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SENSORY NEUROPATHY IN PATIENTS WITH TYP2 2 DIABETES MELLITUS

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Abstract:
OBJECTIVE: *To determine the frequency of sensory neuropathy in patients with typ2 2 diabetes mellitus*
PATIENTS AND METHODS: *The study was carried out at hospital Hyderabad / Jamshoro, Any non-insulin dependent patient Type 2 DM) was assessed for inclusion into the study. A total of two hundred consecutive eligible patients were enrolled and evaluated according to prescribed proforma. The inclusion criteria were type 2 diabetes mellitus of any duration, reasonably intelligent who can nicely interpret sensory testing and mentally alert and oriented while the exclusion criteria were mentally not alert, failure to have co-operation during sensory examination, gross deformity and sensory loss of feet, edematous feet, an active ulcer, gangrene of feet and local trauma to feet. Patients were assessed for intactness, impairment or loss of touch and vibration sensation after explaining the feel of touch with monofilament on hand while the sense of vibration with tuning fork on forehead and sternum.*
RESULTS: *Two hundred patients with type 2 diabetes were evaluated for this study. There were 63% females and 37% males. . In duration 1 – 3 years, 53.5% have no sense lost, 35.2% patients lost vibration sense while impaired touch and both senses lost were found to be 5.6% each. During 4 – 5 years the patient having no sense lost percentage decreased up to 43.2%, vibration sense lost remain almost the same around 35.1%, impaired touch sense increased upto 18.95 and both sense lost percentage decreased upto 2.7%. Duration 1-3 years showing 46.7% males having no sense lost, 40% have vibration sense lost, no patient recorded of impaired touch and males having both sense lost percentage is 13.3. 4–5 years category having figure 25% of no sense lost, 50% having vibration sense lost impaired touch both senses lost are of 12.5% each.*
CONCLUSION: *The vibration sense loss increases with the increase in duration of disease and by realizing the facts we can educate the patients after picking up earlier the loss of vibration sense (as manifestation of sensory neuropathy) about tight glycemic control.*
KEYWORDS: *Diabetes, Neuropathy and Sensory*

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INTRODUCTION:

Diabetes mellitus is a metabolic disorder where glucose metabolism is disturbed leading to the cardinal manifestation of hyperglycemia secondary to insulin deficiency [1].This could be due to either decreased production of insulin or resistance to the action of insulin at cellular level. It is divided into type 1 and type 2 diabetes mellitus. Type 1 diabetes mellitus is characterized by absolute deficiency of insulin and presents at younger age [2]. Type 2 diabetes mellitus manifest in adult age and is characterized by relevant deficiency of insulin in combination with resistance to the action of insulin. Later in the course of disease the patients may develop the absolute deficiency and become insulin dependent [3]. The complication of diabetes manifest in each and every system of the body. The incidence of the complication is dependent on multiple factors; degree and duration of hyperglycemia being the two important ones. Diabetic neuropathy is probably the commonest manifestation [4]. Sensory neuropathy clinically manifest as either positive and negative symptoms. Positive symptoms manifest as burning, itching, tingling sensations in the absence of relevant stimuli. Negative symptoms are hypoaesthesia, anaesthesia and loss of positive sense [5]. Sensory symptoms are seen more frequently at the distal end of the nerves. This manifesting most in hands and feet. This loss of sensory modality is more marked at the distal end of long sensory nerves. Loss of protective touch and position sensations makes feet more predisposed to deformity and injuries at feet [6]. As the sensory changes are insidious in onset, patients do not pay much attention and practically accept these complications as inevitable. Bulk of scientific data proves that early detection of these complications can not only prevent but also slow down their progression but is also very important in preventing the complication. Through vasculopathy or neuropathy may dominate in a particular patient usually both are present.

