesity and diabetes management. These will include mastering “lipid conversations”, encouraging adherence to therapy, and handholding individual patients as they journey towards healthier metabolic health. Concepts such as lipid legacy, lipid karma, and cholesterol cutting, similar to glycemic memory, metabolic karma, and cost cutting, can be used to encourage proactive efforts towards lipid control. All these will lead to a state of optimal health, which we describe as “Lipid longevity”.

SUMMARY

We need action to fight ASCVD, and the morbidity and premature mortality that it is associated with. One simple way is to ensure healthy lipid levels for all. We call for bringing lipid health to the center stage of metabolic health, at both preventive and curative levels. Successful advocacy for lipid health will automatically translate into comprehensive cardiometabolic health for our fellow citizens.

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Memoryporosis, Memorymalacia, and More: Describing Dementia with Person-Friendly Onomastics

SANJAY KALRA*, SARTHAK KUKREJA†, NITIN KAPOOR‡

ABSTRACT

This communication proposes person-friendly terminology for various memory disorders and cognitive impairment syndromes, including dementia. Building upon the lexicon of bone health, it proposes words such as memorypenia, memoryporosis, memorymalacia, and memorypetrosis to describe mild cognitive impairment, “irreversible” dementia, short-term dementia, and hyperthymestic syndrome, respectively. These nouns offer a nonjudgment, person-friendly and socially acceptable way of defining and describing memory disorders. Through discussion and debate, these onomastic inventions should gain acceptance in professional as well as informal discourse.

Keywords: Cognitive impairment, dementia, delirium, osteomalacia, person-centered care, osteoporosis

MEMORY

Memory is the ability to retain information or representations of past experiences. It is a process that involves three distinct stages: encoding, where experiences or learned information are registered and established as records in the central nervous system; storage, where this information persists for varying durations; and retrieval, where stored information is accessed and utilized as needed¹. Memory and cognition are distinct yet interconnected. Memory specifically deals with storing and recalling information, whereas cognition is a broader term encompassing various mental functions, such as complex attention, executive function, learning, language, perceptual-motor abilities, and social cognition. For example, memory involves recalling the rules of chess, while cognition entails strategizing the next move based on those rules.

While memory is popularly perceived as a physical “thing” stored in the brain—akin to data on a hard drive—modern neuroscience views it as a dynamic process involving chemical and structural changes between neurons. It is not about how much memory the brain can hold but how the vast amounts of information processed daily are integrated into broader cognitive processes.

MEMORY DISORDERS

Memory impairments are frequently part of broader neurocognitive disorders (NCDs), which include conditions that impair reasoning, decision-making, and communication. While some degree of memory loss is a normal aspect of aging, it becomes pathological when it accelerates or is accompanied by significant functional decline. These disorders are categorized differently across classification systems: in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR)², they are classified as major and mild NCDs, emphasizing underlying pathological processes, whereas the ICD-11³ categorizes them into delirium, dementia, amnesic disorders, and mild NCDs. Differentials for dementia include conditions such as mild cognitive impairment, delirium, and normal age-related forgetfulness. Additionally, psychiatric disorders, such as depression, post-traumatic stress disorder, and dissociative disorders, may present as memory or cognitive complaints rather than overt mood symptoms.

*Treasurer, International Society of Endocrinology (ISE); Vice President, South Asian Obesity Forum (SOF); Bharti Hospital, Karnal, Haryana, India

†Medical Officer, Dept. of Psychiatry, All India Institute of Medical Sciences, New Delhi, India

‡Dept. of Endocrinology, Diabetes and Metabolism, Christian Medical College, Vellore, Tamil Nadu, India; Noncommunicable Diseases Unit, Baker Heart and Diabetes Institute, Melbourne, Victoria, Australia

Address for correspondence

Dr Nitin Kapoor

Dept. of Endocrinology, Diabetes and Metabolism, Christian Medical College, Vellore, Tamil Nadu - 632 002, India

E-mail: nitin.endocrine@gmail.com

Cognitive impairments can also result from medication side effects (e.g., anticholinergic or antihistamine use), sleep disturbances, and substance use disorders, further complicating diagnosis and management⁴⁻⁶.

Memory is important from a diabetes care perspective, as diabetes dementia is increasingly being recognized and diagnosed⁷. While dementia, including vascular dementia, is a commonly encountered condition, other types of dementia are also known.

MEMORYPOROSIS

The term memoryporosis has been used earlier, as a less threatening, more acceptable synonym for dementia. The authors suggest the use of this term not only for persons living with dementia, but also for health care professionals who feel cognitively challenged and overburdened by their work.

NEWER TERMS

The adoption of terms such as “memoryporosis” is part of a broader effort to reduce the stigma associated with dementia and other cognitive disorders. Research consistently shows that stigma—negative attitudes toward individuals based on distinguishing characteristics—has significant implications for health outcomes, contributing to feelings of marginalization and exacerbating distress. The World Health Organization has recognized the widespread stigma faced by older individuals with dementia, emphasizing that it “accentuates and deepens the distress experienced by the person”^{8,9}.

By offering a more neutral and less threatening alternative, the term “memoryporosis” reframes dementia as a condition that, while serious, is part of the broader spectrum of cognitive aging. This reframing aims to reduce the social stigma often associated with dementia, which can confine individuals to a singular, stigmatized identity.

Taking a cue from this discussion and from existing terminology in bone and mineral health, we expand the lexicon of memory disorders. We suggest newer synonyms for various memory disorders, based upon their clinical characteristics (Table 1).

Memory loss has a wide variety of causative factors. Memorymalacia may be used to describe correctable causes of dementia, such as nutritional deficiency, hyponatremia, and hypothyroidism. An analogy can also be drawn with the T- and Z-scores that are used in bone health assessment. Age-related memory

Table 1. Newer Terms for Memory Disorders

Newer terminology	Standard terminology
Memorymuddle	
Memorypenia	Mild cognitive impairment
Memoryporosis	Dementia
Juvenile memoryporosis	Early onset dementia
Memorymalacia	Amnesic disorders without associated cognitive feature
Memoryplasticity	
Memorypetrosis	Hyperthymestic syndrome

impairment should be assessed in a manner similar to Z-scores, rather than T-scores. Memoryporosis, on the other hand, may be more appropriate for relatively nonmodifiable etiologies, such as Alzheimer’s disease, vascular dementia, and structural or traumatic brain lesions. This concept bears resemblance the constructs of osteomalacia and osteoporosis.

Drug-induced memoryporosis is well-known, just as drug-induced osteoporosis is. Similarly, juvenile memoryporosis implies early onset dementia, just as juvenile osteoporosis refers to the occurrence of osteoporosis in younger individuals. Memorypetrosis suggests rigid, inflexible, and maladaptive memory retention, which may occur in conditions such as hyperthymestic syndrome. The suggested phraseology can also be used to describe memory-related phenomena such as transience, absent mindedness (memorymuddling), misattribution (memorymalacia) suggestibility (memoryplasticity), bias (memorydysplasticity), and persistence (memorypetrosis).

This onomastic exercise is a first step towards facilitating and fostering discussion and debate regarding the nomenclature of memory disorders.

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Impact of Protein Deficiency on Reproductive Health

RITU PATEL

Reproductive health is vital for the survival of any sexually reproducing organism¹. The human reproductive system is a complex network of physiological processes that requires a balanced diet to function correctly. In particular, an unbalanced diet deficient in protein can harm the safety and efficiency of gametes and their implantation¹. Nutrition is, therefore, a crucial factor affecting reproductive health in both men and women¹.

