

Clinico-epidemiological Profile of Pure Neuritic Hansen's Disease in Western Odisha: a Hospital Based Retrospective Cross Sectional Study

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Received : 19.09.2017

Accepted : 31.07.2018

There is a complete lack of data on clinico epidemiological profile of pure neurotic leprosy from Western Odisha region, despite the area still being endemic for leprosy. This study has been carried out to address this issue to identify the profile of pure neuritic leprosy reporting to a Tertiary Care Centre in Western Odisha. Patient's case records with clinical diagnosis of PNL who reported to this centre between October 2012 to October 2014 were studied. Demographic details, educational qualification, clinical presentation, pattern of peripheral nerve involvement, type of disabilities and complications occurring if any, were noted from the patient records and analyzed. Data collected and analysed shows that out of total 1460 of these leprosy patients 145 (9.93%) patients had been diagnosed with pure neuritic form of the disease. The mean age of PNL patients was 34.43 ± 1.09 years. The various clinical presentations, that were observed and recorded, included sensory loss, tingling, pain, hypoesthesia, trophic ulcer and various grades of motor nerve disabilities. Neuropathic pain was complained by 28.3% patients. Mononeuritic presentation was observed in 79/145 (54.5%) patients with ulnar nerve being the most commonest nerve involved. Grade 2 disabilities were present in a large proportion of these PNL cases. Disabilities were more common in polyneuritic type of cases compared with mononeuritic cases. Such high disability rates in these PNL cases at our Tertiary Care Centre might be due to late self reporting of cases for treatment or diagnosis being delayed. These figures may not reflect the proportion/percentages at population level which should be verified by actual surveys after proper training of staff. As PNL demands early diagnosis to prevent progression of nerve damage and multiple nerve involvement, all patients having the above clinical presentations should be suspected of PNL in leprosy endemic areas.

Key words : Clinico-epidemiological profile, Pure Neuritic Hansen's disease, Odisha, India

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Introduction

Pure neuritic leprosy (PNL) has been reported from India since a long time and described in Indian as well as international classifications such as Madrid Classification (Sharma 2001). Wade in 1952 described polyneuritic leprosy as a separate group. Indian Association of Leprologists and subsequent revisions have recognized PNL as distinct group (AILWC 1955, IAL 1982). It is defined as leprosy with thickened peripheral nerve(s) with variable degrees of sensory/motor function loss in the region of its distribution of the nerve in absence of a skin patch (IAL 1982, Pradhan et al 2016). The signs and symptoms of motor and sensory function/deficit in pure neuritic leprosy depends on the type and degree of nerve involvement, number and type of nerves involved, awareness of loss of sensation by the affected patient, and the and the protective measures used by patient to safe guard the anesthetic area. However, there are only a few studies on the clinico-epidemiological profile of PNL from various parts of India, and there is no data from Western Odisha, despite it being an endemic area of leprosy.

The present study describes the prevalence and the clinical aspects PNL in the post elimination era of leprosy in a tertiary care centre in Western Odisha. The aim of the study was to find out the proportion and various clinical presentation of PNL patients attending the out patient department and In Patients Ward of our Tertiary Care Centre.

Materials and Methods

A retrospective cross-sectional study was conducted at VSS Medical College Hospital, a tertiary care centre in Western Odisha, India to determine the prevalence and clinical presentation of PNL patients attending the hospital. The study also focused on the pattern

of nerve involvement and various types of disabilities found in these patients of PNL. Pure neuritic leprosy (PNL) is defined as presence of a thickened peripheral nerve(s) with and without sensory/motor loss in the region of its distribution of the nerve in the absence of skin patch at the time of examination, and/or absence of history of such a patch existing in the past.

All newly diagnosed cases of PNL, whose OPD records were available, and had attended the OPD of this hospital between October 2012 to end of October 2014 were included in the study. Patients having other concomitant diseases known to cause peripheral neuropathy like diabetes, hereditary sensory neuropathy, amyloidosis and those on drugs known to cause peripheral neuropathy, like Isoniazid were excluded. Institutional ethics committee approval was obtained prior to initiation of the study. Data from patients records was noted, from the leprosy register of the above period, and analysed.

