ORIGINAL RESEARCH

Assessment of incidence of nasal involvement in pulmonary tuberculosis patients

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ABSTRACT

Background: Pulmonary tuberculosis (PTB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis. Nasal tuberculosis was initially documented in 1761.Hence; the present study was conducted for assessing incidence of nasal involvement in pulmonary tuberculosis patients. **Materials & methods:** A total of 100 cases of pulmonary tuberculosis were enrolled. Complete demographic and clinical details of all the patients was obtained. A Performa was made and complete clinical findings were recorded separately. Patients with head and neck symptoms were assessed separately. Nasal swabs were taken in all the patients and were sent to assess involvement of tuberculosis infection. Incidence of nasal involvement by tuberculosis was done. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis was done using SPSS software. **Results:** Mean age of the patients was 45.8 years. 56 percent of the patients were males while the remaining were females. 61 percent of the patients of rural residence. Incidence of nasal tuberculosis was 28 percent. Non-significant results were obtained while correlation occurrence of nasal tuberculosis with age, gender and residence. **Conclusion:** Although it is an uncommon clinical presentation, the resemblance of tuberculosis (TB) to conditions with unfavorable outcomes, coupled with the challenges associated with diagnosing TB, necessitates its consideration in the evaluation of patients exhibiting granulomatous or ulcerative lesions in the nasal region.

Key words: Nasal, Tuberculosis

INTRODUCTION

Pulmonary tuberculosis (PTB) is an infectious disease caused by the bacterium Mycobacterium tuberculosis. This pathogen primarily affects the lungs but can also impact other organs, including the brain, kidneys, and lymph nodes. Currently, tuberculosis remains a significant global public health challenge, particularly in less developed nations. The World Health Organization (WHO) estimates that there are approximately 8.7 million new cases annually, with around 0.5 million of these cases occurring in children. The Pan American Health Organization (PAHO) reports 250,000 cases each year, resulting in approximately 20,000 deaths annually.[1- 3]

Effective treatment relies not only on the administration of suitable chemotherapy but also on establishing a strong rapport with the patient. A compassionate physician or healthcare professional who fosters a positive relationship with patients plays a vital role in ensuring adherence to treatment and follow-up care. National tuberculosis programs that prioritize the careful selection and training of health workers to treat patients with dignity and empathy are more likely to succeed than those that do not emphasize the importance of building strong patient relationships.[4,] [5]Nasal tuberculosis was initially documented in 1761 by Giovanni Morgagni, an Italian professor of anatomy, during his examination of the autopsy results of a young man suffering from pulmonary tuberculosis. The findings revealed ulcerations in the nose, soft palate, and nasopharynx.[6-8]Hence; the present study was conducted for assessing incidence of nasal involvement in pulmonary tuberculosis patients.

MATERIALS & METHODS

The present study was conducted for assessing incidence of nasal involvement in pulmonary tuberculosis patients. A total of 100 cases of pulmonary tuberculosis were enrolled. Complete demographic and clinical details of all the patients was obtained. A Performa was made and complete clinical findings were recorded separately. Patients with head and neck symptoms were assessed separately. Nasal swabs were taken in all the patients and were sent to assess involvement of tuberculosis infection. Incidence of nasal involvement by tuberculosis was done. All the results were recorded in Microsoft excel sheet and was subjected to statistical analysis was done using SPSS software. Univariate analysis was done for evaluation of level of significance.

RESULTS

Mean age of the patients was 45.8 years. 56 percent of the patients were males while the remaining were females. 61 percent of the patients of rural residence. Incidence of nasal tuberculosis was 28 percent. Non-significant results were obtained while correlation occurrence of nasal tuberculosis with age, gender and residence.

Table 1: Demographic data

Demographic	Number	Percentage
Mean age (years)	45.8	
Males	56	56
Females	44	44
Rural residence	61	61
Urban residence	39	39

Table 2: Incidence of nasal tuberculosis

Nasal tuberculosis	Number	Percentage
Present	28	28
Absent	72	72
Total	100	100

Table 3: Correlation of nasal tuberculosis with age, gender and residence

Correlation	r^2-value	p-value
Age	1.274	0.225
Gender	1.845	0.616
Residence	1.645	0.846

DISCUSSION

Upper respiratory tract tuberculosis is considered uncommon, affecting only 1.8% of individuals diagnosed with tuberculosis. The occurrence of tuberculosis in the nose, nasopharynx, and paranasal sinuses is extremely rare, even in areas where pulmonary tuberculosis is prevalent. Generally, nasal tuberculosis arises as a secondary condition linked to lung or laryngeal tuberculosis; however, there are rare instances of primary infections in the nasal region. Diagnosis involves a thorough assessment that includes patient history, rhinoscopy, nasal endoscopy, biopsy, and histopathological analysis, supplemented by additional diagnostic methods such as biochemical blood tests, serological evaluations, isolation of the mycobacterial tuberculosis complex, and imaging studies. A conclusive diagnosis is achieved through biopsy and the histopathological detection of Langerhans cells.[7- 9]Hence; the present study was conducted for assessing incidence of nasal involvement in pulmonary tuberculosis patients.

Mean age of the patients was 45.8 years. 56 percent of the patients were males while the remaining were females. 61 percent of the patients of rural residence. Incidence of nasal tuberculosis was 28 percent. Non-significant results were obtained while correlation occurrence of nasal tuberculosis with age, gender and residence. Khan S et al conducted a review of histopathologically confirmed cases of nasal tuberculosis over the span of one year. In total, four patients were identified with nasal tuberculosis through histopathological examination. The ages of the patients ranged from 5 to 34 years, with a balanced male-to-female ratio. All individuals were found to be immunocompetent. Primary nasal tuberculosis was present in each of the four cases. None of the cases were clinically suspected prior to diagnosis, with histopathology serving as the primary diagnostic tool. Each patient received antituberculous therapy and demonstrated significant improvement. While nasal tuberculosis is uncommon, it should be included in the differential diagnosis for chronic nasal symptoms and granulomatous nasal lesions.[10]Dixit Ret al, in their reviewed, summarized that the clinical manifestations of nasal tuberculosis often do not appear until the disease has progressed significantly. A bloody nasal discharge may be the initial and potentially sole symptom observed. Additional common symptoms include pain, nasal obstruction, and dryness in the nasal passages or throat. Ocular symptoms may arise from the obstruction of the nasolacrimal duct or direct involvement of the orbit. Headaches can also develop if the disease invades the sinuses and extends into the cranial cavity.[9]The diagnosis of primary sinonasal tuberculosis presents significant challenges. Due to the difficulty in detecting acid-fast bacilli in surgical samples, Beltran et al suggested that the diagnosis should rely on specific criteria: a lack of clinical improvement following empirical antibiotic treatment, the presence of caseous granulomatous inflammatory lesions observed in histopathological analysis, and the detection of Mycobacterium tuberculosis in the surgical specimen. Nasal secretions and swabs are not utilized for diagnosis because of their low yield. Histological examination revealing spherical granulomas with central caseous necrosis is indicative of tuberculosis. While a positive Ziehl-Neelsen stain can suggest tuberculosis, it does not always confirm the diagnosis. Molecular testing offers the advantage

of identifying tuberculosis within a day, boasting high specificity.[11]

CONCLUSION

Although it is an uncommon clinical presentation, the resemblance of tuberculosis (TB) to conditions with unfavorable outcomes, coupled with the challenges associated with diagnosing TB, necessitates its consideration in the evaluation of patients exhibiting granulomatous or ulcerative lesions in the nasal region.

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