Moreover, nutritional factors influence not only oocyte maturation but also the quality of embryos and the efficiency of implantation¹.

EFFECTS OF PROTEIN DEFICIENCY IN VARIOUS STAGES OF LIFE

Effect of Protein Deficiency in Adolescent Girls

Protein undernutrition can cause stunted growth, anemia, physical weakness, and edema in adolescents². The primordial follicle pool is built up at the early stage of development and is, therefore, vulnerable to any nutritional deficiency². Therefore, reproductive maturation and capabilities depend on early-life events. Previous reports from clinical and experimental studies have indicated that early-life problem is associated with a decline in ovarian follicular reserve, changes in ovulation rates and altered age at the onset of puberty. Delayed puberty again can have long-lasting effects on fertility and pregnancy outcomes².

Effects of Protein Deficiency in Perinatal Period

The nourishment of a pregnant mother, specifically her dietary protein consumption, is a crucial element that determines the embryo's survival, growth and development³. Inadequate dietary protein intake may lead to embryo loss, intrauterine growth restriction (IUGR), birth defects, preterm birth, pre-eclampsia and

eclampsia due to the absence of specific amino acids essential for cellular metabolism and function³.

Perinatal exposure to a protein-deficient diet and mother/child malnutrition during the critical developmental period can lead to certain life-long psychopathological changes and increased susceptibility to dysfunction that underlies most origins of health defects and disease². Protein malnutrition during the perinatal period can program the offspring's sexual maturity through epigenetic factors².

Effects of Protein Deficiency in the Postnatal Period

Maternal deficiency of proteins has negative effects both on mother and child, like- reduced postnatal growth and feed efficiency, impaired offspring growth and development, maternal insulin resistance, cretinism, cognitive and behavioral defects, postpartum complications, anemia, maternal hemorrhaging, etc³.

Furthermore, low maternal dietary protein intake causes the greatest abdominal adiposity in fetuses³. IUGR increases neonatal mortality, and surviving IUGR infants experience an increased risk of developing metabolic disorders, hormonal imbalances, abnormal development and cardiovascular disorders into adulthood³.

ROLE OF PROTEIN IN VARIOUS REPRODUCTIVE FUNCTIONS

Role of Proteins in PCOS

The amount of protein consumption may affect the ovulatory function or women's fertility¹. Protein intake is known to deregulate steroidogenesis in women affected by polycystic ovary syndrome (PCOS), likely by reducing hyperinsulinemia¹.

A study conducted by Mumford et al found that a protein-rich diet was significantly associated with lower testosterone levels in healthy women¹. In another study by Chavarro et al, the consumption of vegetable proteins was associated with a lower risk of ovulatory infertility in healthy women¹.

Obstetrician and Gynecologist, Singrauli, Madhya Pradesh, India

Role of Proteins in Pubertal Hormone Profile

Puberty and ovulation depend on the hypothalamic-pituitary-gonadal axis, and any interference with luteinizing hormone (LH) and follicle-stimulating hormone (FSH) can delay ovulation and puberty². Protein deficiency can disrupt LH and FSH periodic surges, resulting in increased cystic and antral follicles and decreased corpora lutea. These hormonal modulation disruptions may also contribute to reproductive failures and ovarian dysfunctions².

Role of Proteins in Ovarian Morphology and Function

Proper ovarian functioning is critical to maintaining reproductive status and overall health². The development of follicles at different stages, particularly the transition of primordial follicles into primary follicles, is critical to normal ovulation physiology. Protein deficiency leads to abnormalities in primordial transition, causing pathological conditions such as ovarian failure². Ovarian morphometric analysis has shown decreased primary follicles, increased primordial follicles, decreased corpora lutea and increased cystic follicles in protein-deficient groups (which all can cause problems getting pregnant or staying pregnant)².

Role of Proteins in Intrauterine Growth and Survival of the Fetus

Protein deficiency during gestation leads to slow growth in fetuses, caused by competition for available nutrients between the mother and fetus, resulting in suboptimal conditions for the fetus. Maternal protein restriction affects fetal development and can lead to IUGR, which impacts the offspring's survival, growth and development².

Role of Proteins in the Fetal Genome

Maternal protein nutrition is significant in fetal programming and can alter gene expression in the fetal genome³. L-arginine (Arg), an amino acid necessary for synthesizing molecules with metabolic and cell signaling functions, is critical for fetal growth and development during pregnancy. Adding Arg to the diet during pregnancy can improve embryonic survival and conceptus development³.

Animal studies have shown that maternal under-nutrition, particularly deficiencies in protein and amino acids, during early gestation are more harmful than during late gestation. Because the demands of the fetus and mother for nutrients change rapidly, dietary protein and amino acid requirements vary at different stages of gestation³.

BENEFICIAL INTERVENTIONS

Numerous animal studies regard Arg supplementation to be safe for humans. Studies have shown that dietary Arg supplementation during pregnancy can improve embryonic survival and growth by increasing placental angiogenesis and blood flow and promoting embryonic protein synthesis. A deficiency in Arg can cause preterm labor by stimulating the uterine myometrium due to the reduced bioavailability of nitric oxide (NO). NO deficiency is also linked to pre-eclampsia, which causes proteinuria and high blood pressure in pregnant women³.

- Adding 3 g of Arg to the diet daily for 4 weeks in women with pre-eclampsia reduces blood pressure, improves fetal health and growth, and also beneficially prolongs pregnancy³.
- Daily intravenous infusion of 20 g Arg for 7 days during late gestation (Week 33) increases birth weight by 6.4% in IUGR babies³.
- Furthermore, Arg supplementation decreases placental apoptosis and improves the development of IUGR fetuses³.

In conclusion, regulating maternal dietary protein intake during pregnancy is crucial to ensure proper embryonic survival, growth and development. The deficiency of specific amino acids due to low maternal dietary protein intake can lead to embryonic loss and impaired growth and development of the conceptus. The resulting IUGR can have long-term adverse effects on the surviving neonate. However, dietary supplementation with amino acids such as Arg and L-glutamine during specific stages of gestation can help overcome the harmful consequences of maternal protein malnutrition.³ Adequate maternal dietary protein intake can also result in healthier mothers and infants, improving reproductive success. Thus, regulating maternal protein nutrition during pregnancy is vital for the health and well-being of both the mother and offspring³.

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Principles of Ethics in Medical Research

The Nuremberg Code of 1947 was the first international treatise on the ethics of research involving human beings and highlighted the essentiality of obtaining voluntary consent.

In 1964, the World Medical Association formulated guidelines on conducting research on humans, known as the Declaration of Helsinki. This has undergone seven revisions with the latest version being issued in October 2013 at Fortaleza, Brazil.

In 1979, the Belmont Report released by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research in the United States of America (USA), for the first time enunciated the three basic ethical principles for research involving human subjects: respect for persons, beneficence and justice.

UNESCO's Universal Declaration on Bioethics and Human Rights (2005) and other international instruments on human rights further defined the Universal Codes of Ethics to be adopted by the member countries.

Research is essential for progress of medicine, yet it falls upon those striving to find answers to the mysteries of science to ensure that all research involving human participants should be conducted in accordance with the four basic principles of ethics in health care viz. autonomy (respect for person/s) beneficence, non-maleficence (do no harm) and justice. Ethics are as important as the quality of research.

