

## Microscopic rhinoscopy in lepromatous leprosy

N. K. SONI

### Abstract

Ten patients with lepromatous leprosy have been studied to detect intranasal pathology by conventional naked eye rhinoscopy and also by use of the surgical microscope. The comparison of both methods reveals that microscopic rhinoscopy is superior in providing more accurate details of intranasal lesions in leprosy and biopsy can be taken in a precise manner from accurate and representative sites. Use of the microscope with adequate exposure and bright illumination provides precise details of lesions and an opportunity for bimanual manipulation, photography, teaching and recording. Thus, it is worthwhile to perform microscopic rhinoscopy in such cases.

**Key words:** Microscopy; Leprosy, lepromatous; Nose

### Introduction

The nose is one of the main organs to suffer in leprosy. It is affected often severely and early in the disease, even before manifestation of skin or nerve involvement (Barton, 1985). Many studies reveal that nasal discharge plays an important role in the transmission of leprosy (Barton, 1974a; Davey and Rees, 1974; McDougall *et al.*, 1975; Chako *et al.*, 1979; Barton and Hugerzeil, 1975). In high endemic areas leprosy is probably the commonest cause of persistent nasal symptoms. Common nasal symptoms are dryness, stiffness, crusting, obstruction, repeated epistaxis (Soni, 1988a) and loss of olfaction (Barton, 1974b; Soni and Chatterji, 1984). Maxillary sinus mucosa (Soni, 1988b, 1989) and less commonly the mucosa of the other sinuses can also be involved (Barton, 1979). The disease spreads to the posterior part of the nose and can involve the Eustachian tube or its opening (Soni, 1994, 1995).

Early in the course of lepromatous leprosy, examination of the nose is characterized by isolated nodules or plaques with pale, yellowish thickening of the nasal mucosa (Barton, 1976). Subsequently, generalised nodular infiltration of the mucosa with a predilection for the anterior part of inferior turbinate and nasal septum occurs. Septal perforation, saddle deformity and atrophic rhinitis are late sequelae of the disease. Nasal secretion harbours millions of live bacilli but viable bacilli can be eliminated within one week after treatment with rifampicin or in several months with dapsone. There is good correlation between the clinical and histological findings in the skin and nose with a few exceptions (Barton *et al.*, 1982). However, it has been reported many times that apparently normal

looking mucosa is not necessarily free from lepromatous changes when examined histologically (Barton, 1974a, 1985; Barton *et al.*, 1982).

The intranasal examination is usually performed by conventional anterior rhinoscopy which is less than satisfactory. Detailed examination with the naked eye is limited. Prades (1970) introduced use of the surgical microscope for detailed and accurate examination of the nasal cavities. Subsequently, it has been popularised by Belal (1978). Microscopic rhinoscopy gives a new dimension to endonasal diagnosis by providing adequate exposure, brilliant light, magnification and depth perception. In the present study, surgical microscopy was carried out in 10 patients with lepromatous leprosy.

### Materials and methods

The present study was carried out in 10 confirmed cases of lepromatous leprosy in the ENT Department, P. B. M. Hospital and Associated group of Hospitals, attached to the Medical College, Bikaner. A detailed history was taken, particularly symptoms of leprosy in relation to nose and sinuses. Anterior rhinoscopy and posterior rhinoscopy was performed in each case. Microscopic rhinoscopy was also carried out with careful scrutiny of the nasal cavities and endo-nasal manipulation was performed where indicated.

The equipment required is a pair of different length, self-retaining nasal specula, operating microscope with a straight ocular tube and 300 mm objective lens. Other instruments include probes, forceps, scissors and suction tips. Local surface anaesthesia using lignocaine spray four per cent or

local packs of lignocaine with 1:100 adrenaline hydrochloride solution is rarely required in leprosy patients as the disease itself causes loss of sensation. The patient is seated with the neck hyperextended. A nasal speculum is inserted and microscopic examination (magnification six to 10 times) is carried out on the internal nasal structures. Inspection of the regions of the vestibule, septum, inferior and middle turbinates is performed. Different magnifications are used to judge the colour of the mucosa, amount of oedema, congestion and distribution of blood vessels. Palpation of the lesion by using a probe or suction tip can be performed. Biopsy was taken whenever required.