The demographic details, educational level, socioeconomic status past history of treatment of leprosy, family history of leprosy, contact history and type of clinical presentations were recorded. Information regarding peripheral nerve enlargement and/tenderness, number of nerves involved and their distribution, grading of nerve thickness, prevalence of various disabilities according to the WHO grading system were recorded (Brandsma & van Brakel 2003).

Results

Out of total 1460 leprosy patients who attended the hospital during this period, 154 patients met the inclusion criteria of PNL. However, 9 cases were excluded after being noting that they also had diagnosed with diabetes mellitus). Hence the data of 145 (9.93%) cases is being used in this study analysis. The mean age of the patients was 34.43 ± 1.09 years. Males (74.5%) out numbered

females (25.5%). Most of patients were between 21 to 40 years of age. Majority of the patients (72%) were from the rural areas and most of them (40.7%) belonged to the lower socio-economic strata but had some degree of primary education (41.37%) (Figs 1& 2).

All the patients presented with varied sensory and motor symptoms. Among sensory abnormalities anaesthesia, paresthesia, hypoesthesia, tingling, pain, trophic changes were commonly found (Table 1). Neuropathic pain was the main complaint in 28.3% patients and out of them 51.2% had Grade 1 neuropathic pain and 46.3% and 2.5% had complaint of Grade 2 and 3 pain respectively, according to the grading system described earlier (Rao & Jain 2013).

Mononeuritic presentation was found in 79 (54.5%) patients with ulnar nerve being the most commonly involved in 56 (71%) cases, followed by

common peroneal nerve in 22 (27.8%) cases. Among patients presenting with polyneuritic profile, 2 nerve involvement was reported in 41 (28.3%) cases, 14 (9.7%) cases had 3 nerve involvement and 7 (4.8%) patients with 4 nerve involvement (Table 2). Out of 66 patients presenting with polyneuritic leprosy, ulnar nerve was most common nerve found to be enlarged clinically in 50 (75.8%) patients followed by common peroneal in 48 (72.7%), great auricular in 8(12.1%), radial cutaneous nerve in 6(9.1%), sural in 5(7.6%), posterior tibial in 3(4.5%), and superficial peroneal in 3(4.5%) patients respectively.

More than 2 nerves involved in single extremity were found in 12 patients. Nerves of upper and lower extremities were involved in 105 and 73 patients respectively, whereas in 34 cases nerves of both upper and lower extremities were

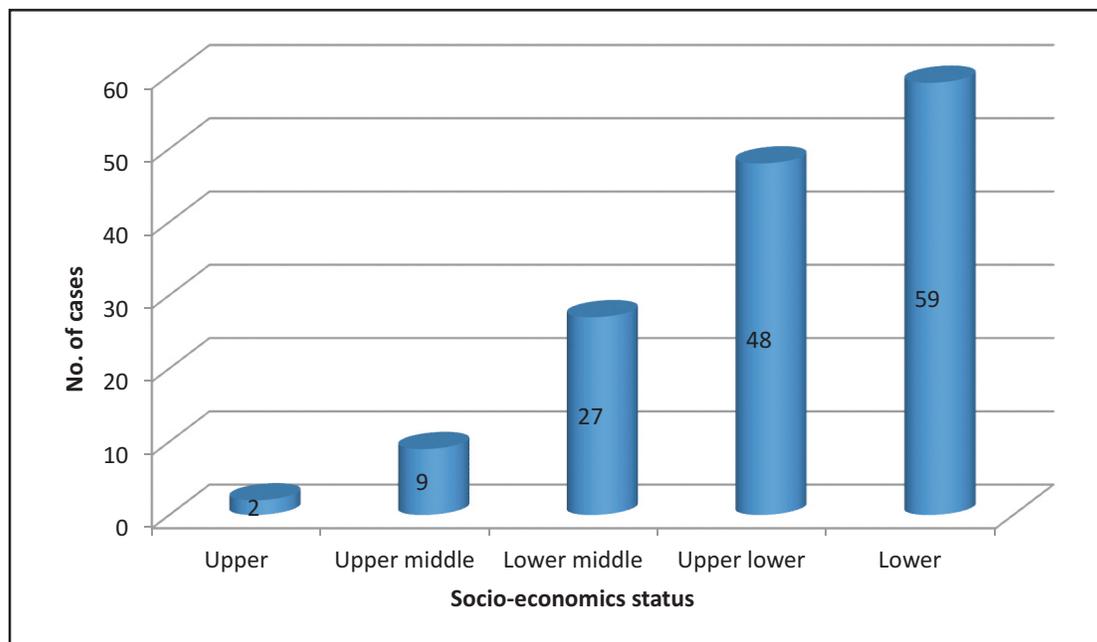


Fig 1 : Showing the socio-economic strata of the primary neuritic patients in the study