The "Indian Council of Medical Research National Ethical Guidelines for Biomedical and health Research involving human participants 2017" guidelines have expanded these four basic principles into 12 general principles described below. These are common to all areas of biomedical research for health involving human participants, their biological material and data.

The 12 general principles of ethics in medical research are:

1. **Principle of essentiality** whereby after due consideration of all alternatives in the light of existing knowledge, the use of human participants is considered to be essential for the proposed research. This should be duly vetted by an ethics committee (EC) independent of the proposed research.
2. **Principle of voluntariness** whereby respect for the right of the participant to agree or not to agree

to participate in research, or to withdraw from research at any time, is paramount. The informed consent process ensures that participants' rights are safeguarded.

3. **Principle of non-exploitation** whereby research participants are equitably selected so that the benefits and burdens of the research are distributed fairly and without arbitrariness or discrimination. Sufficient safeguards to protect vulnerable groups should be ensured.
4. **Principle of social responsibility** whereby the research is planned and conducted so as to avoid creation or deepening of social and historic divisions or in any way disturb social harmony in community relationships.
5. **Principle of ensuring privacy and confidentiality** whereby to maintain privacy of the potential participant, her/his identity and records are kept confidential and access is limited to only those authorized. However, under certain circumstances (suicidal ideation, homicidal tendency, HIV positive status, when required by court of law, etc.) privacy of the information can be breached in consultation with the EC for valid scientific or legal reasons as the right to life of an individual supersedes the right to privacy of the research participant.
6. **Principle of risk minimization** whereby due care is taken by all stakeholders (including but not limited to researchers, ECs, sponsors, regulators) at all stages of the research to ensure that the risks are minimized and appropriate care and compensation is given if any harm occurs.
7. **Principle of professional competence** whereby the research is planned, conducted, evaluated and monitored throughout by persons who are competent and have the appropriate and relevant qualification, experience, and/or training.
8. **Principle of maximization of benefit** whereby due care is taken to design and conduct the research in such a way as to directly or indirectly maximize the benefits to the research participants and/or to the society.
9. **Principle of institutional arrangements** whereby institutions where the research is being conducted, have policies for appropriate research governance and

take the responsibility to facilitate research by providing required infrastructure, manpower, funds and training opportunities.

10. **Principle of transparency and accountability** whereby the research plan and outcomes emanating from the research are brought into the public domain through registries, reports, and scientific and other publications while safeguarding the right to privacy of the participants. Stakeholders involved in research should disclose any existing conflict of interest and manage it appropriately. The research should be conducted in a fair, honest, impartial and transparent manner to guarantee accountability. Related records, data and notes should be retained for the required period for possible external scrutiny/audit.
11. **Principle of totality of responsibility** whereby all stakeholders involved in research are responsible for their actions. The professional, social and moral responsibilities compliant with ethical guidelines and

related regulations are binding on all stakeholders directly or indirectly.

12. **Principle of environmental protection** whereby researchers are accountable for ensuring protection of the environment and resources at all stages of the research, in compliance with existing guidelines and regulations.

The National Medical Commission Registered Medical Practitioner (Professional Conduct) Regulations, 2023 also say that *“the registered medical practitioner should protect and minimize risk of patients who participate in medical research, conscious that the dual role as researcher-practitioner would require disclosure to patients and additional regulatory and ethical compliance”*. Further, *“clinical drug trials or other research involving patients or volunteers must comply with ICMR guidelines and the New Drugs and Clinical Trials Rules, 2018. Consent taken from any patient or participant for the trial of drug or therapy which is not as per the guidelines shall be construed as misconduct”*.

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APAO 2025: The 40th Asia-Pacific Academy of Ophthalmology Congress

IMAGING IN UVEITIS

Prof Rupesh Agarwal, Singapore

Selecting the right imaging modality is key to diagnosing, monitoring, and treating ophthalmic diseases. Fundus photography characterizes fundus lesions, while ultra-widefield (uWF) imaging detects peripheral lesions and assesses disease activity. Autofluorescence tracks disease progression, and uWF fluorescein angiography identifies vascular leakage, capillary nonperfusion, and neovascularization. Indocyanine green angiography helps detect choroidal granulomas, while optical coherence tomography (OCT) localizes lesions and biomarkers. OCT angiography aids in diagnosing complications like choroidal neovascularization.

In uveitis, true-color fundus photography provides high-resolution imaging for better visualization of the peripheral retina, improving lesion, and vasculitis detection. With true-color and three-dimensional depth, it enhances lesion tracking and treatment planning. These advanced modalities reveal lesion extent, guide clinical decisions, and evaluate retinal hemorrhages. They also help detect subtle signals and early clinical clues, ensuring timely and effective disease management.

Key benefits of advanced imaging techniques include:

- **Insightful imaging** – True-color and three-dimensional depth for comprehensive analysis.
- **Tracking lesions with precision** – Monitoring lesion progression and guiding treatment strategies.
- **Beyond boundaries** – Revealing the full extent of lesions and supporting clinical decisions.
- **Guiding intervention** – Evaluating lesion extension and retinal hemorrhages for better management.
- **Subtle signals** – Detecting early clinical clues for timely intervention.

INTRAOPERATIVE OCT GUIDED DMEK

Dr Namrata Sharma, New Delhi

Descemet membrane endothelial keratoplasty (DMEK) offers faster visual rehabilitation, superior outcomes, and a lower risk of graft rejection. However, challenges such as graft preparation, poor visualization in hazy corneas, and

postoperative detachment limit its widespread use, especially in advanced corneal decompensation cases. Studies have shown that intraoperative OCT is a valuable tool in the armamentarium of keratoplasty surgeons. It helps visualize the third dimension of corneal layers *in vivo*, offering a more comprehensive view during surgery. Acts like a “third eye”, enhancing visualization and providing real-time insights. Refines DMEK surgeries by enabling surgeons to visualize the unseen and enhance graft positioning and adherence. However, modification and quantification of the current system are required to enhance its accuracy and efficiency.

Additionally, a novel technique using a crescent blade in the AC aids in Descemet membrane (DM) visualization. The blade acts as a reflector under the operating microscope, allowing for better identification, and removal of DM remnants. This approach, independent of the red reflex, benefits cases with small pupils or poor corneal clarity. By providing a stable platform for intravitreal forceps, it facilitates the removal of detached DM tags, improving graft adherence and overall surgical success in endothelial keratoplasty.

MANAGEMENT STRATEGIES IN EO-PACG

Dr Shikha Gupta, New Delhi

Angle closure is rare in children and young adults compared to the elderly, with distinct underlying causes. Unlike late-onset primary angle-closure glaucoma (LO-PACG), early-onset PACG (EO-PACG) is often associated with structural anomalies rather than pupillary block. Due to its rarity, optimal surgical management remains unclear, with challenges like malignant glaucoma posing risks in high-risk patients. A study done at RP center compared EO-PACG and LO-PACG in patients aged ≥ 18 years and < 40 years, using criteria such as vertical CDR $> 0.7:1$, untreated IOP > 22 mmHg on multiple occasions, and glaucomatous visual field defects. Data from 50 EO-PACG patients undergoing surgery were analyzed, of which 25 underwent trabeculectomy, while 25 had phacoemulsification with MIGS. Key findings revealed that:

- **Lens vault (LV)** was significantly higher in EO-PACG (0.70 mm vs. 0.63 mm, $p = 0.029$).

