Editorial

South Asian Endocrinology: Challenges and Concerns, Collaboration and Consolidation

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Abstract

The practice of endocrinology in South Asia poses many challenges but simultaneously offers unique opportunities. The population in this region is predisposed to diabetes and cardiovascular disease at a much lower body mass index compared to Caucasians. Dietary deficiencies, higher prevalence of infection and distinct environmental and genetic factors further complicate the presentation of endocrine disorders. Over the past few decades, important breakthroughs have been made to confront these challenges. Collaboration among the endocrine fraternity of the South Asian countries will help to consolidate these gains and pave the way forward for a healthier region.

Keywords: Endocrinology, infection, sarcopenia, South Asia, thin-fat obesity

Introduction

South Asia is home to more than one-fourth of the global population. The region, characterized by high population density, is frequently afflicted with infectious diseases that seem to be gradually getting superseded by the increasing burden of non-communicable diseases (NCDs), including diabetes, obesity and cardiovascular diseases.[1] Besides, several distinct endocrine conditions attributable to unique environmental and socioeconomic factors are observed in this region. Clinicians practicing in this region must be aware of these disorders to optimize the endocrine and metabolic health of the South Asian populace.

Unique epidemiology of type 2 diabetes, obesity and cardiovascular diseases

In a recently published national survey from India, the overall weighted prevalence of diabetes was 11·4%, prediabetes 15·3%, hypertension 35·5% and dyslipidemia 81.2%. Generalized obesity was present in 28.6%, and an even higher percentage (39.5%) had abdominal obesity.[2] The pooled prevalence of diabetes in Pakistan was 13.7%,[3] and an even higher percentage was reported from Sri Lanka (diabetes 23%, prediabetes 31.5%).[4] The prevalence rates are projected to increase further in the coming years and will likely create a major public health challenge.[5] What is more alarming is the detection of NCD at a younger age, in a severe form, and often associated with serious complications. Lifestyle and environmental alterations, urbanization and migration are the probable causative factors behind the spiralling burden of NCDs in the region.[6]

Phenotype of thin-fat obesity

South Asians not only have a very high prevalence of diabetes and related NCD but also develop these comorbidities at a much lower body mass index (BMI).[6] This unique phenotype has been termed thin-fat obesity.[7] Abdominal obesity and visceral adiposity induce insulin resistance and contribute to the development of metabolic syndrome.[8,9] This has led to the revision of BMI cut-offs among Asians, highlighting the necessity to intervene at lower thresholds.[10,11]

Sarcopenia

High visceral adiposity is accompanied by sarcopenia or low skeletal muscle mass and physical multimorbidity in residents of these regions.[12] Though traditionally perceived as a

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geriatric syndrome, nutritional and environmental factors may contribute to the development of sarcopenia even in middle age among Asians.[13] Musculoskeletal aging profoundly affects the quality of life, disabilities, and recovery from disease, and early recognition and appropriate intervention among Asians is obligatory for optimizing health outcomes.[14]

Skeletal health and metabolic bone diseases

In addition to low muscle mass, impaired bone accrual and concurrent osteoporosis are another public health concern.[15] Metabolic bone diseases among South Asians are again multifactorial and driven by unique environmental and genetic factors but often remain unrecognized.[16] Low dietary calcium and protein intake compounded by the high prevalence of vitamin D deficiency are key contributors to osteoporosis but also have been implicated in the development of rickets and osteomalacia.[17,18] Florid hyperparathyroidism, scurvy and nephrolithiasis, including childhood endemic bladder stones, are still observed and call for public health and individualized intervention.[16] Mitigation measures to prevent endemic fluorosis are urgently required in some parts where fluoride concentration in drinking water is more than 1.5 ppm.[19] Tuberculosis, leprosy, syphilis and fungal infections may mimic MBD and demand high index of suspicion for prompt diagnosis.[16]

Infection and endocrinology

Acute and chronic infections can complicate many endocrine disorders, and awareness among treating physicians is necessary for preventing suboptimal outcomes. The escalating burden of diabetes is a serious risk factor for tuberculosis. In a meta-analysis of 74 studies from India, Pakistan, Nepal, Bangladesh and Sri Lanka, the pooled prevalence of diabetes in patients with tuberculosis was 21%, varying from 11% in Bangladesh to 24% in Sri Lanka. These patients were also likely to have higher odds of mortality and treatment failure, but not multi-drug resistant tuberculosis.[20] Tuberculosis can involve the adrenals, pituitary, thyroid and gonads.[21] Similar involvement has been described with fungal infections and leprosy in several reports.[22,23] High prevalence of endocrine dysfunction is also found in individuals infected with the human immunodeficiency virus.[24,25]

