Rhinology, 38, 90–92, 2000

The disappeared disease: tuberculosis of the nasal septum*

Young-Chul Choi, Yong-Soo Park, Eun-Ju Jeon, Seung-Heon Song

Department of Otolaryngology Head and Neck surgery, Our Lady of Mercy Hospital, College of Medicine, The Catholic University of Korea, Inchon, Korea

SUMMARY

Recent advances in chemotherapy have reduced the incidence of upper respiratory tract tuberculosis. Tuberculosis of the nose is mainly by secondary infection to pulmonary tuberculosis via contagious, hematogenous or lymphatic routes. Primary infection of the nose is rare but possible when self-cleansing mechanism and lysosomal activity, of the nose is lost. A 45-year-old Korean woman with the chief complaints of nasal obstruction, crusting, and recurrent episodes of epistaxis is presented. Physical examination of the nose revealed friable, easily bleeding masses with crusts on both sides of the septum. The appearance and consistency of the lesions were different from those of nasal polyps. Chest and sinu X-rays revealed no active lesions. Tuberculin skin test was positive and the biopsied specimen proved to be consistent with tuberculosis. Her condition improved after anti-tuberculous medication for about 6 months.

Key words: chemotherapy, nasal septum, primary infection, tuberculosis

INTRODUCTION

Tuberculosis is a chronic bacterial infection caused by *Mycobacterium tuberculosis* and characterized by the formation of granulomas in infected tissues and by cell-mediated hypersensitivity (Harrison et al., 1994). Recent advances in chemotherapy have reduced the incidence of upper respiratory tract tuberculosis to such a degree that it is usually forgotten when the differential diagnosis of upper respiratory lesions is considered. This is especially true for nasal lesions. Nasal tuberculosis was first described by Giovanni Morgagni (1761). Havens (1931), reviewing the American literature, was only able to find 15 cases, and seven of these are even doubtful. Tuberculosis infection arising in nasal cavity is known as a rare disease, and mainly by secondary infection to pulmonary tuberculosis via contagious, hematogenous or lymphatic routes. We recently experienced a case of primary tuberculosis arising in the nasal cavity, so we report it with a review of the literature.

CASE REPORT

A 45-year-old Korean woman presented to Our Lady of Mercy Hospital, Inchon, Korea, on May 27, 1997 with complaining of nasal obstruction, crusting, and recurrent episodes of epistaxis. Clinical examination showed friable, easily bleeding masses with crusts on both sides of the septum (Figure 1). There were no other significant physical examination findings. The patients

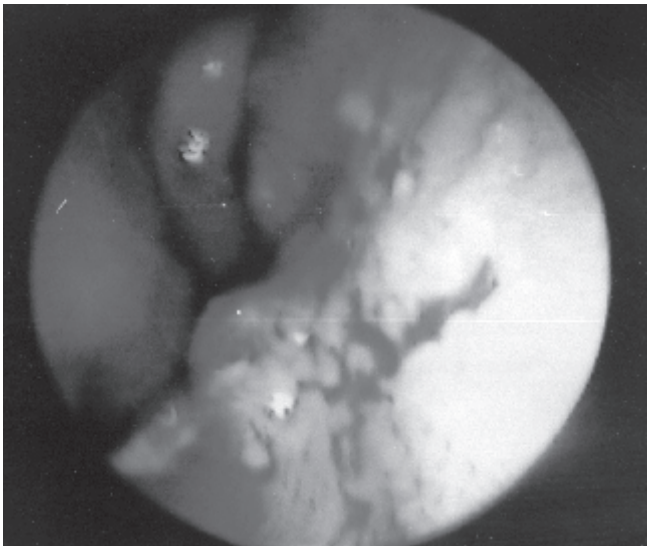

Figure 1. Nasal endoscopic finding shows friable, easily bleeding masses with crusts on the right side of the septum.