- **Relative pupillary block** was less common in EO-PACG (33.1% vs. 90.4%).
- **UBM/ASOCT findings** indicated a significantly higher prevalence of plateau iris (24.3% vs. 6.7%) and pseudo-plateau iris (42.65% vs. 2.9%) in EO-PACG.

Key Points: EO-PACG presents distinct mechanisms of angle closure, requiring alternative management strategies. While pupillary block treatments are effective for LO-PACG, interventions targeting plateau iris and ciliary body-related issues are essential for EO-PACG patients.

DISTINCTIVE IMAGING CHARACTERISTICS OF RETINAL AND CEREBRAL VESSELS BETWEEN CENTRAL AND BRANCH RETINAL VEIN OCCLUSION BY MRI AND AI-BASED IMAGE ANALYZER

Dr Xinyuan Zhang, China

Retinal vein occlusions (RVO), including branch retinal vein occlusion (BRVO) and central retinal vein occlusion (CRVO), exhibit distinctive imaging characteristics, reflecting differences in their pathophysiological mechanisms. Advanced magnetic resonance imaging (MRI) and artificial intelligence (AI)-based image analysis reveal that BRVO and CRVO differ significantly in age, high blood pressure duration, intraocular pressure, and vascular characteristics highlighting differences in vascular structure, function, and underlying causes. Cerebrovascular characteristics indicate a stronger association between BRVO and cerebrovascular diseases, while a difference in the optic nerve subarachnoid space width hints at a potential link between CRVO and primary open-angle glaucoma. These findings underscore the need for distinct management strategies tailored to each RVO subtype, focusing on their specific risk factors and complications. Retinal and cerebrovascular geometric features may serve as valuable imaging biomarkers for diagnosis, prognosis, and personalized treatment for RVO. Moreover, the retina emerges as a crucial window for predicting and monitoring systemic conditions, emphasizing the importance of further exploration into biological and imaging biomarkers.

Take Home Messages

- RVO is associated with both systemic and ocular conditions.
- Retinal imaging offers insights into systemic health, highlighting its potential for predictive and diagnostic use.

- Continued research is needed to identify new biomarkers for more precise clinical applications.

IRIS AND PUPIL REPAIR TECHNIQUES

Dr Gaurav Luthra, Dehradun

Advancements in ophthalmic surgery are revolutionizing the repair of iris and pupil damage, particularly in cases of traumatic injury. Severe eye trauma can lead to corneal irregularities, astigmatism, and impaired vision, requiring meticulous surgical intervention. Early diagnosis and advanced imaging play a crucial role in planning treatment, ensuring precise correction. Diagnostic imaging, such as toric alignment checks, ensures accurate lens positioning for astigmatism correction, crucial in post-injury recovery. Techniques like customized IOLs, meticulous suturing, and corneal grafts help restore vision and esthetics. With cutting-edge tools and precise surgical planning, ophthalmologists are enhancing outcomes for patients with severe eye trauma.

WIDEFIELD ENDOTHELIAL IMAGING OF THE CORNEA

Asst Prof Marcus Ang, Singapore

Corneal endothelial diseases such as Fuchs' endothelial dystrophy and bullous keratopathy are leading indications for corneal transplantation. Endothelial keratoplasty remains the most common technique, with advancements such as Descemet stripping only (DSO) offering promising outcomes. Specular microscopy is the gold standard for imaging the corneal endothelium, but newer imaging techniques are needed to address limitations in corneal clarity and optical quality. Assessment of peripheral endothelial cell density in early-stage Fuchs' dystrophy is emerging as a key marker of disease severity, aiding in informed treatment decisions.

Wide-field imaging has also enhanced patient selection for procedures like DSO and endothelial keratoplasty. DSO, which involves a 4.0 mm descemetorhexis, promotes endothelial cell migration in mild to moderate cases. The use of Rho-kinase inhibitors (ROCKi) may accelerate corneal clearance following DSO. DMEK is gaining popularity due to lower rejection rates and superior visual outcomes.

Advances in imaging and surgical techniques continue to refine treatment strategies, leading to improved vision and quality of life for patients.

- Endothelial keratoplasty is the most common type of corneal transplant procedure.

- Peripheral endothelial assessment is crucial for evaluating disease severity and progression.
- DSO is suited for mild to moderate cases with adequate peripheral endothelial reserves.
- ROCKi accelerates corneal clearance post-DSO.
- DMEK offers superior visual outcomes and lower rates of rejection.

TECHNOLOGICAL DEVELOPMENT AND IMPLEMENTATION OF AI FOR COLLABORATIVE MANAGEMENT OF CATARACTS

Prof Haotian Lin, China

As the global population ages, cataract prevalence is on the rise, posing a substantial challenge to health care systems worldwide. Traditional cataract management, which heavily relies on specialized expertise and complex surgical interventions, is increasingly overwhelmed by the volume of patients needing care. This challenge is compounded by limited medical resources, resulting in inadequate access to timely and effective treatment. To address this growing demand, the integration of AI into cataract management offers a transformative solution. AI-driven approaches can be used in diagnosis, treatment, prognosis, and applications.

Diagnosis: One of the most promising innovations in cataract diagnosis is the CC-Cruiser system, an AI-based platform that facilitates intelligent diagnosis of congenital cataracts. By leveraging intelligent cloud services, CC-Cruiser significantly enhances diagnostic accuracy and professional consistency.

Treatment: Traditional cataract microsurgery is hindered by lengthy training requirements, a scarcity of skilled surgeons, and inherent physiological limitations such as hand tremors and limited visual discrimination. To overcome these barriers, AI technologies are being developed and implemented to improve surgical accuracy, reduce manual errors, and augment human capabilities.

- One notable innovation is **Deep Surgery**, a real-time surgery monitoring and feedback system. Its evaluation capability matches that of expert surgeons, making it a valuable tool for real-time guidance and precision.
- The **Robotic Surgery System**, filters out physiological tremors and scales down hand motions up to 30x and supports both local control and remote control. Furthermore, remote surgery can be stopped and taken over urgently in case of network failure.

- **Semi-Automated Continuous Capsulorhexis Control:** Ensures superior capsulorhexis trajectory and higher reproducibility, with comparable success rates to manual performance.

Prognosis: Current clinical examinations often fall short of accurately predicting postoperative prognosis. AI offers a promising alternative, using multimodal data fusion to predict postoperative visual acuity.

Application: In Guangzhou, a community-based AI ophthalmologist initiative has been implemented since 2018, covering more than 10 primary clinics and screening over 10,000 people.

Take Home Messages

- The integration of AI in cataract management represents a breakthrough in addressing the growing demand for precision care.
- By leveraging intelligent diagnosis, enhancing surgical accuracy, and predicting postoperative outcomes, AI offers a collaborative and scalable solution to the global cataract burden.

POSTERIOR CAPSULE RENT: IOL IMPLANTATION! CHILL DOWN THE SPINE

Dr Partha Biswas, Kolkata

Mature, Subluxated Cataract with Posterior Capsule Rent (PCR) – What Next?

In cases of mature, subluxated cataracts, performing a neat, centered capsulorhexis can be difficult. If there is visible subluxation, the first priority should be bag stabilization.

