

INTEGRATION OF SCREENING, MONITORING AND FOLLOW UP TOOLS FOR EFFECTIVE FOOT CARE: EXPERIENCE FROM A DIABETES CARE CENTRE (C-INVEST)

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Background

- Diabetic neuropathy is the most prevalent chronic complication of diabetes and is a diagnosis of exclusion.
- The prevalence of Diabetic Peripheral Neuropathy (DPN) in India is reported to be 18.3% - 32.2%.
- Around 8% of diabetics have Peripheral Vascular Disease at the time of diagnosis.
- Plantar pressure in the diabetic foot contributes to identifying abnormal values that increase risk for foot ulceration which needs to be more integrated in clinical practice with daily life of the patient.
- The expenditure for hospital admissions for foot related complications is higher with greater chances of neuropathy in patients with irregular follow up.
- Screening for DPN with the state-of-the-art integrated foot care is an important strategy to reduce the burden of diabetic foot ulcers.
- We report the results of the screening of diabetic neuropathy and vasculopathy. We also associate the relevance of the duration of diabetes based findings to integrate with the comprehensive foot care program.

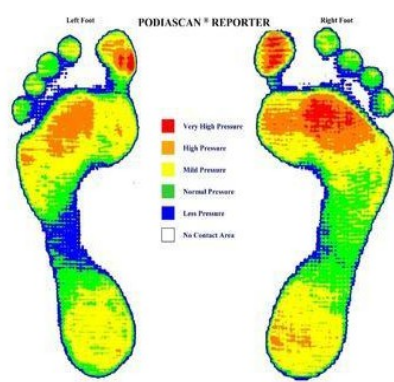
Methods

- We retrospectively analysed the records of 1500 patients over a period of 10 months screened for diabetic foot related complications.
- The assessment was modelled and based on the American Diabetes Association Diabetic Neuropathy Position statement which includes either temperature or pinprick sensation (small-fiber function) and vibration sensation (large-fiber function).
- Biothesiometer to assess vibration perception for neuropathy, Doppler to measure Ankle Brachial Index (ABI) for vasculopathy and Podiascan for abnormal planter pressure points were utilised.
- The patients were educated about foot care and appropriate treatment was initiated.
- Chi-square test and ANOVA were used for the statistical analysis.

Results

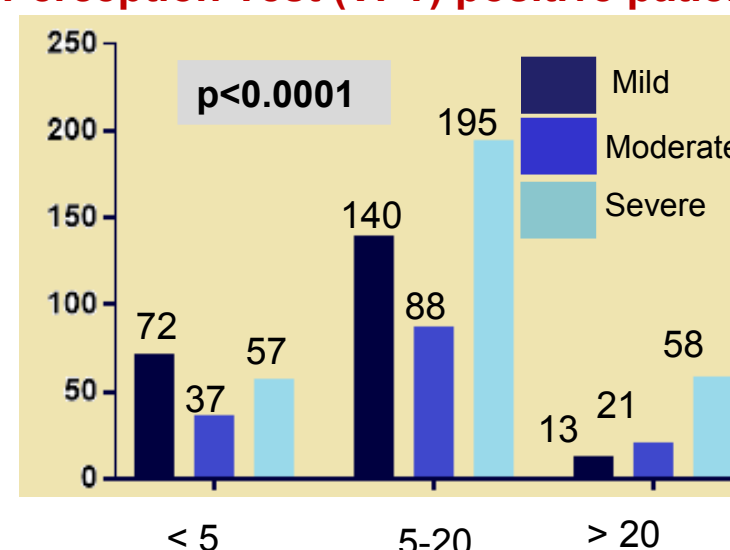
- Abnormal vibration perception was present in 46.5% (n=698) of screened population.
- The prevalence of the severity grade revealed that 32.2 % (n=225), 23.3 % (n=163), 44.4% (n=310) had mild, moderate and severe diabetic neuropathy.
- ABI of > 1.3 in right leg, left leg and bilaterally was recorded in 70, 42 and 40 patients respectively.
- 27 patients recorded midfoot collapse and 338 patients had 1stmetatarsal high pressure points.
- The watchful follow up is ongoing to monitor for the development of complications.