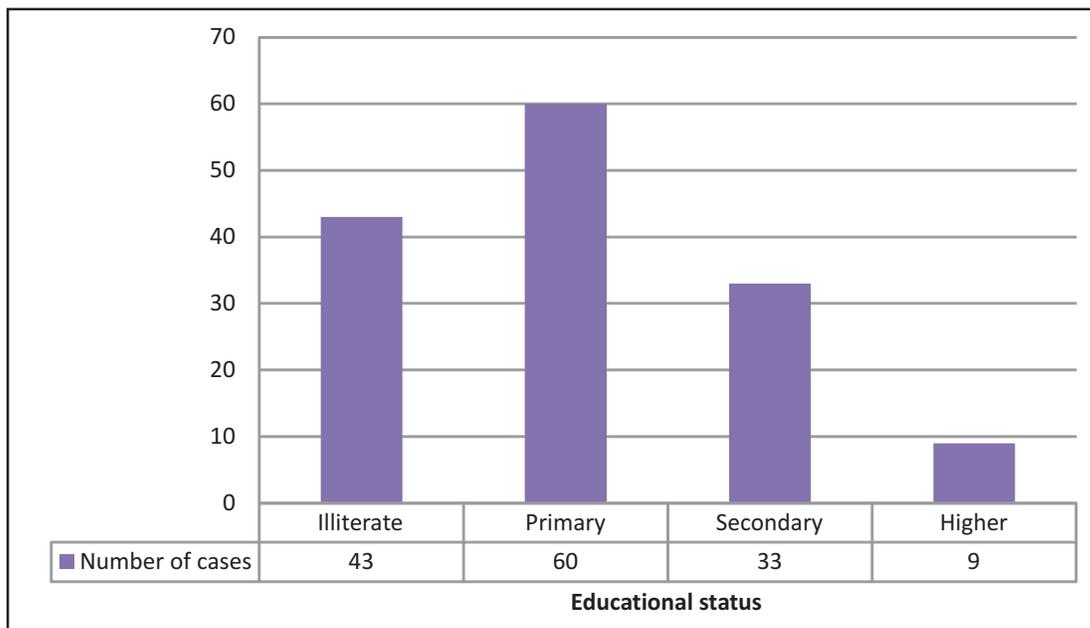


Fig 2 : The literacy status of the patients analyzed in the study

Table 1 : The presenting symptoms including disabilities in the PNL patients included in the study (Total = 145)

Presenting complaint	Number of cases	Percentage (%)
Loss of sensation	74	51
Tingling	51	35.2
Ulcer	47	32.4
Hypoesthesia	28	19.3
Pain	41	28.3
Abnormal sensation (Paresthesia)	24	16.6
Spontaneous blister	18	12.4
Foot drop	12	8.3
Shortening of fingers and toes	8	5.5
Contracture of finger and toes	7	4.8
Swelling	10	6.9
Claw hand	16	11

It may be noted that several patients had presented with more than one symptoms.

involved. Nerve abscess was found in 9 patients with ulnar nerve involvement (44.4%) Out of total

259 clinically enlarged nerves Grade 1 thickness was found in 52.3% nerves, whereas Grade 2

Table 2 : Showing the number of nerves involved in the patients (Total =145)

Number of nerves involved	Number of cases	Percentage of cases
One	79	54.5
Two	41	28.3
Three	14	9.7
Four	7	4.8
Five	1	0.7
Six	1	0.7
Seven	2	1.4

and 3 thickening was observed in 42.1% and 5.6% of nerves respectively (Rao & Jain 2013).

Several Grade 2 disabilities were also observed in a large number of patients. These included trophic ulcers, claw hand contracture of fingers and, toes, resorption of bones/shortening of fingers etc, foot drop and wrist drop. Motor disabilities were more common in those with polyneuritic nerve involvement (72.9%) of cases. Of the 145 PNL cases, 107 belonged to lower socioeconomic strata (Fig 1). Significantly, 43/145 were illiterate (Fig 2) which show that such groups are much more vulnerable than others.