- Start with a capsular tension ring—insert it early to secure the bag.
- Capsular hooks are preferable, but iris hooks can be used for financial constraints.

Eccentric Longitudinal PCR

- Inject high molecular weight viscoelastic between the anterior and ruptured posterior capsule to tamponade the area.
- Avoid vitreous prolapse at all costs.
- Land the intraocular lens (IOL) haptics on the iris plane, then carefully pivot the optic into the space between the anterior capsule and posterior rent.

The quality of the haptic-optic junction matters for safe manipulation. These maneuvers are highly case-dependent—do not force them if conditions are not favorable.

FLACS with PCR

A PCR during femtosecond laser-assisted cataract surgery (FLACS) can be mentally taxing—not just technically.

- Carefully remove the cortex—avoid increasing the PCR size.
- Use viscoelastic generously to prevent chamber fluctuation.
- Place a one-piece IOL in the bag only if the posterior capsule is stable and the rent is peripheral and well-tamponaded.

Central PCR at the Finish Line

When a central rupture appears toward the end of surgery: Use viscoelastic tamponade immediately. Create a posterior capsulorhexis with micro-forceps. If well executed, a bulky IOL can still sit stably within the bag.

Managing a Large PCR with Nucleus/Cortex in Place

- Inject high-viscosity viscoelastic to partition the nucleus from the vitreous.
- Stop phaco immediately if the iris trembles or vitreous prolapses.

Trifocal IOL in PCR Cases

- Decentration and tilt can affect contrast sensitivity.
- Communicate openly with the patient. Let them know the risks and that the IOL can be exchanged later if the vision is unsatisfactory.

LASER-ASSISTED CAPSULOTOMIES IN WHITE CATARACTS: FLACS, ZEPTO, AND SELECTIVE LASER CAPSULOTOMY

Dr Jeewan S Titiyal, New Delhi

- Surgical technique for white cataract has evolved from manual capsulotomy (extracapsular cataract extraction) to continuous curvilinear capsulorhexis (phaco) to laser capsulotomies (automated) now.
- Laser capsulotomy devices include femtosecond laser, precision pulse capsulotomy (Zepto) and selective laser capsulotomy (CAPSULaser).
- FLACS creates single-step reproducible circular adequately sized capsulotomies.
- Intumescent white cataract with fluid has higher chances of incomplete capsulotomy and may need careful manual completion to avoid extention.
- FLACS: Nucleotomy is not of much help in white cataracts.

- Intraoperative OCT: helps elucidate intraoperative dynamics of the spectrum of white cataracts and facilitates completion of capsulorhexis.

IMPORTANCE OF EFFECTIVE LENS POSITION

Prof Jod S Mehta, Singapore

Cataract surgery has evolved significantly over the past 30 years, transitioning from a purely restorative procedure to a refractive surgery aimed at achieving spectacle independence. The increasing use of digital screens and an aging population have heightened the demand for precision in IOL implantation. Advancements in IOL technology have focused on optimizing efficacy and minimizing side effects, necessitating accurate, consistent, and reproducible capsulorhexis. While manual techniques can achieve this, FLACS ensures greater precision in terms of centration, equality, and sizing, particularly concerning angle alpha and angle kappa.

The Femtis IOL system further enhances effective lens position, which is crucial for optimal refractive outcomes. A well-positioned IOL leads to stable vision, reduced aberrations, and enhanced patient satisfaction.

PRESBYOPIA-CORRECTING IOLS: PROGRESS AND LIMITATIONS

Dr Douglas D Koch, USA

The approach to advising monovision depends on patient acceptance. If vision is adequate, a contact lens trial is recommended. For surgical monovision, the dominant eye is set for distance, provided that the resulting blur in the other eye does not impair overall vision. The nondominant eye is then targeted for near vision. I prefer presbyopia-correcting IOLs as most patients favor them. They provide true spectacle independence and preserve full stereopsis, whereas monovision results in a 50% reduction in stereopsis with a 1.5D difference. An example of an enhanced monofocal IOL is Eyhance, which offers superior photopic vision with a 3 mm pupil, improving distance visual acuity by 0.1 log units.

Additionally, these IOLs help prevent falls by eliminating the need for bifocals, which contribute to one-third of falls. However, limitations exist due to the physics of simultaneous vision, including vulnerability to defocus, contrast loss, and potential dysphotopsia. Furthermore, the long-term efficacy and safety of this treatment remain under evaluation.

News and Views

Diabetes in the Family: A Predictor of CKD Progression

A study involving over 6,500 adults and children, published in the *Journal of the American Society of Nephrology*, found that while a family history of kidney disease was not associated with disease progression in patients with chronic kidney disease (CKD), having a family history of diabetes significantly raised the risk of disease progression¹.

In this observational study, researchers analyzed data from two CKD cohorts: 2,573 adults and children from the Cure Glomerulopathy Network (CureGN) and 3,939 adult participants from the Chronic Renal Insufficiency Cohort (CRIC). Using multivariable models, self-reported first-degree family histories of CKD, diabetes, and other conditions with common comorbidities were examined to assess their associations with the risk of comorbidities and progression of kidney disease in patients with CKD.

A family history of common comorbid conditions was linked to greater risk of developing these conditions in subjects with CKD. Specifically, the risk of diabetes was increased over threefold with an adjusted odds ratio (aOR) of 3.37. The risk of cancer increased 48% (aOR 1.48), and the risk of cardiovascular disease increased by 69% (aOR 1.69) among these patients.

The study also found that although the polygenic risk score for CKD was significantly associated with progression of kidney disease (adjusted hazard ratio [aHR] 1.11 across combined cohorts), a family history of kidney disease was not independently associated with disease progression in those with existing CKD.

A first-degree family history of diabetes, on the other hand, was independently associated with 19% increased risk of CKD progression, even after adjusting for the presence of diabetes, polygenic risk score for diabetes, and other risk factors (aHR 1.19 in combined cohorts).

These findings highlight the significance of taking a detailed family history in patients with CKD as a simple and cost-effective tool for risk stratification. They suggest that eliciting a thorough family history should be a standard practice for patients with CKD as it may enable early identification and management of at-risk individuals. Furthermore, clinicians should be more proactive in managing modifiable risk factors

such as diet, weight, and high blood pressure in these individuals.

Reference

1. Zanoni F, et al; CRIC Study Investigators and the CureGN Study. Family history in the context of CKD. *J Am Soc Nephrol*. 2025 Mar 11.

Impact of Pediatric *Mycoplasma pneumoniae* on Asthma Outcomes

Children who have been hospitalized with *Mycoplasma pneumoniae* infection are at a significantly higher incidence of experiencing asthma exacerbation. Children infected between 24 and 71 months of age were particularly vulnerable, showing the highest risk of asthma exacerbation. These findings were published May 6, 2024 in the journal *Pediatric Pulmonology*¹.

The medical records of youngsters in South Korea were examined in this retrospective cohort study between January 2002 and December 2017. Participants who had been hospitalized with a diagnosis related to *M. pneumoniae* infection were included in the study. The outcome was asthma exacerbation, which was defined as hospitalization due to asthma at least 6 months after *M. pneumoniae* infection. Systemic steroid prescription records and asthma diagnosis records were used for alternative validation of asthma exacerbation. The objective was to investigate the association between *M. pneumoniae* infection and subsequent asthma exacerbation in children with allergies.