Fig 1. Representative image from Podiascan

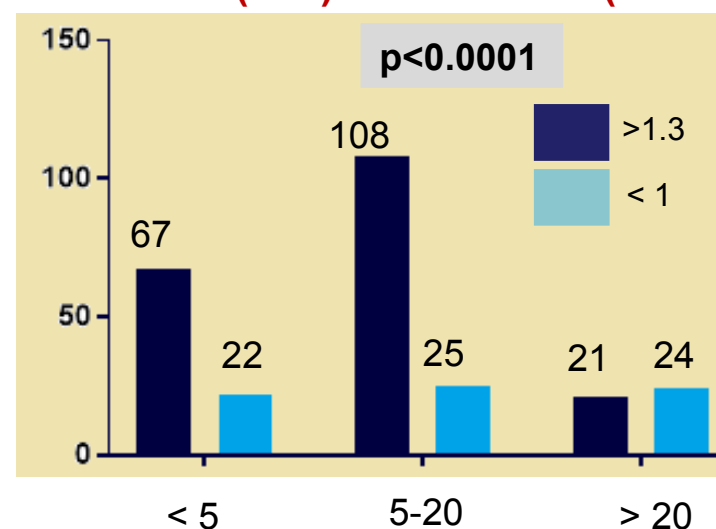


Podiascan system provides, cost effective and efficient way to evaluate static, dynamic plantar foot pressure distribution; generates immediate, on the spot and everlasting high resolution image of the pressure distribution all the way through the planter surface

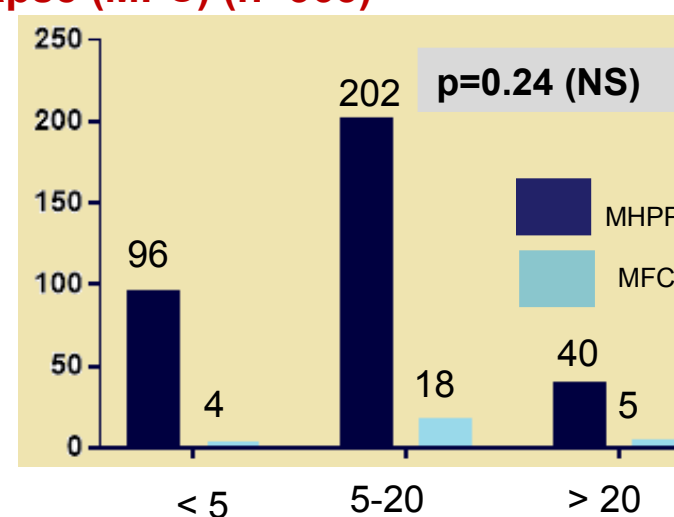
Fig 2. Comparison across the duration of diabetes (yrs) for,
A) Vibration Perception Test (VPT) positive patients (n=698)



B) Ankle Brachial Index (ABI) >1.3 and < 1 (n=267)-Vasculopathy



C) Podiascan findings- 1st Metatarsal High Pressure Points (MHPP), Mid Foot Collapse (MFC) (n=365)



Conclusions

- Our study demonstrates the substantial burden of neuropathy and vasculopathy with the duration of diabetes significantly associated with the findings of vibration sense and ankle brachial index.
- Screening with the technology led tools, in addition to the guideline recommendations is important to detect asymptomatic neuropathy and enables effective decision making for preventive foot care.
- A state of the art integrated foot care approach including neuropathic and vascular screening coupled with other routine screenings help to achieve the objective of detecting early diabetes related complications.
- The early intervention, education, treatment and follow up tools are important for an effective preventive management.
- We propose a one point model of Screen, Treat, Educate and Prevent (STEP) as a unique approach for maximisation of utilisation of health resources in a resource constraint setting.

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