* Received for publication March 31, 1999; accepted November 22, 1999

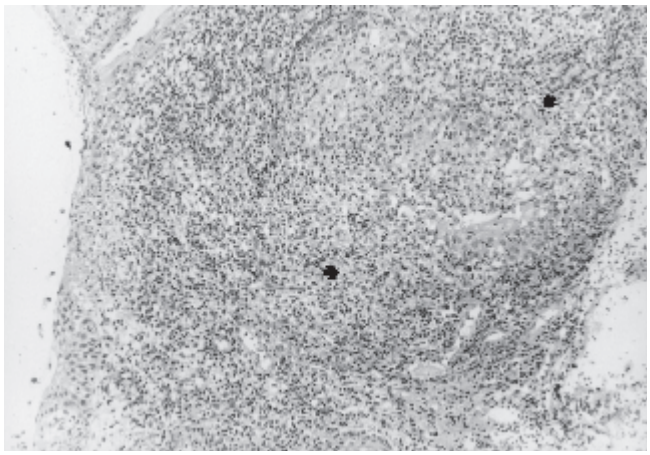

Figure 2. Ovoid, well defined granulomas (arrows) beneath the metaplastic respiratory epithelium (H & E, × 100).

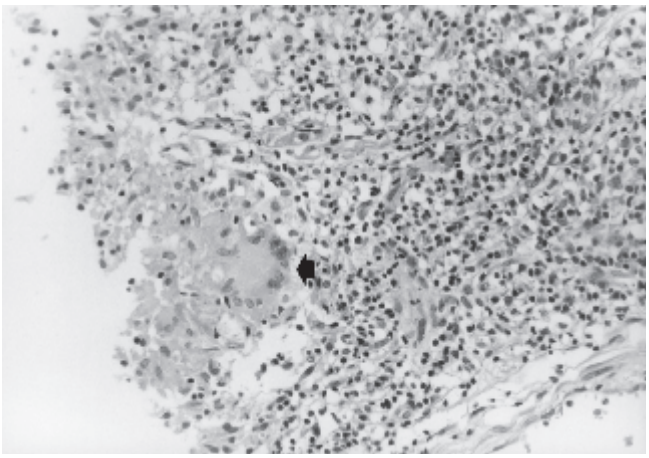

Figure 3. Granuloma having multinucleated, Langerhans' type multinucleated giant cells (arrow) and focal necrosis (H & E, × 200).

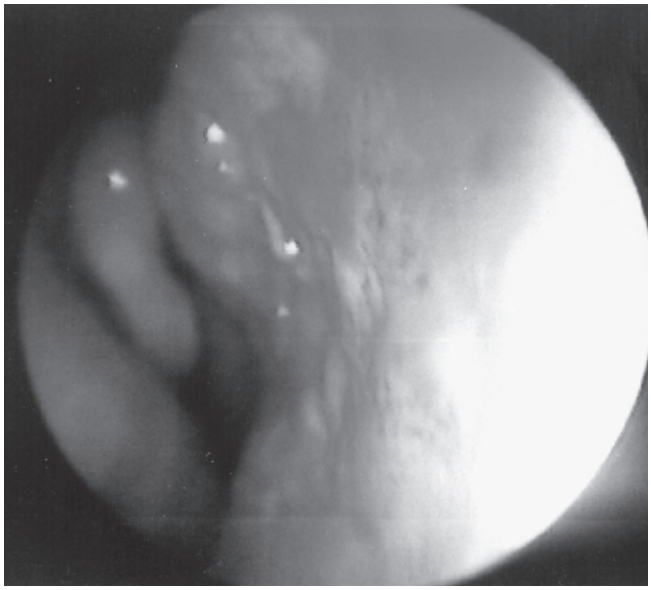

Figure 4. One month after the chemotherapy, septal masses had mostly disappeared.

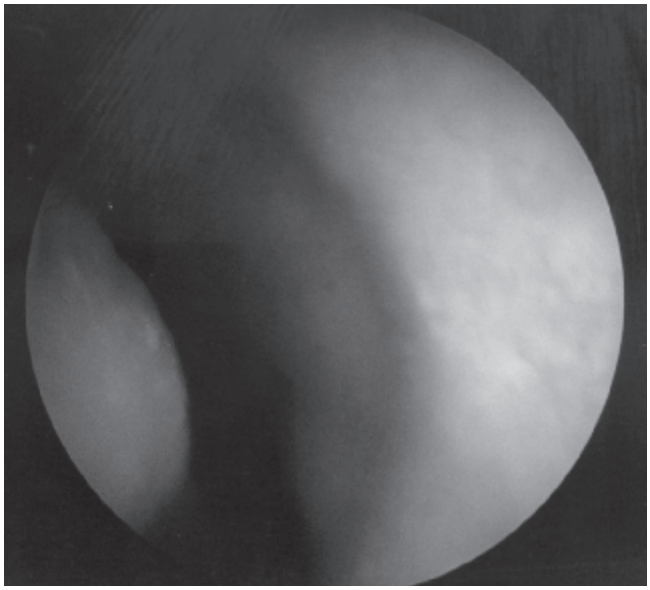

Figure 5. After the completion of 6-month course of chemotherapy, septal masses were completely resolved.

