Review Article

Diabetes and Stress

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Diabetes Mellitus (DM) is a complex metabolic disease which also affects psychological condition of body. Stress is such common psychological condition which is usually related to lifestyle but it can be associated with Diabetes in many ways. DM increases stress in your body and stressful condition also leads to DM. In DM, glycemic control is certainly a primary therapy approach in management but along with that psychological conditions especially stress, depression, anxiety should be addressed equally for long term continuation of therapy. DM and stress both conditions can affect each other so medical and social comprehensive approach with involvement of patient, physician, family person, counsellors, dietician, educators, psychologists; will certainly help to manage both DM and stress and to maintain patient wellbeing also.

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Diabetes Mellitus (DM) is a metabolic condition which resulted due to elevation of blood sugar in body, which affects multiple systems of the body, which also includes psychological condition of body. According to current lifestyle pattern due to lack of exercise, higher intake of junk food, sedentary lifestyle; new onset of diabetes is continuously increasing in entire world. Stress is commonly related to lifestyle like difficulty in family, disturbed relationships, extensive work in job etc. Diabetes and stress are conjoined conditions. DM increases stress in your body and if you are stressful then it leads to DM[1]. Management of stress is very important approach in treatment of DM. Ill-treated stress leads to depression, which increases suicide tendency. If stress is not properly taken care then it causes hormonal dysregulation and worsens control of DM, which leads to various complications like cardiovascular disease (CVD), diabetic kidney disease, neuropathy etc[2].

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Editor's Comment :

- DM and Stress both can affect each other.
- Stress like condition should be considered in DM management.
- Proper counselling is a key approach.

Prevalence of DM and Stress:

Globally, 463 million population is living with diabetes mellitus, where in china has highest number of DM population, followed by India which has 77 million diabetic population[3]. World Health Organization (WHO) mentions that globally leading responsible risk factor for disability is may be mental disorders. Depression, Anxiety and stress, these three are leading causes of disability in young people with age <45 years[4]. According to various study, one in five adults are suffering from any mental illness, while one third of adults are suffering from stress[5]. Stress is commonly associated with conditions like female sex, advance age, obesity, DM[6]. DM and stress are commonly associated conditions, and prevalence of high/very high stress is 35% among DM patients. Major stress inducers are related to family, work, financial issues, and the disease[7].

Relationship between DM and Stress :

Relation of stress and depression with pathophysiology of type 2 diabetes mellitus is always a mystery. Multiple studies have observed that depression is associated with progressive insulin resistance and hyperglycemia, whereas the association of stress with diabetes is less clear. The biological systems involved in adaptation that mediate the link between stress and physiological functions include the hypothalamic–pituitary–adrenal axis and

the autonomic nervous and immune systems. The hypothalamic–pituitary–adrenal axis is a tightly regulated system that represents one of the body's mechanisms for responding to acute and chronic stress (Fig 1). Depression is associated with cross-sectional and longitudinal alterations in the diurnal cortisol curve, including a blunted cortisol awakening response and flattening of the diurnal cortisol curve which is also contributing factor for more resistance to insulin and high blood sugar level[8].

DM and Stress : Both Can Affect Each Other

Diabetes mellitus is a chronic metabolic condition, which leads to do major changes in lifestyle of human. Lifestyle modifications plays very crucial role in management of DM which includes diet control, proper exercise, meditation, avoidance of junk food, alcohol, tobacco. Its management also includes lifetime medications like insulin injections, oral antidiabetic agents, statin, blood pressure lowering agents[9]. Such kind of long term treatment creates social discomfort specially in young population which create social and emotional fatigue. And eventually such situation leads to "frustration of chronicity" and behavioral change like stress or depression[10]. This stress becomes itself inducer for high / very high stress. Sometimes patient may feeling himself as family burden, isolated from society, while some of patients may become aggressive or hostile to family members, clinicians or paramedical healthcare staff. In order to maintain self-esteem, the patient avoids dealing with reality, calming, in his fragility, that he is omnipotent and refusing treatment, which leads to long term complications of DM and it again potentiates condition of stress[11].

