cell carcinoma, mostly of moderately differentiated type. In our study also all cases were histologically squamous cell CA (100%) but with moderate and poorly differentiated tumours predominated 83% case of pyriform fossa. Our study shows cervical lymphnode metastasis is expected to be seen in 60% of cases. In our study, incidence of lymphnode metastasis in pyriform fossa (66.6%) postericoid (25%) posterior pyaryngeal wall (50%) which is consistent with the incidence of 65%, 30% and 40% respectively (Stell and Swift 1987). This could be explained due to rich lymphatic drainage seen in pyriform fossa and least in postericoid region.

Nodal stage is a highly significant determinant of survival in hypopharyngeal tumours. In the present study, N stage was N₀ 12 (40%), N₁ 12(40%), N₂ 5 (16.6%), N₃ (3.3%). Hahn et al, (1987) noted N stage as N₀ 43%, N₁ 25%, N₂ 17%, N₃ 14%.

Hoffman et al. (1997) in his study noted that due to paucity of symptoms or failure to address early symptoms, the

hypopharyngeal tumours most frequently presented at an advanced stage (77.4%) being stage III or IV. Sharma and Chhangani (1992) observed cases belonging to stage III and IV were 71%. In our study more than half of the cases presented advanced III and IV (60%).

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RHINOLITH

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The rhinolith is a foreign body nose which becomes coated with calcium and magnesium salts and is comparatively uncommon even in children and may be noticed incidentally on routine radiographs.^{1,2} It may remain unnoticed for many years and may be encountered during the course of routine clinical examination or noticed incidentally on radiographs³. Rhinolith may be exogenous or endogenous, depending on the nucleus it has encrusted.^{2,4,5}

MATERIAL AND METHODS

We are presenting a retrospective analysis of 15 cases of rhinoliths seen over a 3 years period at Pt. B. D. Sharma PGIMS, Rohtak. The clinical profile is given in Table 1.

OBSERVATIONS

There were 10 females and five males in the age group of 4 years to 45 years. All cases belonged to poor socio-economic status except one. Chronic nasal discharge and

unilateral nasal obstruction were the presenting symptoms in all cases. Other features observed were epistaxis, headache and heaviness on the affected side, anosmia or

Fig. 1 Showing rhinolith in the nasal cavity

Clinical Profile of Rhinolith cases

Sl. No.	Age/sex	Socio economic status	Symptoms	Site of rhinolith
1	4 yr. Male	Poor	Nasal discharge and obstruction	Right nasal cavity
2	15 yr. female	Poor	Unilateral nasal obstruction, foul smell, nasal obstruction.	Right nasal cavity
3	36 yr. Male	Poor	Headache, heaviness on right side, nasal discharge and obstruction	Right nasal cavity
4#	45 yr. female	Good	Headache and nasal blockade	Left nasal cavity
5	3.5yr. male	Poor	Nasal discharge epistaxis	Left nasal cavity
6	30 yr. female	Poor	Loss of smell, nasal obstruction, headache	Right nasal cavity and maxillary antrum
7	11 yr. male	Poor	Nasal obstruction, nasal discharge, mouth breathing	Right nasal cavity
8	13 yr. female	Poor	Unilateral nasal obstruction, nasal discharge	Left nasal cavity
9	6 yr. male	Poor	Nasal discharge, obstruction, epistaxis	Left nasal cavity
10	26 yr. female	Poor	Headache, loss of smell, progressing nasal obstruction	Left nasal cavity
11	20 yr. female	Poor	Loss of smell, headache, nasal discharge	Right nasal cavity
12	21 yr. female	Poor	Loss of smell, headache, nasal discharge	Right nasal cavity
13	18 yr. female	Poor	Epistaxis, nasal discharge, headache	Right nasal cavity
14	16 yr. female	Poor	Epistaxis, nasal discharge, headache	Right nasal cavity
15	29 yr. female	Poor	Epistaxis, nasal discharge, headache	Right nasal cavity

Recurrence of Rhinolith on left side for 3 times

cacosmia, and unilateral foul smelling discharge (Table 1). Anterior rhinoscopy revealed a mass covered with mucopurulent secretions and a gritty sensation. X-ray PNS and lateral view were obtained to confirm the diagnosis and extent of rhinolith (Fig. 1.). In adults, rhinoliths were removed under local anaesthesia where as in children (5 Cases) required general anaesthesia. In four cases there were multiple rhinoliths. In five cases chemical analysis of rhinolith showed calcium, magnesium, traces of iron, carbonate and phosphate. No recurrence was seen except in one case where the rhinolith recurred thrice.

DISCUSSION

The reported incidence of age in literature is 8 to 25 years^{2,6,7} as also in present series. We observed rhinoliths more commonly in females (66%) who for no apparent reason have a higher incidence^{2,9}. Rhinolith can also develop in association with occupational factors such as saw⁹, stone¹⁰, coal and cement dust¹¹. The common presenting features reported are unilateral progressive nasal obstruction, purulent nasal discharge blood stained at times, mouth breathing, headache, anosmia, epiphora,

nasal regurgitation, change in voice, snoring, pain and some times fever^{4-7,12-14}. Rarely the rhinolith may perforate the hard palate^{12,14}. It was not observed in any patient of the present series.

Pathogenesis of rhinolith is similar to stone formation anywhere in the body. The nidus is an intranasal foreign body which undergoes encrustation. Cherry pits are commonest reported foreign bodies.¹¹ The other reported nidus reported are beads, buttons, fruits, stones, pieces of paper, retained nasal packing¹⁶, pebbles, sand, needle, seeds, parasites, woodglass splinters and sharpnells^{12,15,16}. The endogenous focus could be misplaced teeth, sequestrae, blood clots, dried pus, desquamated epithelium.¹¹ According to Morgan oxalates tends to be deposited in an acid pH leading to formation of a hard rhinolith, conversely phosphates in an alkaline medium form soft and friable stones.¹⁶ The chemical composition of rhinolith is hydroxy apatite ($\text{Ca}_5(\text{PO}_4)_3\text{OH}$), calcium ortho phosphate hydrate ($\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$) and sometimes calcium, magnesium phosphate, carbonate and oxalate ions^{2,5,14}. In the present study rhinolith were found

to be made up of calcium, magnesium carbonate and phosphate, traces of iron and organic matter. Radiograph demarcates the extent of stone and its effect on sinuses and septum (Fig. 1).

Treatment consists of the removal of the rhinolith either under local or general anaesthesia depending on the age of the patient. Sometimes lateral rhinotomy, caldwell-Luc, or septoplasty is required.^{1,3,16} In the present study the rhinoliths were removed through anterior nares in all cases except one where Caldwell-luc's operation was done as rhinolith was extending into the maxillary antrum. Surprisingly, an adult female belonging to a well-to-do family, with good personal hygiene & normal nasal cavity had recurrence of stone three times on the same side without any identifiable cause. This has not been reported earlier.

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