medical and family histories were insignificant. Chest & sinus X-rays were normal. Intranasal biopsies were done and histological examination was made. The histological examination revealed granulomas composed of epithelioid cells and Langerhans' giant cells surrounded by lymphocytes (Figures 2 and 3). In a Zielh-Neelsen stain for AFB, some bacilli were found. The tuberculin skin test with purified protein derivative revealed a diameter of induration of 11 mm. The sputum examination and culture showed no acid-fast bacilli. Complete blood count, blood chemistry and urinalysis were within normal limits.

With the diagnosis of primary nasal tuberculosis, she was transferred to the department of internal medicine, division of infectious disease. Treatment with 2-month course of isoniazid 400 mg, rifampin 600 mg, ethambutol 800 mg, pyrazinamide 1.5 g was commenced and then isoniazid, rifampin, ethambutol were continued for an additional 4 months. After the chemotherapy, the patient improved rapidly. One month after the chemotherapy, more than half of the septal masses had disappeared (Figure 4). After the full course of chemotherapy, the septal masses were completely resolved (Figure 5). She has been followed up for the past 19 months and is symptom-free, with no local or general signs of recurrence.

DISCUSSION

Recent advances in diagnostic techniques and chemotherapy have reduced the incidence of tuberculosis but, many patients are suffering from tuberculosis. The pathogenesis has been established. Tuberculosis arising in the nasal cavity is known as a rare disease, primary infection is extremely rare and occurs mainly by secondary infection to pulmonary tuberculosis via contagious, hematogenous or lymphatic routes. Otherwise, organisms may be introduced into the nose by inhalation of infected droplets or dust. Usually, females are more susceptible than males. The middle-aged and elderly seem to be the most frequently affected compared to any other age group (Friedman, 1971). The tubercle bacillus indicted by Virchow in 1865, as the etiologic agent, is characterized by its hardness, ubiquity, and vagarious nature. Normal respiratory mucous membranes are

markedly resistant to invasion by the tubercle bacillus. The mechanical protection affords by the cilia as well as an apparent bactericidal effect of the nasal secretions has been described. Local trauma, such as atrophic rhinitis, has been implicated. Of course, host resistance is an important factor, as are malnutrition and debilitation predisposing to infection. Chronic exposure to inhaled foreign material leads to a significant increase in incidence, the most notable example being patients with silicosis (Willis, 1970). In Korea, Kim et al., (1964-1965) presented 2 cases of nasal tuberculosis, thereafter, to date, about 8 cases of tuberculosis involving the nasal cavity have been reported (Moon, 1967; Park, 1969; Choi, 1971; Oh, 1994; Park, 1995).

The nasal septum is more frequently involved than the lateral wall, though if the latter is affected, the inferior turbinate is the commonest location, the floor is seldomly involved. Perforations of the septum may occur. Lesions may be present in both nostrils, but it is more frequently unilateral. A history of previous tuberculosis will be of value. Nasal obstruction is the most frequent presenting symptom which is usually the results of the formation of a foul-smelling crust. Scaling, epistaxis, and fetor may also occur. Nasal lesions may be asymptomatic. Lupus lesions are distinguished by their lack of pain and frequent association with lupus vulgaris. Systemic symptoms of fever, night sweats and weight loss may or may not be present. Nasal lesions exhibit pale red or pink granulations or ulcerations on the cartilaginous portion of the septum or the inferior turbinate, although initially one would see only thickening due to submucosal infiltration. Granulations have slightly roughened or granula surfaces are soft and bleed rather easily when touched with a probe or cotton-tipped applicator. The posterior edge of the septum may be involved. The discharge is usually thin except in lupus lesions where the discharge tends to be thick and foul. In the latter, examination after shrinking the mucosa will disclose brownish, apple-jelly colored nodules.