Discussion

The pure neuritic leprosy is a common form of leprosy in India. In the previous studies from India (Noordeen 1972), Bangladesh (Ishida et al 2000) and Oman (Al Suwaid et al 1994), the percentage of PNL was found to be 8.2%, 6.2% and 8.1% respectively. Studies conducted in different regions of India by various workers, have reported incidence of PNL between 3 to 5% (Mahajan et al 1996, Kumar et al 2004, Mendiratta et al 2006, Jindal et al 2009). Our study which was conducted in a tertiary care hospital that caters to most of the patients of Western Odisha (an endemic area of leprosy), 9.9% of total leprosy patients had PNL at the time of diagnosis. In the study by Kumar et al (2004)

61.5% of the PNL patients were between 15-35 years of age which is similar to our findings of 70.3% patients belonged to 21-40 years of age group. The incidence of PNL among children and elderly was significantly less than as compared to 21-40 years age group. The variable and prolonged incubation period, as well as economic independence of people in the middle age group, so that they can bear the expenses of visiting a tertiary care hospital away from their place of residence might have contributed to the above observation.

In other studies of Kumar et al (2004) and Mendiratta et al (2006), predominant presenting complaints were found to be sensory in nature which is quite similar to our observation. However, motor nerve abnormalities were the more common presenting complaints in another the study by Mahajan et al (1996). The disability rate observed in this study was also on the higher side of 70% (Mahajan et al 1996).

Mononeuritic presentation or single nerve involvement, was more common in our study in contrast to other similar studies (Kumar et al 2004, Mendiratta et al 2006), where polyneuritic presentation was more frequently documented. However, the findings of our study was comparable with another study (Jardim et al 2003) where mononeuritic manifestation was

common presentation. In most of studies (Pannikar et al 1983, Uplekar & Antia 1986, Talwar et al 1992, Mahajan et al 1996, Kumar et al 2004) conducted on PNL, ulnar nerve has been found to be the most commonly involved nerve except in a study conducted in India by Noordeen (1972), where lateral popliteal nerve was reported the most commonly involved nerve. Like most of the studies ulnar nerve was commonly involved nerve in other study as well.

This implies that percentages of different types of involvement in these PNL cases observed in our study may have some meaning for situation in Western Odisha. However, that needs to be analysed by proper epidemiological studies in the area. More than 2/3 (107/145) of our cases belonged to lower socioeconomic strata. More than 30% (43/145) were illiterate. As large number of such cases have been found to have disabilities, consequences for such people are quite bad.

Pure neuritic leprosy is a fairly common form of leprosy particularly in endemic areas. It commonly affects people from lower socioeconomic strata who are often not well educated and therefore seek health care late in the course of the disease. It often goes unnoticed by the patient because of absence of cutaneous manifestations and hence is diagnosed late by the physician. Among the various presentations of PNL sensory loss, trophic ulcer and motor disabilities were commonly found in our study. Polyneuritic presentation was found in 45.5% cases of the present study with some patients having involvement of up to 7 nerves clinically. Motor disabilities were found in 48% cases and were high in those having polyneuritis which suggests PNL should be diagnosed early to prevent progressive nerve damage and multiple nerve involvement. Although there have been studies regarding PNL, no other study has

described various types of presentations in patients of PNL, nor the Grades of neuritic pain observed by the patients, the number of nerves involved or the grades of nerve thickening in detail as described by us in this study. The present study focuses on the above aspects and we suggest that patients with above clinical presentations in an endemic area should be primarily suspected of having PNL. 9.93% of our cases had PNL. While this may not truly reflect the proportion at population level, these findings indicate the need to train health care workers including doctors working in this area about this important presentation in a sizeable proportion. Such orientation of programme will benefit such patients whose disabilities must be prevented/effectively managed as social consequences for such people are very heavy.

Acknowledgement

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How to cite this article : Pradhan S, Padhi T, Sirka CS et al (2018). Clinico-epidemiological Profile of Pure Neuritic Hansen's Disease in Western Odisha: a Hospital Based Retrospective Cross Sectional Study. *Indian J Lepr.* **90**: 253-259.