### Result

In the present study, the majority of patients were in the age group of 21 to 30 years. The youngest was 21 years old and the oldest one 62 years. Male patients outnumbered the female in a ratio of male to female of 4:1. All patients were socio-economically poor and belonged to a low income group and most (eight patients) were farmers and labourers.

The patients presented with various nasal symptoms. The commonest symptoms were dryness and stuffy nose (eight cases), crusting (seven cases), recurrent bleeding (five cases). Uncommon symptoms were loss of smell (two cases) and headache (one case).

In anterior rhinoscopy (conventional) various findings were recorded (Table I). Nodule and/or infiltration were seen in six patients, perforation of nasal septum was seen in two patients, one of whom has a saddle nose deformity. In many cases more than one finding was seen. Only four cases were seen to have early involvement and two cases were in an advanced stage with gross nasal deformity (Table II).

Among the various sites in the nose, the anterior end of the inferior turbinate was found to be affected in all cases. The other sites involved were the anterior part of the septum, middle turbinate, muco-cutaneous junction of the posterior part of

inferior turbinate and posterior part of the nasal septum.

Microscopic rhinoscopy revealed various findings in the nose. The area which looked to be normal by the naked eye was found to be uneven and rough having tiny small raised nodules. The patient who had a lesion at the anterior part of the inferior turbinate and nasal septum with a normal looking posterior part on conventional rhinoscopy, also revealed small tiny pathological changes in the form of ulcerations, smooth raised nodules or plaques and uneven tiny granulomata. Almost all cases showed some evidence of pathological changes in the nasal cavity by surgical microscopy. The margin of ulceration was clearly visible. The raw area of the granuloma was very easy to identify so a biopsy was taken from the nose and from a representative area. Thus, various stages of leprosy could be seen in one patient. The anterior portion was found to have intermediate stages whilst the middle third of the nasal cavity showed changes of early leprosy.

### Discussion

Leprosy affects 12 to 15 million people world-wide and in many developing countries it is the most common cause of chronic nasal symptoms (Barton and Davey, 1976). Many studies suggest that 97 to 98 per cent of patients have clinical changes in the nasal cavities (Barton, 1974a; Barton and Davey, 1976). In all the above series, the nasal cavity was examined by conventional anterior rhinoscopy. The use of the microscope in the examination of the nasal cavity reveals that all the cases of lepromatous leprosy had clinical changes of a variable degree in the nasal mucosa.

The clinical stages of early, intermediate and late, proposed by Barton (1974a) and that of Job *et al.* (1966) need alteration when the surgical microscope is used. The patients having early and minor changes give an appearance of grossly obvious lesions. The normal-looking appearance of mucosa showed raised thickened regions with an uneven surface, small tiny nodules and minor ulcers under microscope. Removal of crusting shows evidence of obvious clear granulation tissue which may bleed many times. The margin of the septal perforation shows evidence of healing by the naked eye but microscopic rhinoscopy revealed evidence of granulation tissue at one or other area of its boundaries.

The patient otherwise presented with some signs and symptoms as were clearly described in various reports and studies (Barton, 1974a; Barton and Davey, 1976; Barton, 1985).

Microscopic rhinoscopy reveals details of nasal cavities in lepromatous leprosy. Precise mucosal clinical changes can thus be attained in each case. It also greatly facilitates the procedure of biopsy taking from the most accurate representative site and thus reduces the need for repeated biopsies. The procedure is under excellent visual control. The operating microscope with an observation tube

TABLE I

VARIOUS NASAL FINDINGS IN 10 PATIENTS WITH LEPROMATOUS LEPROSY

Signs	No. of patients	Percentage
Nodular infiltration	6	60
Ulceration	3	30
Granulation	3	30
Atrophic area	4	40
Perforation of septum	2	20
Saddle nose deformity	1	10

TABLE II

NASAL LESION CLASSIFICATION ACCORDING TO SEVERITY OF LESIONS (Barton, 1974a)

Intra-nasal lesion	No. of patients
Early stage	4
Intermediate stage	4
Advanced stage	2

allows an observer to follow detailed diagnostic examination very satisfactorily. Photomicrography can be easily performed and is important for teaching and recording. Thus adequate exposure, bright light, magnification and depth perception with the opportunity of bimanual instrumentation provided by microscopic rhinoscopy give new dimensions in endonasal diagnosis of such granulomatous lesions. Early nasal mucosal changes can be defined and so treatment instituted early. Further studies on a number of different nasal diseases may reveal differentiating features among various granulomatous lesions such as leprosy from tuberculosis, syphilis, scleroma and fungal granuloma.