A total of 84,074 children with *M. pneumoniae* infection and 3,36,296 children without the infection formed the study group. They were followed up for a mean duration of 12.2 years.

Children with a history of *M. pneumoniae* infection were found to be at nearly threefold increased risk of experiencing asthma exacerbation compared to unexposed children with a hazard ratio (HR) of 2.86. This heightened risk was independent of allergic comorbidities. The risk of asthma exacerbation was highest in children who developed *M. pneumoniae* infection between 24 and 71 months of age. This risk was threefold higher in this age group.

This association remained significant even when an alternative definition of asthma exacerbation based on asthma diagnosis and systemic steroid prescriptions

was used with HR of 1.38 confirming a strong association between *M. pneumoniae* infection and asthma exacerbation later on.

By linking *M. pneumoniae* infection to asthma exacerbation, this study suggests *M. pneumoniae* infection as a significant risk factor for childhood asthma and related complications. This association highlights the need for greater awareness and enhanced monitoring of children with a history of *M. pneumoniae* infection to prevent asthma exacerbations and improve outcomes in at-risk children. Special attention should be given to children infected between 24 and 71 months of age, as they are at the highest risk.

Reference

1. Ha EK, et al. Age-related effects of *Mycoplasma pneumoniae* infection and subsequent asthma exacerbation in children. *Pediatr Pulmonol.* 2024;59(6):1569-77.

Perinatal Antibiotic Exposure and Long-Term Lung Health in Preterm Children

Frequent antibiotic exposure during the perinatal period in very low birth weight (VLBW) preterm infants is associated with impaired lung function and an increased risk of wheezing by early childhood, according to a study reported in *JAMA Network Open*¹.

Through this multicenter cohort study, the researchers aimed to determine if repeated perinatal antibiotic exposure in VLBW preterm neonates was linked to the development of obstructive airway disease at early school age. Data of 3,820 VLBW preterm neonates (22 weeks 0 days' to 36 weeks 6 days' gestation with birth weight <1,500 g) enrolled in 58 German Neonatal Network centers from January 2009 to March 2017 and had received follow-up at 5 to 7 years of age were utilized for the study. Perinatal antibiotic exposure was categorized using an antibiotic risk score (ARS) into three risk groups:

- ARS I (Low-risk): Maternal surgical antimicrobial prophylaxis (SAP) only before cesarean delivery.
- ARS II (Intermediate-risk): Maternal SAP and postnatal antibiotics given to the neonate.
- ARS III (High-risk): Additional maternal antibiotic treatment during pregnancy.

The study included only those participants born by cesarean delivery for the analysis (n = 3,109; 81.4%). Of these, 292 (9.4%) were in the ARS I risk category, 1,329 (42.7%) in ARS II, and 1,488 (47.9%) in the ARS III group.

The primary outcome of the study was the forced expiratory volume in 1 second (FEV1) score at 5 to 7 years

of age. The secondary outcomes were forced vital capacity (FVC) z score and childhood asthma episodes.

Analysis revealed that higher ARS levels were significantly associated with lower FEV1 z scores at early school age. Higher levels of antibiotic exposure were significantly linked to lower FEV1 z scores. Participants in the ARS II group had a mean FEV1 z score 0.31 lower than those in ARS I ($\beta = -0.31$; $p = 0.03$), while those in ARS III showed an additional decline ($\beta = -0.27$; $p = 0.006$).

In a secondary analysis, a higher exposure level (ARS III vs. II) was associated with impaired FVC z scores ($\beta -0.23$; $p = 0.02$). The risk of early childhood asthma episodes was nearly doubled with higher exposure with odds ratio (OR) 1.91 ($p = 0.001$).

This study displays the lasting impact of frequent early-life antibiotic exposure on the lungs in preterm infants although it does not establish a causal association. Antibiotics can be life-saving in many cases; nevertheless, judicious use of antibiotic use in neonatal care is imperative to prevent long-term pulmonary outcomes. Early identification of at-risk preterm infants enables the implementation of targeted strategies to support respiratory health and improve long-term outcomes.

Reference

1. Fortmann I, et al. Perinatal antibiotic exposure and respiratory outcomes in children born preterm. *JAMA Netw Open.* 2025;8(5):e259647.

Benefits of Chronotype-Tailored Diet on Obesity and Metabolic Health

A chronotype-adapted diet more effectively enhances weight loss, cardiometabolic health, and gut microbiota in individuals with overweight or obesity compared to a conventional low-calorie diet, according to the findings of the CHRONODIET trial, which were presented at NUTRITION 2025, the annual meeting of the American Society for Nutrition^{1,2}.

This open-label randomized controlled trial, conducted over a period of 4 months, enrolled 140 adults with overweight or obesity and randomized them to either a chronotype-adapted low-calorie diet with meal timing aligned to individual metabolic peaks (based on morning or evening chronotype), or a standardized low-calorie diet plan. Both diets provided the same total daily caloric intake. The self-assessment Morningness-Eveningness Questionnaire (MEQ) was used to determine chronotype. The primary outcome measured was change in body weight, while the secondary outcomes

included alterations in body composition, biochemical markers, gut microbiota composition, and levels of short-chain fatty acids (SCFAs).

Of the 140 participants, 117 (84%) with mean age 49 years completed the study. The participants in both groups lost weight significantly, but evening chronotypes in the intervention group saw greater reduction (−3.7 kg), followed by morning chronotypes (−3.2 kg) and controls (−2.5 kg).

Fat mass percentage showed a significant decline in the intervention group, more so in evening chronotypes (−2.8%) than in morning chronotypes (−1.6%). No significant change was observed in the control group (−0.5%). Total and low-density lipoprotein cholesterol were reduced in both intervention groups, but only morning chronotypes showed a significant drop in glucose levels (−2.9 mg/dL).

Gut microbiota analysis showed that the intervention group had an increase in SCFA-producing bacteria like *Clostridiales vadin BB60* and a decrease in *Nitrososphaeraceae*, along with greater production of anti-inflammatory SCFAs such as isobutyric acid (+0.42% vs. −0.25%) and 2-methylbutyric acid (+0.43% vs. −0.44%) compared to the control group.

A chronotype-adapted diet therefore appears more effective than a standard low-calorie diet in improving body composition, metabolic health, and gut microbiota in overweight or obese individuals, especially among evening chronotypes “who may face greater challenges with conventional dietary strategies”. According to the authors, this study is the first to evaluate the effectiveness of a chronotype-adapted diet compared to a standard calorie-distributed diet in promoting weight loss and improving cardiometabolic risk factors and gut microbiota. “Given the burden of obesity, a chronotype-adapted diet—aligning meal timing with biological rhythms—could be an innovative approach to weight management”, they wrote. The chronotype should be taken into account when providing dietary counseling to the patient.

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1. Dinu M, et al. (LB04-03-25) Chronotype-adapted dietary intervention enhances weight loss, metabolic health, and gut microbiota in overweight/obese individuals: The CHRONODIET randomized trial. Available at: <https://nutrition2025.eventscribe.net/index.asp?presTarget=3060294>. Dated June 1, 2025. Accessed June 14, 2025.
2. Adapting diet to chronotype boosts weight loss, Gut Health - Medscape - June 04, 2025.

DIETARY MANAGEMENT OF NONCONSTIPATED IBS

Results of a pilot randomized trial published in the journal *Neurogastroenterology & Motility* show that adherence to a Mediterranean diet provides symptom relief in adults with diarrhea-predominant (IBS-D) or mixed-pattern irritable bowel syndrome (IBS-M)¹.