Autoimmune endocrine disorders

The prevalence of type 1 diabetes is set to double by 2040, with the largest relative increase estimated to occur in low- and lower-middle-income countries.[26] Most South Asian countries report a high prevalence of type 1 diabetes. A study from Karnal, a town in North India, reported rates of 10.20/100,000 population, with a strong urban-rural gradient.[27] The Karnataka State registry recorded an incidence of 3.7/100,000 in boys and 4.0/100,000 in girls.[28] The occurrence of organ-specific autoantibodies is commonly observed among individuals with type 1 diabetes from this region.[29,30] High prevalence of autoantibodies to islet cell proteins and thyroid antigens has been demonstrated in children with type 1 diabetes from Sri Lanka.[31] Thyroid autoantibodies have been commonly detected among the Bangladeshi population.[32,33] Iodization has been hypothesized to predispose to induction of autoimmunity, but other factors, including genetic predisposition, might play a role.[34,35]

Unique endocrine disorders

Russel's viper envenomation is an atypical cause of acute or delayed-onset hypopituitarism in Sri Lanka, Myanmar and India.[36] An unusual variety of hypoglycemia-induced epidemic of acute encephalitic fever in Bangladesh, India and Vietnam has been linked to litchi fruit (*Litchi sinensis*) consumption. Methylene cyclopropyl glycine in litchi fruit is a homolog of hypoglycin A and predisposes to hypoglycemia by interfering with gluconeogenesis and fatty acid β-oxidation.[37] DHAT syndrome, an unusual fear of losing semen and physical harm resulting from it, is found primarily in South Asia.[38] A common but underrecognized condition is adrenal insufficiency from the injudicious use of glucocorticoids.[39] Glucocorticoids present in alternative and complementary medicines other than inducing life-threatening adrenal shock from sudden withdrawal, also result in diabetes, hypertension and osteoporosis.[40]

Success stories from the past

Salt fortification is the most effective way to prevent iodine deficiency disorders (IDDs) in the community. The global prevalence of IDD has come down from 13.1 to 3.2% in the last 25 years, and this has been made possible by an effective salt fortification strategy implemented worldwide, including in most South Asian countries.[41] Pakistan, Nepal, Bangladesh, Sri Lanka and India have successfully implemented salt iodization policies nationally.[42-46] The World Health Organization survey on global and regional iodine status 1993–2019 reveals that the prevalence of IDD in South Asia has come down by 78.7%, with more than 191 million cases being prevented by universal salt iodization.[41] This is a promising example of how the population's health and economy can improve by successfully implementing national health policies.

National endocrine societies

Almost all South Asian countries are privileged to have vibrant national endocrine societies which remain instrumental in spreading endocrine awareness among the clinicians and the community. The South Asian Federation of Endocrine Societies (SAFES) is a conglomeration of the national endocrine societies of the region and endeavours to promote research and collaboration between the societies.

These societies also publish peer-reviewed reputed journals that facilitate and support endocrine research with emphasis on South Asian endocrinology. The editorial team of the Indian Journal of Endocrinology and Metabolism and the Endocrine Society of India should be complimented for bringing out this special supplement on South Asian endocrinology. We are hopeful that the articles published in this edition will provide useful insight and open up further avenues for endocrine collaboration.

The way forward

In collaboration with the SAFES, the Endocrine Society of India announced and celebrated World Prediabetes Day on 14 August 2021. The world, especially the South Asian countries, is facing a significant challenge of the cascading pandemic of diabetes, obesity and associated NCDs. The best treatment of diabetes is to prevent it, and hence, all levels of prevention must be actively pursued. Ensuring the right choices in terms of food and lifestyle at a personal level and from a community and national perspective offers the best possible way to confront the situation. All stakeholders starting from individuals to national governments and international bodies, must actively contribute to this critical fight. The endocrine societies and their member doctors are the key facilitators in this battle against diabetes.

Conclusion

The cascading prevalence of diabetes and associated complications is a global and regional concern. Several distinct endocrine conditions that pose critical diagnostic and therapeutic challenges are also encountered here. Encouraging collaboration and sharing knowledge will enable us to consolidate our gains and achieve greater heights in the service of mankind.

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Conflicts of interest

There are no conflicts of interest.

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