The lesion may take the form of a definite granular mass or ulceration. Particularly in the lupus variety, local spread may occur via the muco-cutaneous junction, to involve the skin of the nose and face. Spread may also occur via the lacrimal duct, to produce a cold abscess of the lacrimal sac. If involvement of the septum occurs, this may lead to perforation of the cartilaginous portion. Bony involvement does not occur however, and the collapsed saddle nose of syphilis is not seen. Laboratory work-up must include an FTA-ABS, complete blood cell count with differential count, erythrocyte sedimentation rate, blood urea nitrogen, creatinine, and urinalysis. A chest X-ray will be helpful in excluding the condition as secondary to pulmonary tuberculosis. Sinus roentgenogram must be obtained. The Tuberculin test, if negative, rules out a diagnosis of tuberculosis, but a positive result does not help either way. The histology is usually highly suggestive, though many diseases are able to give a similar pattern. Bacterial, acid-fast, and fungal stains and cultures should be done on any nasal discharge present, as well as on tissue removed at biopsy. To confirm the diagnosis, it is essential to identify the organism from tissue or nasal washings, or culture it in vivo or in vitro. Repeated biopsy may be necessary to establish the correct diagnosis. Normally, displays of the characteristic pattern of tuberculosis are as elsewhere in the body. Microscopically, these lesions may demonstrate the presence of tubercles consisting of aggregations of round cells, epitheliod cells, giant cells of Langerhans' type, and possibly foci of caseation necrosis. In comparison with granulomatous disease of other causes, granulomata caused by tubercle bacilli tend to have more giant cells and larger numbers of epitheliod cells (Messervy, 1971). Tuberculosis is a chronic granuloma. It must, therefore, be distinguished from other granulomata including lethal midline granuloma, Wegener's granuloma, Boeck's sarcoid, leprosy, and the fungal disease caused by actinomycosis, blastomycosis, and coccodiomycosis. In addition, granulomas may form around the injection sites of corticosteroids used to treat inferior turbinate hypertrophy (Wolff, 1974).

Once a diagnosis has been made, the patient should be immediately started on anti-tuberculous chemotherapy. Adequate local treatment including frequent nasal douching and office follow-up to remove crusts will also be important (Waldman et al., 1981). Current recommendations include a 2-month course of therapy with three drugs: isoniazid, rifampin, and either streptomycin or ethambutol. After daily therapy for 2 weeks, the drugs may be given twice a week if the patient demonstrates response. Later, twice weekly administration of isoniazid and rifampin is continued for 6 to 7 months. Baseline audiometric and bithermal caloric assessments should be done and repeated periodically because of the ototoxicity of streptomycin (Cummings et al., 1998). In Korea, anti-tuberculous therapy with the same prescription for 1 year more is commonly used as a safe method.

Potential complications, including septal perforation, local spread, central nervous system involvement, atrophic rhinitis, and nasal stenosis are usually related to the severity and duration of the disease process.

REFERENCES

1. Cummings CW (1998) Otolaryngology Head & Neck Surgery, St. Louis, Missouri, pp. 848-849.
2. Friedman I (1971) The changing pattern of granulomas of the upper respiratory Tract J Laryngol Otol 85:631-682.
3. Harrison TR (1994) Harrison's principles of internal medicine. McGraw Hill, Inc., pp. 710-718.
4. Havens FZ (1931) Primary tuberculosis of the nasal mucous membranes. Arch Otolaryngol 14: 181-186.
5. Messervy M (1971) Primary tuberculoma of the nose with presenting symptoms and lesions resembling a malignant granuloma. J Laryngol Otol 85:177-184.
6. Morgagni G (1761) On the seats and causes of death investigated by anatomy. Venice, Vol.1, pp. 50-55.
7. Waldman SR, Levine HL, Sebek BA, Parker W, Tucker HM (1981) Nasal tuberculosis: A forgotten entity. Laryngoscope 91:11-16.
8. Willis W, Chodosh PL (1970) Tuberculosis of the upper respiratory tract. Laryngoscope 80:679-696.
9. Wolff M (1974) Granulomas in nasal mucous membranes following local steroid injections. Am J Clin Pathol 62:775-782.

Young-Chul Choi, M.D.,
Department of Otolaryngology Head and Neck surgery,
Our Lady of Mercy Hospital,
College of Medicine, The Catholic University of Korea,
665, Bupyung 6 Dong, Bupyungku, Inchon, 403-016, Korea
Tel.: +82-32-510-5797
Fax: +82-32-510-5821
E-mail: ent39825@unitel.co.kr