

ORIGINAL RESEARCH

Assessment of phantom limb pain in patients with leg amputation

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ABSTRACT

Background: Phantom limb pain in the amputated limb is often accompanied by significant suffering. The present study was conducted to evaluate phantom limb pain in diabetic and non-diabetic leg amputees. **Materials & Methods:** 52 diabetic patients underwent leg amputation of both genders. Patients were divided into 2 groups. Group I were diabetic patients underwent leg amputation and group II had non-diabetic (control) patients underwent leg amputation. Parameters such as prevalence, intensity and characteristics of phantom limb pain was recorded. **Results:** Group I had 20 males and 14 females and group II had 18 males and 16 females. Amputation level was transtibial seen in 6 and 7, partial foot in 5 and 2, knee disarticulation in 4 and 6 patients, transfemoral in 10 and 11, hip disarticulation in 9 and 8 patients in group I and II respectively. The difference was significant ($P < 0.05$). The mean experience phantom limb pain (PLP) was seen in 32 and 30, experience phantom sensations (PS) was seen in 27 and 25, phantom limb pain intensity on VAS was 3.8 and 3.2. Dull ache pain in 12 and 13, sharp/stabbing pain was seen in 16 and 11, burning pain in 2 and 3, shooting/electric pain in 3 and 5, and cramping pain in 1 and 2 patients in group I and II respectively. **Conclusion:** Non-diabetic subjects had less phantom limb pain in compared to diabetic patients.

Key words: phantom limb pain, peripheral neuropathy, knee amputation

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INTRODUCTION

Phantom limb pain (PLP), or pain in the severed limb, is frequently accompanied by severe suffering. The illness might result in handicap and a lower quality of life when it comes to one's health and is challenging to manage.¹ It has been discovered that a number of risk variables, such as depression, diabetic amputation cause, and stump pain, are connected to the development and maintenance of PLP. PLP appears to be more common in individuals with traumatic or surgical limb amputations, despite reports of PLP in those with congenital amputations.² Diabetes-related amputations are assumed to cause less PLP. Patients with diabetes and associated peripheral neuropathy are thought to have less discomfort from the phantom limb following an amputation because long-standing peripheral neuropathy diminishes all sensations received from the lower limbs.³ Research on the potential effects of peripheral neuropathy or diabetes are noticeably lacking, and few studies have demonstrated that the incidence of PLP is independent of age, gender, and degree of amputation.⁴

Amputations of one or more lower limbs are generally done to treat diabetic problems, and they may be linked to PLP risk factors such depression and pre-amputation pain.⁴ These risk variables, which are usually missing in healthy individuals who have upper limb amputations due to trauma, could account for the high PLP prevalence.⁵ The present study was conducted to evaluate phantom limb pain in patients with leg amputation.

MATERIALS & METHODS

The present study consisted of 68 diabetic patients undergoing leg amputation of both genders. The consent was obtained from all enrolled patients. Data such as name, age, gender etc. was recorded. There were two groups of patients. Patients with diabetes in group I had their legs amputated, while patients without diabetes (the control group) had their legs amputated. Data was recorded on parameters such the frequency, severity, and traits of phantom limb discomfort. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

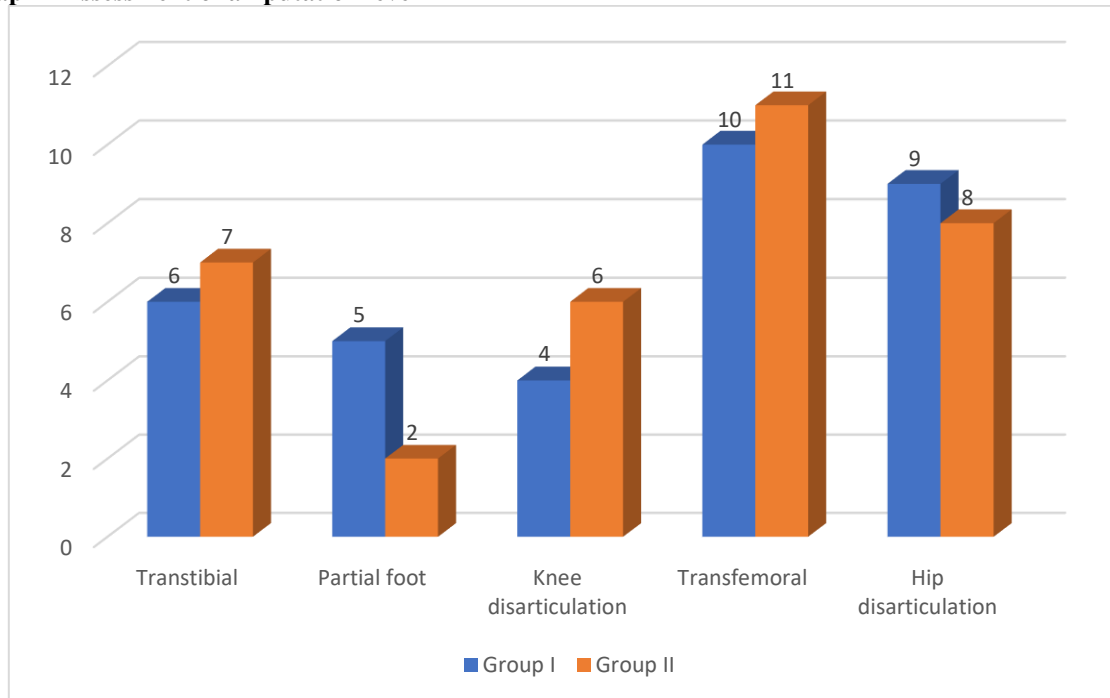
RESULTS

Table I Distribution of patients

Groups	Group I (34)	Group II (34)
Status	Diabetes	Non- diabetes
M:F	20:14	18:16

Table I shows that group I had 20 males and 14 females and group II had 18 males and 16 females.