Singh P from the Division of Gastroenterology and Hepatology, Dept. of Internal Medicine, Michigan Medicine, Ann Arbor, USA and colleagues conducted this pilot-feasibility, single-center randomized controlled trial to compare the efficacy of the Mediterranean diet with a diet low in fermentable oligo-, di-, monosaccharides, and polyols (lowFODMAP diet) in adult patients with IBS-D or IBS-M. The participants were recruited from gastroenterology and primary care clinics at the University of Michigan randomized to receive either the Mediterranean diet or lowFODMAP diet for a duration of 4 weeks. Symptoms including abdominal pain intensity and bloating were assessed daily, while the IBS Symptom Severity Score (IBS-SSS) and the IBS Adequate Relief (IBS-AR) were measured every week. The primary endpoint was the proportion of patients achieving a ≥30% reduction in abdominal pain intensity for at least 2 of the 4-week study period. The participants could continue with their current IBS medications, provided the dosage had remained stable for at least the past 1 month.

Out of the 26 participants who were randomized, 20 completed the trial with 10 in each intervention arm. The primary endpoint was achieved by 73% of those assigned to the Mediterranean diet vs. 81.8% of those following the lowFODMAP diet.

While not statistically significant, greater number of participants in the lowFODMAP group reported adequate relief and improvement in IBS-SSS compared to those in the Mediterranean diet group; 54.6% vs. 27.3% for IBS-AR and 81.8% vs. 45.5% for IBS-SSS. Reduction in IBS-SSS score was also significantly greater in the lowFODMAP diet group compared to the Mediterranean diet group (−105.5 vs. −60).

The Mediterranean diet is rich in fruits, vegetables, legumes, nuts, whole grains, and olive oil, while limiting red meat and saturated fats.

Based on the findings, this pilot study concluded that a Mediterranean diet improves abdominal symptoms in most patients with IBS-D and IBS-M; however, the low-FODMAP diet demonstrated a greater magnitude of relief. While the Mediterranean diet may be a feasible alternative to the more “complex and restrictive” low

FODMAP diet, larger real-world studies are needed to validate these preliminary findings, before it can be routinely recommended for management of IBS.

Reference

1. Singh P, et al. Efficacy of Mediterranean diet vs. low-FODMAP diet in patients with nonconstipated irritable bowel syndrome: a pilot randomized controlled trial. *Neurogastroenterol Motil.* 2025 Apr 24:e70060.

Seasonal Infections and Childhood Henoch-Schönlein Purpura

Around 60% of the incidence of Henoch-Schönlein purpura (HSP) in children are potentially associated with *Streptococcus pneumoniae* and *Streptococcus pyogenes*, according to a study published in *JAMA Network Open*¹.

In this cohort study, researchers conducted an interrupted time-series analysis using patient records from a national hospital-based surveillance system in France. The study focused on children under 18 years old who were hospitalized for HSP between January 2015 and March 2023. The primary objective was to investigate the impact of seasonal pathogens on the occurrence and severity of HSP in children. The monthly incidence of HSP per 1,00,000 children and the estimated percentage of HSP incidence potentially associated with 14 selected common seasonal pathogens were the primary outcomes of the study.

The study analyzed data from two groups of children: 9,790 children, median age 5 years with HSP and 757,110 children, median age 0.7 years with the infectious diseases included in the study. Both groups had a male preponderance with boys comprising over half of the group. Following the implementation of nonpharmaceutical interventions for the COVID-19 pandemic in March 2020, the incidence of HSP decreased significantly by 53.6%. After the relaxation of nonpharmaceutical interventions in April 2021, the incidence of HSP increased significantly by 37.2%.

The study also quantified the percentage of HSP cases potentially associated with specific pathogens. The percentage of HSP incidence with *S. pneumoniae* was 37.3%. With *S. pyogenes* and human rhino enterovirus, the incidences were 25.6% and 17.1%, respectively. The study conducted three sensitivity analyses, all of which produced similar results, reinforcing the robustness and reliability of the findings.

The study has shown a significant decrease in HSP cases following the introduction of nonpharmaceutical interventions during the pandemic, and a significant increase in cases after the relaxation of nonpharmaceutical

interventions. These results suggest a strong correlation between public health measures aimed at controlling the spread of infectious diseases and the incidence of HSP in children.

Health care providers should be vigilant for signs of HSP in children presenting with infections caused by *S. pneumoniae* and *S. pyogenes*, with the highest association noted for *S. pneumoniae*. Hence, preventive measures targeting these pathogens, such as vaccination and infection control practices, including early diagnosis and treatment could significantly prevent or reduce the incidence of pediatric HSP.

Reference

1. Felix A, et al. Common seasonal pathogens and epidemiology of Henoch-Schönlein purpura among children. *JAMA Netw Open.* 2024;7(4):e245362.

Sleepless and Susceptible: How Sleep Debt Fuels Infections

Shift work, night shifts in particular, increase the risk of several common infections such as common cold in nurses, suggests a study, which analyzed self-reported data from Norwegian nurses published early this week in the journal *Chronobiology International*¹.

This study examined the correlation of sleep duration, sleep debt, and shift work characteristics with self-reported infections among 1,335 Norwegian nurses from the SURvey of Shift work, Sleep and Health (SUSSH) study. Their mean age was 41.9 years and the majority (90.4%) of them were female. Data was obtained from the SUSSH study. They self-reported sleep patterns, shift work schedules, and frequency of infections (such as common cold, pneumonia/bronchitis, sinusitis, gastrointestinal infection, and urinary tract infection) over the past months.

Analysis showed that sleep debt, the gap between sleep need and actual sleep duration, was associated with at least a threefold increase in the risk of several infections in a dose-dependent manner after adjusting for demographic factors. Specifically, sleep debt ranging from 1 to 120 minutes increased the risk of common cold (aOR 1.33), pneumonia/bronchitis (aOR 2.29), sinusitis (aOR 2.08), and gastrointestinal infection (aOR 1.45), compared to no sleep debt. Sleep debt exceeding 2 hours nearly doubled the odds of common cold (aOR 2.32), pneumonia/bronchitis (aOR 3.88), sinusitis (aOR 2.58), and gastrointestinal infections (aOR 2.45).

Those who worked the night shift were also at an increased risk of common cold (aOR 1.28), particularly with 1-20 night shifts (aOR 1.49). However, sleep

duration and quick returns (short intervals between consecutive shifts) were not linked to any infection risk.

These findings highlight the role of sleep in shift workers, particularly in health care settings. The authors propose several strategies to reduce sleep debt such as maintaining consistent sleep schedules, limiting consecutive night shifts, taking days off after last night shift, and enhancing awareness about sleep hygiene. Sleep is crucial for a healthy immune system. Maintaining adequate sleep may help reduce infection risk; however, further research is needed to establish a definitive cause-and-effect relationship.

Reference

1. Hartveit Hosøy D, et al. Night work and sleep debt are associated with infections among Norwegian nurses. *Chronobiol Int.* 2025;42(3):309-18.

Should Uterine-Preserving Surgery become the New Standard of Care for Pelvic Organ Prolapse?

Uterine-preserving surgery is a safe, efficient, and effective alternative to hysterectomy for women undergoing native tissue prolapse repair for pelvic organ prolapse, according to a study published in the *American Journal of Obstetrics and Gynecology*¹.

