

## Diabetes Mellitus: Beyond the Triopathy

Anubhav Chauhan\*, Surat Singh

Department of Ophthalmology, Dr Yashwant Singh Parmar Govt. Medical College, Nahan, District Sirmour, Himachal Pradesh, India.

**Corresponding Author:** Anubhav Chauhan, Senior Resident, Department of Ophthalmology, Dr Yashwant Singh Parmar Govt. Medical College, Nahan, District Sirmour, Himachal Pradesh, India, **Tel:** +919816991482; **Email:** chauhan.anubhav2@gmail.com

**Received Date:** 03 Mar 2018

**Accepted Date:** 23 Mar 2018

**Published Date:** 26 Mar 2018

**Copyright** © 2018 Chauhan A

**Citation:** Chauhan A and Singh S. (2018). Diabetes Mellitus: Beyond the Triopathy. *M J Diab.* 3(1): 011.

### ABSTRACT

When diabetes mellitus comes into question, the most common thing that strikes the mind of a physician is triopathy, cardiovascular status and secondary infections due to the immunosuppressive state. Attention also needs to be paid to the examination of the oral cavity, auditory, complete ophthalmic, skin, pulmonary, gastrointestinal and muscular system in such patients, so that the work up of a diabetic patient becomes complete in all its aspects. A few noteworthy manifestations are discussed below.

### KEYWORDS

Diabetes; Manifestations; Workup.

### INTRODUCTION

An elevated blood glucose level is associated with dysfunction, damage and failure of various organs, especially the eyes, kidneys, nerves, heart and blood vessels [1]. The five classic complications associated with diabetes mellitus (DM) include retinopathy, neuropathy, nephropathy, cardiovascular complications (coronary arterial disease, stroke and peripheral vascular disease) and delayed wound healing. Periodontal disease has recently been recognized as the "sixth complication" of DM. Oral involvement is in the form of periodontal disease, dental caries, fissured tongue, irritation fibroma, traumatic ulcers, lichen planus, recurrent aphthous stomatitis, xerostomia and burning mouth syndrome. Taste impairment has also been associated with the development of obesity and it has been reported during the course of diabetes [2].

Besides the diabetic retinopathy changes known to occur in DM, other significant ocular findings may be in the form of anterior ischemic optic neuropathy, diabetic papillopathy, cranial nerve palsy, ocular ischemic syndrome, retinal vein occlusion, retinal artery occlusion, glaucoma, dry eye and hence a complete ocular workup is mandatory [3]. Diabetic retinopathy changes in pregnancy need a special mention. In patients who had nonproliferative diabetic retinopathy, studies dem-

onstrated that as many as 50% of them may show an increase in their nonproliferative retinopathy during pregnancy. Approximately 5-20 % of these patients develop proliferative changes [4].

Skin involvement in DM is in the form of acanthosis nigricans, acrochordrons, diabetic dermopathy, rubeosis faciei, stevens-johnson syndrome, necrobiosis lipoidica, vitiligo, bullosis diabeticorum, psoriasis, lichen planus, xerosis, scleroderma diabeticorum, granuloma annulare, onychodystrophy and periungual telangiectasias to name a few [5]. Involvement of the auditory organ [6] and diabetic muscular infarction [7] has also been reported in DM. Despite the presence of a large capillary network in the lung, pulmonary complications of DM are frequently disregarded. This is mainly because the alveolar-capillary system is characterized by a great microvascular reserve, and pulmonary abnormalities are commonly subclinical in diabetic patient. The rate of decline in respiratory function in diabetics has been found to be higher than in normal non smoking subjects [8]. A restrictive lung disease pattern has also been reported [9].

In patients with diabetes, acute hyperglycaemia inhibits external anal sphincter function and decreases rectal compliance, potentially increasing the risk of faecal incontinence [10].

Glycogenic hepatopathy is characterized by elevated liver enzyme (especially transaminases), hepatomegaly, and glycogen accumulation within hepatocytes. There is no histological evidence that suggests that the enzyme elevations are due to liver necrosis, so the elevation is considered to be a result of hepatocyte's membrane injury leading to enzyme leakage instead of cell death [11]. The term "hepatogenous diabetes" is used to describe diabetes developing in patients with cirrhosis [12]. Diarrhea is a more common symptom in the diabetic population compared with controls. Besides diabetic enteropathy can itself cause diarrhea, drugs used to treat diabetes mellitus like metformin and acarbose can lead to diarrhoea. Diabetic patients are more likely to have associated diseases (eg, celiac sprue and microscopic colitis) and hence diarrhoea in diabetes should not be taken lightly [13].