Graph I Assessment of amputation level



Graph I shows that amputation level was transtibial seen in 6 and 7, partial foot in 5 and 2, knee disarticulation in 4 and 6 patients, transfemoral in 10 and 11, hip disarticulation in 9 and 8 patients in group I and II respectively. The difference was significant ($P < 0.05$).

Table III Evaluation of phantom limb pain

Parameters	Group I	Group II	P value
Experience phantom limb pain (PLP)	32	30	0.62
Experience phantom sensations (PS)	27	25	0.74
Phantom limb pain intensity (VAS)	3.8	3.2	0.08
Dull ache	12	13	0.05
Sharp/stabbing	16	11	
Burning	2	3	
Shooting/electric	3	5	
Cramping	1	2	

Table II shows that mean experience phantom limb pain (PLP) was seen in 32 and 30, experience phantom sensations (PS) was seen in 27 and 25, phantom limb pain intensity on VAS was 3.8 and 3.2. Dull ache pain in 12 and 13, sharp/stabbing pain was seen in 16 and 11, burning pain in 2 and 3, shooting/electric pain in 3 and 5, and cramping pain in 1 and 2 patients in group I and II respectively.

DISCUSSION

Phantom limb pain commonly occurs in people with limb amputations due to trauma or surgery. However, some cases of PLP have been reported in congenital amputees.⁶ It has been proposed that risk factors such as persisting pre-operative pain, stump pain and time period since amputation contribute to the onset of PLP. Phantom limb pain remains a serious public health problem because it is common and often undertreated.⁷ As a result, persisting PLP may

contribute further to depression and problems with prosthesis use, sleep and participation in activities of daily function.⁸ PLP can be experienced in many different forms. Literature describes a sharp/stabbing sensation as the most common type of pain, with aches and shooting pain also being highly prevalent. There are, however, no data suggesting how a pre-existing neuropathymight affect the characteristics of pain perceived from a phantom limb.⁹ The present study was

conducted to evaluate phantom limb pain in patients with leg amputation.

We found that group I had 20 males and 14 females and group II had 18 males and 16 females. Amputation level was transtibial seen in 6 and 7, partial foot in 5 and 2, knee disarticulation in 4 and 6 patients, transfemoral in 10 and 11, hip disarticulation in 9 and 8 patients in group I and II respectively. Desmond et al¹⁰ assessed the prevalence and characteristics of phantom limb pain and residual limb pain after upper limb amputation. 141 participants (139 males; mean age 74.8 years; mean time since amputation 50.1 years) completed a self-report questionnaire assessing residual and phantom limb pain experience. Prevalence of phantom limb pain during the week preceding assessment was 42.6% (60 of 141). Prevalence of residual limb pain was 43.3% (61 of 141). More than one third of these had some pain constantly or most days. Phantom limb pain was commonly described as 'discomforting' (31 of 60) and associated with 'a little bit' of lifestyle interference (23 of 60). Residual limb pain was most often described as 'discomforting' (27 of 61) or 'distressing' (19 of 61) and was typically associated with low to moderate levels of lifestyle interference.

We found that the mean experience phantom limb pain (PLP) was seen in 32 and 30, experience phantom sensations (PS) was seen in 27 and 25, phantom limb pain intensity on VAS was 3.8 and 3.2. Dull ache pain in 12 and 13, sharp/stabbing pain was seen in 16 and 11, burning pain in 2 and 3, shooting/electric pain in 3 and 5, and cramping pain in 1 and 2 patients in group I and II respectively. Jensen et al¹¹ in their study 58 patients who were having limbs amputated were questioned about their stump and phantom limb discomfort the day before the procedure as well as eight days, six months, and two years after the loss of their limbs. Before the limb was amputated, all but one of the patients suffered pain. In 25% of patients, pre-amputation limb discomfort persisted for less than a month, while in 75% of cases, it persisted for more than a month. 29% of those examined the day before the amputation reported not having any limb pain. Eight days, six months, and two years following amputation, the incidence of phantom pain was 72, 65, and 59%, respectively. Patients with persistent pre-amputation limb pain were substantially more likely to experience phantom pain within the first half year following limb removal.

In a typical group of lower-limb amputees, Clark et al¹² investigated the impact of diabetes on the frequency, features, and severity of phantom limb pain (PLP) and phantom sensations (PS). Those who self-reported having diabetes (DM group) and those who did not (ND group) were the two groups of participants. Diabetes participants were then separated into two groups: those with short-duration diabetes (less than 10 years) and those with long-duration diabetes (>10 years). A total of 200 questionnaires were distributed, and 102 were returned. PLP was

present in 85.6% of the population overall, and there was no statistically significant difference between the DM (82.0%) and ND (89.4%) groups ($P = 0.391$). The prevalence of PS did not differ between the DM group (66.0%) and the ND group (70.2%) ($P = 0.665$). Both groups experienced very comparable types of pain, with acute or stabbing pain being the most prevalent. The average PLP intensity, measured on a 0–10 visual analogue scale, was 3.89 (± 0.40) for the DM group and 4.38 (± 0.41) for the ND group. This difference was not statistically significant ($P = 0.402$). The duration of diabetes diagnosis did not correlate with average PLP intensity.

The limitation the study is small sample size.

CONCLUSION

Authors found that non-diabetic subjects had less phantom limb pain compared to diabetic patients.

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