PATIENTS AND METHODS:

The study was carried out at hospital Hyderabad / Jamshoro, Any non-insulin dependent patient (Type 2 DM) was assessed for inclusion into the study. A total of two hundred consecutive eligible patients were enrolled and evaluated according to prescribed proforma. The inclusion criteria were type 2 diabetes mellitus of any duration, reasonably intelligent who can nicely interpret sensory testing and mentally alert and oriented while the exclusion criteria were mentally not alert, failure to have co-operation during sensory examination, gross deformity and sensory loss of feet, edematous feet, an active ulcer, gangrene of feet and local trauma to feet. Patients were assessed for intactness, impairment or loss of touch and vibration sensation after explaining the feel of touch with monofilament on hand while the sense of vibration with tuning fork on forehead and sternum. As the vibration sense is dependent on intact touch sensation. Patients who had loss of touch sensation were not tested for vibration sense. Patients best response was recorded as present or absent then patient was explained and demonstrated the feel of a vibrating tuning fork. It was taken care of, that patient did appreciate the difference between touch of the tuning fork and the vibration produced by it. Patient was asked to respond verbally by saying yes when he would appreciate the touch on all of the specified points on the feet, four on each foot, two on the dorsum, and two on the bottom.

RESULTS:

Two hundred patients with type 2 diabetes were evaluated for this study. There were 63% females and 37% males. . In duration 1 – 3 years, 53.5% have no sense lost, 35.2% patients lost vibration sense while impaired touch and both senses lost were found to be 5.6% each. During 4 – 5 years the patient having no sense lost percentage decreased upto 43.2%, vibration sense lost remain almost the same around 35.1%, impaired touch sense increased upto 18.95 and both sense lost percentage decreased upto 2.7%. 4–5 years category having figure 25% of no sense lost, 50% having vibration sense lost impaired touch both senses lost are of 12.5% each. Males in 6 – 10 years history of diabetes no patient recorded of no sense lost, vibration sense gradually increase upto 54.5%, 9.1% male have impaired sense lost while 36.4% belongs to both senses lost. Females during 1 – 3 years according to Figure 7 showing 58.8% no sense lost, 31.7% have vibration sense lost, and impaired touch sense is 9.8% female and no patient recorded of both senses lost. During 4 – 5 years 48.3% have no sense lost, vibration sense lost of 31% almost the same as in 1 – 3 years. Impaired touch sense increased upto 20.7% and again no patient recorded of both senses lost 127 females out of 200 patient's has loss of senses with duration of disease ($p< 0.01$) while the correlation between male and female patients with different degrees of sense lost is statistically significant ($p=0.03$).

DISCUSSION:

In Pakistan according to National Health Survey 2.74 million persons were affected with this disease. This figure is increasing with the passage of time. Previously it was thought that a particular group was having this disease, now it is clear that persons of all socioeconomic groups are having diabetes mellitus. Even all the races are having this disease although the

prevalence is different among different groups [7-10]. Out of two hundred patients of type 2 diabetes mellitus we had 63% female and 37% male. Maximum patient (35.5%) had 1-3 year duration, 18.5% had diabetes of 4-5 years and 28% had 6-10 years of disease and 18% in more than 10 years disease [8]. Vibration sense was lost in 32.5% as compared with 9.9% who lost sense of touch while 21% had lost both senses. 37.5% patients show's no sense lost while evaluating male and female separately, vibration sense was predominately lost in female (22.8%) as compared to male 11%. Vibration sense lost is the earliest one while the touch lost sense is second one to go. In the end 56.5% of both sense lost is also in favour that when touch sense lost the vibration sense is already gone in the same patient also. Healing is also decreased as the feet examination showed sign like absence of foot pulses, decrease in skin temperature, thin skin lack of skin hair, and bluish skin color. An important factor is health education among the people that is not upto the mark as required to avoid complications of type 2 diabetes especially neuropathy at an early stage [11].

There are certain other factors which are important to discuss about population which is at risk of neuropathy [12]. Patient's education is very much important. In this technique to highlight the facts that he or she is having impaired or lost vibration sense at feet as compared to other sites of the body [13-15].

CONCLUSION:

The vibration sense loss increases with the increase in duration of disease and by realizing the facts we can educate the patients after picking up earlier the loss of vibration sense (as manifestation of sensory neuropathy) about tight glycemic control.

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