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Gender and Diabetic Peripheral Neuropathy

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Abstract

This letter to editor aims to enlighten the role of gender in diabetic peripheral neuropathy (DPN), in terms of prevalence, associated risk factors in pathogenesis and as a confounding factor in clinical trials on pharmacological and non-pharmacological management. The existing studies indicated that gender had following role in DPN; determined the onset, impact of diabetes, painful v/s painless presentation, electrophysiological measures, co-occurrence of carpal tunnel syndrome, medical and surgical treatments and influenced renal function.

Keywords: Gender; Sex; Diabetic neuropathy.

Dear Sir,

I am glad to see the contribution to evidence-based neurology provided by International Journal of Neurology and Neurosurgery by establishing an inter-disciplinary platform for inter-professional exchange of scientific information for the benefit of patients with neurological problems. I am herewith writing to you, to enquire about the current understanding behind the role of gender in diabetic peripheral neuropathy (DPN) in terms of prevalence, associated risk factors in pathogenesis and as a confounding factor in clinical trials on pharmacological and non-pharmacological management.

Gender determined the onset of symptoms in DPN as found by Aaberg *et al*[1] who evaluated gender differences in the onset of neuropathy among patients with type 2 diabetes using a retrospective chart analysis of 376 (156 male and 220 female). The study had following findings: males developed neuropathic complications at 63 years, 4 years earlier than did females.

Gender influenced the neurophysiological findings as found by Albers *et al*[2] who evaluated nerve conduction measures of 429 patients and found men to have lower amplitudes and conduction velocities and longer latencies than the women, with a confounding effect of height. Gender was also a significant predictor of median sensory amplitude, most conduction velocities, and most latencies.

Gender also influenced the co-occurrence of entrapment neuropathies in DPN as shown by Comi *et al*[3] studied the prevalence of CTS in 401 diabetics (208 males and 193 females) using electrophysiological techniques. Forty-five patients (11.2%), 36 females and 9 males, had CTS, and 168 patients (41.8%) - 74 females and 94 males, had peripheral neuropathy which indicated that female sex was a strongest risk factors for CTS.

Gender differences were evident in treatment responses and it was Pesaresi *et al*[4] who compared the effect of dehydro-epiandrosterone (DHEA) treatment in male and in female animals and found sex-specific effects of DHEA in its ability to counteract the decrease in nerve conduction velocity (both

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sexes), reduced thermal sensitivity (females), increased myelin protein expression (females), reduced intra-epidermal nerve fiber density (females), decreased 17β-estradiol and increased 17β-estradiol (males), with decreased α-androstane-3α, 17β-diol (males).

Gender determined the impact of experimental diabetes and response to surgery as demonstrated by Pesaresi *et al*[5] who compared the impact of diabetes and ovariectomy and orchidectomy on the sciatic nerve of STZ-induced male and female rats and had following findings: "nerve conduction velocity (NCV), Na(+), K(+)-ATPase activity, expression of myelin proteins, thermal sensitivity and reactive oxygen species production were similarly affected in male and female animals by STZ. However, ovariectomy, but not orchidectomy, significantly counteracted STZ-induced alterations on NCV, Na(+), K(+)-ATPase activity, and expression of myelin proteins in female rats."

Painful v/s painless neuropathy was dfferentially prevalent across gender which Sorensen *et al*[6] studied the similarities and differences with regard to gender in 2610 people with insensate or painful diabetic peripheral neuropathy. There was more insensate neuropathy in males (OR 1.9) which were influenced by height as a co-variable.

Gender influenced renal function in people with DPN as shown by Valensi *et al*[7] who investigated the relationship of gender with capillary filtration of albumin (CFA) in 163 diabetic patients (74 type I and 89 type II) and found increased albumin retention (AR) being more frequent in women than in men; the LF/HF was higher in men and in women, the AR level correlated negatively with postprandial glycemia.

The above studies indicated that gender had following role in DPN; determined the onset, impact of diabetes, painful v/s painless presentation, electrophysiological measures, co-occurrence of carpal tunnel syndrome, medical and surgical treatments and influenced renal function.

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