This prospective cohort study from Canada aimed to compare the outcomes of hysterectomy-based versus uterine-preserving surgeries for pelvic organ prolapse using native tissue repair and minimally invasive approaches. Conducted between 2020 and 2022, the study enrolled 321 women with stage ≥ 2 uterine prolapse who opted for surgical intervention. Participants self-selected into two groups: 151 chose uterine-preserving hysteropexy, while 170 picked hysterectomy with vaginal vault suspension (reference group). Both groups received additional anterior and/or posterior repairs as needed. The primary outcome was anatomic prolapse recurrence at 1 year, defined as

apical descent of $\geq 50\%$ of the total vaginal length. Secondary outcomes included perioperative factors (surgical duration, hospital stay, opioid use), clinical and functional outcomes, and health care utilization measured at 6 weeks and 1 year post-surgery.

Results showed a significantly lower apical prolapse recurrence rate at 1 year in the uterine-preserving group (7.5%) compared to the hysterectomy group (17.2%), with an adjusted relative risk (aRR) of 0.35. Uterine-preserving surgery was associated with shorter operative time (mean difference -0.68 hours), reduced hospitalization (-4.34 hours), decreased postoperative opioid use (aRR 0.79), and fewer procedural complications (aRR 0.19).

Additionally, uterine-preserving surgery had a lower composite recurrence rate (stage ≥ 2 prolapse in any compartment or retreatment) with aRR of 0.47, primarily due to better anatomic outcomes. Of note, functional and health care outcomes were similar between the groups, despite differences in surgical and anatomic outcomes.

This study provides strong practice-changing evidence to support the routine inclusion of uterine-preserving surgery as a first-line option for women undergoing prolapse repair, especially those who wish to avoid hysterectomy, given the lower recurrence rate and better perioperative outcomes. Both surgical options should be offered to patients to encourage informed and shared decision-making. The self-selection of the procedure by the study participants demonstrates a “pragmatic, patient-centered approach” emphasizing patient autonomy.

Reference

1. Brennand EA, et al; Calgary Women's Pelvic Health Research Group. Hysterectomy versus uterine preservation for pelvic organ prolapse surgery: a prospective cohort study. *Am J Obstet Gynecol.* 2025;232(5):461.e1-461.e20.

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Lighter Side of Medicine

HUMOR

HOTEL SECURITY WOES

While attending a convention in Chicago, a friend and I were overly cautious about big-city dangers. For extra security, we barricaded our hotel room door with a chair, stacked our luggage on top, and crowned it all with the trash can—our version of Fort Knox.

Around 1 AM, a knock startled us.

"Who is it?" my friend asked, panicked.

From the hallway came a woman's voice: "Honey, you left your key in the door."

WORRY-FREE PARENTING

A psychiatrist advised a frazzled mother of a troublemaking child,

"You're far too tense. Try taking tranquilizers regularly."

At her next visit, the psychiatrist asked, "Have they helped calm you down?"

"Oh yes," she said serenely.

"And how's your son doing now?"

She smiled, "Who cares?"

EXACT CARPENTER

During a court hearing, a carpenter was testifying as a witness. The defense lawyer tried to trip him up:

"How far were you from the accident?"

The carpenter replied, "Twenty-seven feet, six and a half inches."

"Incredible! How can you be that precise?"

"I figured some fool would ask," the carpenter said. "So, I measured it."

SCIENTIFIC SURVIVAL

Stranded on a deserted island, a chemist, a physicist, and a mathematician find a sealed can of food.

The chemist suggests heating the can with sunlight. The physicist calculates leverage angles using a rock.

The mathematician pauses, then confidently says, "Let's assume we have a can opener..."

TIME FLIES

Why did the scarecrow win an award?

Because he was *outstanding in his field*.

JOB INTERVIEW

Interviewer: "What's your greatest weakness?"

Me: "Honesty."

Interviewer: "I don't think honesty is a weakness."

Me: "I don't care what you think."

GRAMMAR NERD

The past, the present, and the future walked into a bar.

It was *tense*.

Dr. Good and Dr. Bad

SITUATION: A 44-year-old premenopausal woman with type 2 diabetes had low bone turnover.



LESSON: A cross-sectional study showed that premenopausal females with type 2 diabetes have lower bone turnover in comparison to those without type 2 diabetes. It was stated that significantly lower bone turnover process initiates relatively early in the premenopausal age, regardless of the duration of diabetes.

BMC Endocr Disord. 2017;17(1):72.

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Paintal AS. Impulses in vagal afferent fibres from specific pulmonary deflation receptors. The response of those receptors to phenylguanide, potato S-hydroxytryptamine and their role in respiratory and cardiovascular reflexes. Q. J. Expt. Physiol. 1955;40:89-111.

Books

Stansfield AG. Lymph Node Biopsy Interpretation Churchill Livingstone, New York 1985.

Articles in Books

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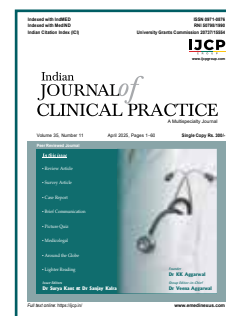
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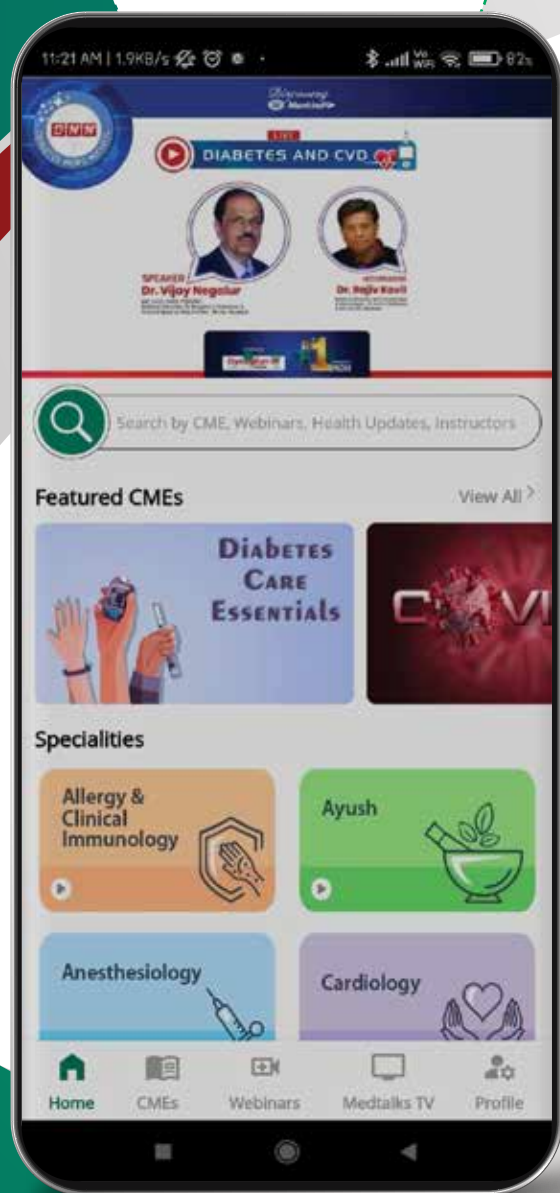
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