Correlation between stress and DM development is still questionable but in Fig 1, it is hypothesized that stress activates neuroendocrine related hormones and elevates their level which may cause sever hyperglycemia and require appropriate treatment of patients through anti-diabetic agents[12]. Stress develops continuous negative thoughts through vicious cycle of low adherence to therapy, nervousness, poor therapy target achievement in patient and reduces capacity to cope up with upcoming challenges in future. Early intervention and involvement of family for the treatment of DM and stress give good results in terms of adequate compliance, positive attitude of the patients' towards diabetes; which helps to control sugar level in range and reduce stress related complications as well[13-15].

DM and Stress : Therapeutic Approach

In current scenario, DM management should have holistic approach, which should not be limited to control

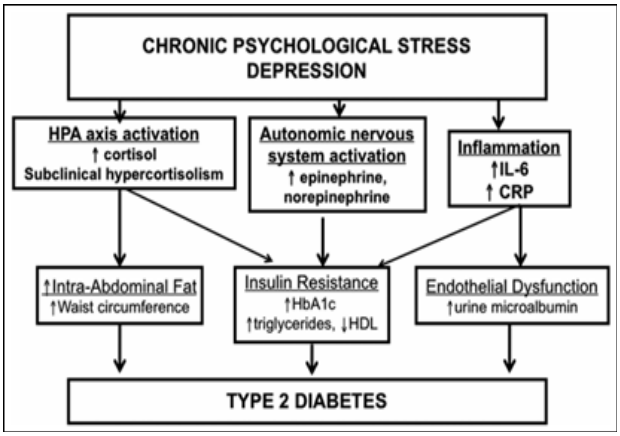

Fig 1 — DM and major mental disorders – A hypothesis

only blood sugar level but beyond that there is need to care of psychological status as well. It is requirement to establish collaborative relationship between physician and patient for appropriate long term management. The main objective of treatment to develop self-esteem in patient, and make him so capable to take proper decision for him and his family both. It is a real challenge to counsel patients regarding acceptance of this disease. It is therefore important to involve family person, dietician, psychologist, diabetes educator to make capable the patient to adjust with lifestyle changes. It was observed that important factor in adherence to strict diets as well as in blood glucose control family support was the most[16]. It is very important for patient to express his fear for future, anger, frustration and for that proper counselling is required for him[17]. As per American Diabetic Association (ADA) guidelines on clinical practice and management of DM, there are some situations where there is a need to approach mental health provider for DM patients[18].

- Impaired self-care of patient
- Positive screening for depression symptoms
- Suspicion of eating or behavioral eating disorders
- Intentional omission of insulin or oral medication to reduce weight
- Positive screening for anxiety and fear of hypoglycemia
- Suspected for serious mental illness
- Suspected for cognitive impairment
- Not able to take care for diabetes related complication
- In some cases, before undergoing bariatric or metabolic surgery and after surgery

Controlling a stress is very crucial approach in management of DM, as uncontrolled stress certainly increases blood sugar level, which may have other long

term metabolic complications in patient. Apart from medications, stress management through social cognitive theory may help to decrease stress and increase coping self-efficacy, stress management, perceived social support, and lead to a reduction in the glycosylated hemoglobin levels among patients with diabetes[19].The Mindfulness-Based Stress Reduction (MBSR) program is a approach which is utilized to treat various chronic disorders such as anxiety, depression, pain, cancer, skin diseases, immune disorders, and diabetes[20]. The concept of the "mindfulness theory" provides insight into how thoughts and emotions impact our health, emotional wellbeing, and quality of life. A patient learns how to focus on a specific target, which causes changes in some specific regions of the patient brain associated to his/her memory, sense of self, empathy, and stress[21].

Conclusion

DM is such a chronic disease which should not consider only as metabolic disorder but it has significant impact on psychosocial condition of patient as well. Glycemic control is certainly a primary therapy approach in DM management but along with that psychological conditions especially stress, depression, anxiety should be addresses equally for long term continuation of therapy. DM and stress both conditions can affect each other so medical and social comprehensive approach with involvement of patient, physican, family person, counselors, dietician, educators, psychologists; will certainly help to manage both DM and stress and to maintain patient wellbeing also.

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