DM has been found to be associated with metabolic bone diseases, osteoporosis, fractures, as well as falls in geriatric patients. Indeed, DM not only aggravates osteopenia and osteoporosis, but is also one of the causes of both conditions. Bone loss is more in mothers with previously diagnosed DM or even with gestational DM [14]. The workup of a diabetic patient is exhaustive and time consuming; but should be carried out complete in all aspects. Knowledge of the lesser encountered features in DM should always be kept in mind so that the already "suffering" diabetic patient leads a life without suffering from complications of the disease.

The authors are of an opinion that not only the diabetic control, but a METABOLIC control is mandatory in such patients. Metabolic control implies active correction of anemia, hyperlipidemia with calcium and vitamin D supplementation in these patients plus use of angiotensin converting enzyme inhibitors like telmisartan (if the patient is hypertensive). These pharmacological remedies, besides an active lifestyle have been found to have a positive effect on diabetic patients, specially those with diabetic retinopathy. The authors do not have much experience with the use of calcium dobesilate which has also been advocated in treating diabetic retinopathy patients.

## REFERENCES

- (2010). American Diabetes Association. Diagnosis and classification of diabetes mellitus. *Diabetes Care*. 33: S62-S69.
- Leite RS, Marlow NM and Fernandes JK. (2013). Oral Health and Type 2 Diabetes. *Am J Med Sci*. 345(4): 271-273.
- Chauhan A and Sharma SD. (2016). Comments on: Microvascular and macrovascular complications in diabetes mellitus: Distinct or continuum?. *Indian J Endocr Metab*. 20: 881-882.
- Bhatia J, Sadiq MN, Chaudhary TA and Bhatia A. (2007). Eye changes and risk of ocular medications during pregnancy and their management. *Pak J Ophthalmol*. 23(1).
- Duff M, Demidova O, Blackburn S and Shubrook J. Cutaneous. (2015). Manifestations of Diabetes Mellitus. *Clinical Diabetes*. 33(1): 40-48.
- Dąbrowski M, Mielnik-Niedzielska G and Nowakowski A. (2011). Involvement of the auditory organ in type 1 diabetes mellitus. *Endokrynologia Polska*. 62(2): 138-144.
- Shenavandeh S, Anushiravani A and Nazariniaet MA. (2014). Diabetic muscle infarction and diabetic dermopathy two manifestations of uncontrolled prolonged diabetes mellitus presenting with severe leg pain and leg skin lesions. *Journal of Diabetes & Metabolic Disorders*. 13: 38.
- Pitocco D, Fuso L, Conte EG, Zaccardi F, et al. (2012). The Diabetic Lung - A New Target Organ?. *The Review of DIABETIC STUDIES* 9(1): 23-35.
- Hamdy G, Amin M, I. El-Azeem AA and Rashad A. (2013). Pulmonary function changes in diabetic lung. *Egyptian Journal of Chest Diseases and Tuberculosis*. 62(3): 513-517.
- Russo A, Botten R, Kong MF, Chapman IM, et al. (2004). Effects of acute hyperglycaemia on anorectal motor and sensory function in diabetes mellitus. *Diabetic Medicine*. 21(2): 176-182.
- Cha JH, Ra SH, Park YM, Ji YK, et al. (2013). Three cases of glycogenic hepatopathy mimicking acute and relapsing hepatitis in type I diabetes mellitus. *Clinical and Molecular Hepatology*. 19(4): 421-425.
- Krishnan B, Babu S, Walker J, Walker AB, et al. (2013). Gastrointestinal complications of diabetes mellitus. *World J Diabetes*. 4(3): 51-63.
- Gould M and Sellin JH. (2009). Diabetic Diarrhea. *Current Gastroenterology Reports*. 11(5): 354-359.
- Wongdee K and Charoenphandhu N. (2011). Osteoporosis in diabetes mellitus: Possible cellular and molecular mechanisms. *World J Diabetes*. 2(3): 41-48.