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Screening of diabetic foot through Amit Jain's triple assessment: A 10 to 20 second screening method

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Abstract

Diabetic foot is a leading cause of amputation in today's scenario and it should be often evaluated for any complications. The evaluation could be a screening or a detailed examination. Screening of diabetic foot serves an important preventive care strategy. Amit Jain's triple assessment is a new, simple, fastest screening method that addresses the triad of diabetic foot effectively. This review article highlights on this new screening method from Indian subcontinent.

Keywords: screening, diabetes, foot, Amit Jain, amputation, triple, assessment

Introduction

It's well known that the global prevalence on diabetes and its complications are on rise ^[1]. Diabetic foot complications are common devastating complication with amputation being 15 to 40 times higher in people with diabetes in comparison to non-diabetics ^[1].

It is seen that the spectrum of diabetic foot complications varies in different region of the world as there is varying standard of living, socioeconomic factors, religious beliefs and available quality of care ^[2, 3]. These complications can be categorized into type 1 diabetic foot complications, type 2 diabetic foot complications and type 3 diabetic foot complication based on Amit Jain's universal classification for diabetic foot complications ^[4, 5].

Many of these complications and its consequences like amputation can be averted by diabetic foot screening ^[3, 6]. Studies have shown that diabetic foot screening have been often neglected ^[6]. The 3 well known screening tools for diabetic foot are Inlow's screening, simplified 60 second screening tool and Amit Jain's triple assessment for diabetic foot ^[7-11].

Amit Jain's Screening Tool

The Amit Jain's triple assessment for diabetic foot is a concept derived from routine clinical examination in surgery and triple assessment concept for breast ^[9].

Diabetic foot is known to be characterized by classical triad of neuropathy, ischemia and infection ^[12]. Amit Jain's triple assessment has 3 components namely; Look, Feel and Test (LFT) component which addresses all the triad of diabetic foot effectively ^[10, 11].

In the Look component, the parts of the foot seen are dorsum of the foot (Figure 1), plantar surface and interdigital areas to identify infection or the ulcer.



Fig 1: showing the dorsum of the foot. The look component

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In the Feel Component, the Dorsalis Pedis/Anterior Tibial artery and Posterior Tibial artery (Figure 2) is palpated to assess the blood flow to the foot.



Fig 2: Showing palpation of posterior tibial artery. The FEEL component

In the Test component, the presence of neuropathy is detected by any of the following methods which can be used either in Isolation or in combination and these include tuning fork, Monofilament testing (Figure 3), pin prick test, Ipswich touch test (Figure 4), vibratip (Figure 5), biothesiometer, etc [9, 10]. The sensitivity and the specificity of these methods/instruments are found to be varying in different studies [13, 14]. The unique advantage here is that the choice of instrument/ method is left to the healthcare professional based on availability of the instrument at the respective regions for testing sensation.



Fig 3: Showing the Monofilament testing. The tes't Component.



Fig 4: Showing the Ipswich touch test.



Fig 5: Showing the vibratip testing the vibration sensation.

There has been always debate on number of sites to be tested for sensation on the foot ranging from 1 to 10 sites [16]. Few recommend 10 sites, few recommend 5 sites and few recommend 3 sites with commonly tested sites being pulp of the great toe, 1st metatarsal head and 5th metatarsal head region [9, 16-18]. Recently, another study suggested 2 sites for testing for sensation [16].

A 10 to 20 Second Screening Method

Although timing has never been a criterion for screening, it is often recommended to be as fast and as specific as possible. It can be noted that though Inlow's screening or simplified 60 second screening methods state it to be 60 seconds, it takes more than 3 to 4 minutes even by the experts on diabetic foot and longer by other healthcare professionals and also a screening chart is required by most as one often forgets the 12 parameters and the scores which is not advisable for any screening technique.

The Amit Jain's triple assessment for a foot would take just 10 to 20 seconds wherein one with routine practice can just look at the foot, feel the pulse fast and test the sensation especially at the pulp of the great toe with either vibratip, Ipswich touch test or with monofilament.

Studies on Amit Jain's Triple Assessment for Foot

There are data from the west which shows that diabetic foot is evaluated only 12 to 20% of the time [6]. We reviewed few studies wherein Amit Jain's triple assessment was used as screening method.

Santosh *et al.* [19] noted that only 6.2% of the feet were looked, 1.5% pulses were felt and none of the patients were tested for neuropathy by the physicians in diabetic patients who were admitted in hospital.

Jain *et al.* [20] evaluated this screening method among surgeons who treated diabetic foot and noted that although 94% feet were looked as patients had presented with foot problems, only in 42% patients pulses were assessed and in 2% patients sensation were tested. Further, the contralateral foot was examined in only 2% of the patients [20].

In prajapathi *et al* series [21], it was seen that 100% feet were looked in patients admitted with diabetic foot, around 86.11% had pulses being assessed and only 25% had their sensation being tested. However, in contralateral foot, only 58% had their foot being looked, 58% pulses were assessed and no sensation were tested [21].

Advantages of Amit Jain's Screening Tool

The following are the significant advantages of this new screening tool [9-11].

1. It is the simplest screening tool on diabetic foot till date
2. It is very practical

3. Easy to remember
4. It can be performed even by a health care worker with ease
5. It is very economical
6. It addresses diabetic foot triopathy effectively and specifically
7. It can be done very fast
8. It can serve as an excellent teaching tool
9. It fulfils most criteria laid down for the screening
10. It serves as an excellent record for diabetic foot evaluation

Sometimes one has to do Single assessment especially in cases of regular follow-up and double assessment in certain situations like when patients is in ICU ^[9]. Amit Jain's advanced LFT for diabetic foot is reserved for detail evaluation and for speciality set up wherein the expert can incorporate the routine essential parameters he want to assess in the LOOK, FEEL and TEST component ^[9].

Conclusion

Amit Jain's triple assessment, a LFT screening tool, is a simple and fastest screening method for diabetic foot that addresses the triad of diabetic foot effectively. This high risk screening tool should be considered a minimum and mandatory evaluation tool by every healthcare professional treating diabetes related problem as it is a preventive care strategy. Studies through this basic screening tool has shown that foot is still not been evaluated completely addressing the triopathy.

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