Microscopic rhinoscopy can be valuable in assessing the response to the disease process with the given treatment, it can provide the guidelines when to alter or stop the antileprosy therapy.

#### References

- Barton, R. P. E. (1974a) A clinical study of the nose in lepromatous leprosy. *Leprosy Review* **45**: 135–144.
- Barton, R. P. E. (1974b) Olfaction in leprosy, *Journal of Laryngology and Otology* **88**: 355–361.
- Barton, R. P. E. (1976) Clinical manifestation of lepromatous rhinitis. *Annals of Otolaryngology and Rhinology* **85**: 74–78.
- Barton, R. P. E. (1979) Radiological changes in the paranasal sinuses in lepromatous leprosy. *Journal of Laryngology and Otology* **93**: 597–600.
- Barton, R. P. E. (1985) Ear, nose and throat involvement in leprosy, In *Leprosy*. (Hastings, R. C., Convit, J., eds.) Churchill Livingstone, Edinburgh, Scotland, pp 243–252.
- Barton, R. P. E., Davey, T. F. (1976) Early leprosy of nose and throat. *Journal of Laryngology and Otology* **90**: 953–961.
- Barton, R. P. E., Hugerzeil, L. (1975) Lepromatous leprosy in the nose after one year of dapsone treatment. Clinical and bacteriological findings. *Leprosy Review* **46**: 265–267.
- Barton, R. P. E., Rees, R. J. W., McDougall, A. C., Ellard, G. A. (1982) The nose in lepromatous leprosy. Bacteriological and histological studies of patients treated with dapsone monotherapy for varying periods of time. *International Journal of Leprosy* **50**: 58–67.
- Belal, A. (1978) Surgical microscopy of the nose. *Journal of Laryngology and Otology* **92**: 197–207.
- Chako, C. J. G., Bhann, T., Victor, V., Alexander, R., Taylor, P. M., Job, C. K. (1979) The significance of changes in the nasal mucosa in intermediate, tuberculoid and borderline leprosy. *Leprosy in India* **51**: 8–22.
- Davey, T. F., Rees, R. J. W. (1974) The nasal discharge in leprosy: Clinical and bacteriological aspects. *Leprosy Review* **45**: 121–134.
- Job, C. K., Karat, A. B. A., Karat, S. (1966) The histopathological appearance of leprosy rhinitis and pathogenesis of septal perforation in leprosy. *Journal of Laryngology and Otology* **80**: 718–732.
- McDougall, A. C., Weddell, A. G. M., Rees, R. J. W. (1975) Lepromatous leprosy in the nose after one year of dapsone treatment: Histo-pathological findings. *Leprosy Review* **46**: 277–279.
- Prades, J. (1970) Endonasal microscopy. *Acta Otorhino Laryngologica Ibero, Americana* **21**: 184–186.
- Soni, N. K. (1988a) Epistaxis and leprosy. *Indian Journal of Leprosy* **60**: 562–565.
- Soni, N. K. (1988b) Radiological study of the paranasal sinuses in lepromatous leprosy. *Indian Journal of Leprosy* **60**: 285–289.
- Soni, N. K. (1989) Antroscopic study of the maxillary antrum in lepromatous leprosy. *Journal of Laryngology and Otology* **103**: 502–503.
- Soni, N. K. (1994) Eustachian tube function in lepromatous leprosy. A tympanometric study. *Indian Journal of Leprosy* **60**: 45–49.
- Soni, N. K. (1995) Leprosy of the Eustachian tube: A nasopharyngoscopic study. *Leprosy Review* **66**: 56–58.
- Soni, N. K., Chatterji, P. (1984) Hansen's disease and olfaction. *International Journal of Leprosy* **52**: 334–342.

Address for correspondence:

Dr N. K. Soni,  
12-A Adarsh Colony,  
Medical College Road,  
Bikaner 334003,  
Rajasthan,  
India.