Tsunami Induced Hyperglycemia and Diabetes Mortality - Two studies from South India

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Stress affects everyone and its subtypes namely work-related stress, home stress and post-traumatic stress disorders (PTSD) are all health hazards. Stress and its comorbid diseases are responsible for a large proportion of disability worldwide. The World Health Organization (WHO) Global Burden of Disease Survey estimates that mental disease, including stress-related disorders, will be the second leading cause of disabilities by the year 2020. Although the term ‘stress’ is used in a wide variety of contexts, it has consistently been demonstrated that individuals with stress and related disorders experience impaired physical and mental functioning, more work days lost, increased impairment at work, and a high use of healthcare services. The disability caused by stress is just as great as the disability caused by workplace accidents or other common medical conditions such as hypertension, diabetes, and arthritis. Natural calamities like earthquakes and tidal wave tsunamis have been known to cause PTSD and impact diseases like diabetes though such reports are scant. The Great Hanshin-Awaji Earthquake worsened glycemic control in Japanese diabetics in 1995. Similar results were seen in a rural community in Northern China where influence of earthquake was noted on quality of life with type 1 diabetes.

A tidal wave swept South-East Asia on 26th December 2004 which was a natural disaster. Tamil Nadu coast was badly ravaged and this led to hardship and mental stress. Since last year the Diabetes Research Centre, Chennai established in a village twice a week Tsunami OPD for diabetic patients. In this issue of JAPI, Ramachandran et al in two populations, one affected by tsunami (n=1184) and other control (n=1176), each more than thousand patients use Harvard trauma questionnaire and score as well as glucose tolerance test. Stress score was significantly higher in tsunami population. Although the total prevalence of diabetes was similar (control – 10.0% vs. tsunami population – 10.5%) prevalence of undetected diabetes (5.7% vs 3.8%; Z = 9.54, P <0.001) and impaired glucose tolerance (9.8% vs 8.3%; Z = 12.83, P <0.001) were higher in the tsunami area. Stress score was higher in women and in the young in the tsunami area. Population affected by tsunami was under high stress and also showed a high prevalence of undetected diabetes and impaired glucose tolerance.

Stress induced hyperglycemia is a well-known feature of “General Adaptation Syndrome” (arousal, resistance, exhaustion), but it is known to reverse. If a sub-population of Tsunami (or earthquake) affected persons turns diabetic after PTSD, then further studies are warranted to study affected/non affected groups with reference to anxiety-depression scale. Earthquake survivors, terrorism affected and such groups can be subjected to retrospective cohort studies. The neuro-endocrine response to stress now is well studied and is a complex interplay of neuro peptides, cortisol-cortisone axis, epinephrine and other catecholamines as well as several other hormones. Currently there are more than 150 published papers of ‘stress’ and ‘hyperglycemia’ which have yielded variable results. Stress still remains an poorly studied component in Asian Indian population and the current study needs a long term follow up to know its long term effects. Traditionally Indian systems like yoga has always aimed at stress modulation and need to be revisited.

Asian Indians have higher prevalence rates of diabetes, premature coronary artery disease [CAD] and cardiovascular disease [CVD] mortality compared to other ethnic groups. Diabetes is one of the leading causes for morbidity and mortality worldwide. In recent years India has witnessed a rapidly exploding epidemic of diabetes. At present there are over 32 million diabetic individuals in India and these numbers are predicted to increase to nearly 80 million by the year 2030. Environmental and lifestyle changes resulting from industrialization and migration to urban environment from rural settings may be responsible to a large extent, for this epidemic of Type 2 diabetes in Indians. In addition, there is also strong evidence that Indians have a stronger genetic predisposition to diabetes. It is also been shown that a typical Asian Indian phenotype with higher percentage of body fat and increased waist to hip ratio or any given body mass index (BMI) which predisposes to diabetes and the metabolic syndrome.

Earlier studies have shown that Indians have a high mortality rate due to diabetes. The number of deaths attributable to diabetes globally in 2000 was estimated at 3.2 million, almost 6% of world mortality. A recent report published by the Indian Council of Medical
With this scenario of the diabetes burden, it is important to study the mortality rates due to diabetes using population-based Indian data to know the real dimensions of the problem and work towards preventive measures. The population-based study done by Dr. Mohan and his group following the cohort from the famous Chennai Urban Population Study is an important mortality study conducted in diabetic and non-diabetic subjects from India. Of the 1262 individuals who responded at baseline, 1140 individuals [90.3%] could be followed annually for six years since 1997. The overall mortality rate was higher in diabetic, compared to non-diabetic, subjects [18.9 vs.5.3 per 1000 person years]. Cardiovascular and renal diseases were the commonest causes of death among diabetic subjects, whereas mortality due to gastrointestinal, respiratory, lifestyle-related and unnatural causes were observed only among non-diabetic subjects. The hazards ratio for all cause mortality due to diabetes early detection of diabetes and its impact on mortality. The burden of diabetes is not just due to diabetes itself but the vascular burden and mortality it will contribute. To reduce mortality due to diabetes early detection of diabetes and impaired glucose tolerance and shows us the contribution of stress in diabetes which is so ill-recognised. This should re-emphasize the point that lifestyle modifications should integrate stress management including Yoga as a part of comprehensive metabolic care. The second study highlights the burden of diabetes and its impact on mortality. The burden of diabetes is not just due to diabetes itself but the vascular burden and mortality it will contribute. To reduce mortality due to diabetes early detection of diabetes and tight control of blood glucose, pressure, lipids and other athero-thrombotic factors is needed.

REFERENCES