



Case report

A missed giant rhinolith retained for a decade in a paediatric patient at a zonal referral hospital in Central Tanzania: Case report and literature review



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ABSTRACT

Introduction and importance: Rhinolith is an entity formed by gradual deposition and coating of different salts of calcium and magnesium over an endogenous or exogenous nidus in the nasal cavity. The type, size and duration of the rhinolith lead to multiple types of presentation. Giant rhinoliths are very rare in paediatric patients owing to the size of their nasal cavities. To the best of our knowledge this is the first reported case of a giant paediatric rhinolith in Tanzania.

Case presentation: We present a 12-year old male who presented with a history of left sided nasal obstruction accompanied with foul smelling nasal discharge for 11 years and was marked by being followed by house flies. Had history of occasional episodes of headache but no facial pain. He was managed at various remote health facilities without specialist consultation for eleven years as case of allergic rhinitis and rhinosinusitis and finally was referred with a provisional diagnosis of chronic granulomatous disease of the nose. The patient underwent anterior rhinoscopy and a left sided stony hard mass was removed under topical local anaesthesia.

Clinical discussion: The patient underwent anterior rhinoscopy and a left sided stony hard mass was removed under topical local anaesthesia. Postoperatively he was kept on a nasal decongestant, a broad-spectrum antibiotic and an analgesic.

Conclusion: Any child with unilateral foul smelling nasal discharge should be considered to have a nasal foreign body until proven otherwise. The treatment of choice remains to be nasal foreign body removal under local or general anaesthesia.

1. Introduction

Rhinolith derives its name by a union of two words that are, “Rhino” and “Lith” implying a “stone in the nose” [1]. Description of rhinolithiasis can be dated back to 1654 when Bartholin first described it [2]. A rhinolith is formed by gradual deposition and coating of different salts of calcium and magnesium over an endogenous or exogenous nidus in the nasal cavity [1,3–5].

The nidus for rhinoliths may be exogenous or endogenous. The exogenous nidus that are the commonest cause of rhinoliths seen in clinical practice varies from small to large size like a paper, stone, grain, seed, grass, glass, wood or rubber materials. An endogenous nidus can be dried up secretions, blood clots, pus, mucosal necrotic debris, hair

follicles, or tooth remnants [6–9].

Regarding the location of nasal foreign bodies, the commonest location is the floor of the nose at the junction between anterior and posterior nares [10–12]. Under normal circumstances, nasal foreign bodies tend to be positioned anteriorly but due to normal physiological action, movement posteriorly occurs and this is the favorable location [7]. Deposition of salts responsible for formation of rhinoliths may be attributed by certain local inflammatory reactions around the focal nidus for rhinoliths that leads to deposition of salts of calcium phosphate, magnesium, calcium carbonate, and aluminium. Such changes around focal nidus make it hard in texture and the size of the rhinolith increases gradually [6,7].

The clinical presentation of rhinoliths is dictated by the type, size and

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duration. The insidiousness and gradual development leads to symptoms gradually developing years after rhinoliths formation begins and therefore causing persistent or recurrent nasal infections. The predominant clinical features are unilateral nasal obstruction and foul smelling nasal discharge. Other features for rhinoliths include cacosmia, epistaxis, headache, facial pain and epiphora [6,7,13,14].

Establishing the diagnosis of rhinoliths is purely clinical and it is possible by the aid of anterior or posterior rhinoscopy. When routine anterior rhinoscopy is unable to establish a proper diagnosis then endoscopic rhinoscopy can lead to diagnosis. In some occasions, imaging also plays an important role in establishing the diagnosis of rhinoliths. If a rhinolith is highly radiopaque they can be identified in conventional x-rays and if the rhinolith is small or less radio opaque, then computerized tomography (CT) scan can be helpful in its localization [13,14].

Prompt diagnosis remains to be of paramount importance to prevent associated complications and upon establishing the diagnosis then the gold standard for management of rhinoliths is their removal with or without aid of endoscopes and this may be dictated by the size and extent of the rhinolith. A more impacted and larger rhinolith should be removed under general anaesthesia as they are extremely painful [13].

In this report we describe a giant rhinolith, which was likely caused by a nidus of a foreign body. We also discuss the surgical management that was performed to cure the patient.

We are therefore reporting an unusual case of a missed giant rhinolith at a zonal referral hospital in central Tanzania. The work has been reported in line with the SCARE 2020 criteria [15].

2. Case presentation

A 12-year old male presented to our clinic with a history of left sided nasal obstruction accompanied with foul smelling nasal discharge for 11 years and was marked by being followed by house flies. Had history of occasional episodes of headache but no facial pain. Moreover, the patient was attended at various remote health facilities without clear relief and thereafter referred to us where upon anterior rhinoscopy at our outpatient clinic, a left sided stony hard mass was found obliterating the entire nasal cavity and causing external nose deformity. He was managed at our clinic by removal of the giant rhinolith under topical local anaesthesia (Photograph 1). The extracted rhinolith measured approximately 8.5 cm by 10 cm. Minimal bleeding was encountered that stopped spontaneously. Postoperatively he was kept on a nasal decongestant, a broad-spectrum antibiotic and an analgesic though had septal perforation due to pressure necrosis of the nasal septum by the giant rhinolith.

Results from laboratory tests revealed the following; negative HIV



Photograph 1. A giant rhinolith post removal under local anaesthesia.

serology and hemoglobin of 12 g/dl.

Post rhinolith removal, he received tablets amoxicillin/clavulanic acid 375 mg 12 hourly for 7 days, tablets prednisolone 10 mg once daily for 5 days then tapered to 5 mg once daily for 5 days, tablets ibuprofen 200 mg 8 hourly for 7 days and ephedrine (0.5 %) nasal drops 8 hourly for 5 days. He was kept under weekly follow up for 3 consecutive weeks and had complete resolution of the original complaints.

3. Discussion

Long standing rhinoliths are formed mainly by complete or partial encrustation of intranasal foreign bodies where majority are exogenous such as beads, buttons, pieces of paper, cherry pits, stones, pebbles, sand, fruits, peas, parasites, wood or glass. At times rhinoliths may be formed by endogenous agents such as sequestra, dried pus, desquamated epithelium, clotted blood, leukocytes, bone fragments or teeth [14,16].

The route of entry of a nasal foreign body is usually anterior, but some may enter through the choanae secondary to vomiting or coughing [12,17].

Nasal foreign bodies like any other inhaled foreign bodies are commonly encountered in children and if encountered in adults then it's among mentally unwell people [16,18]. When foreign bodies are placed in the nasal cavity of a child then it lodges on the floor of the nose similar to what was found in our case report.

Nasal foreign bodies tend to evoke a chronic inflammatory response with deposition of mineral salts mainly calcium and magnesium that increases gradually with time and may be lodged for years [6,7]. This appears to correlate with what was found in our case report where the rhinolith was retained for 11 years.

Symptomatology is usually minor by the time of entry of a foreign body into the nose and in most cases patients may forget the event. Thereafter there is a variable latent period during when the nasal foreign body develops and enlarges [6].

Typical clinical features of the rhinolith are unilateral nasal obstruction and a foul-smelling nasal discharge where discharge is often purulent and fetid and may be blood stained. Other features include epistaxis, nasal or facial swelling, anosmia, epiphora and headache [6,7,13,14]. Our case had a similar symptomatology characterized by unilateral nasal obstruction and foul smelling nasal discharge for eleven years though went undiagnosed for almost a decade due to remoteness of where the patient was residing and with limited access to otorhinolaryngologists.

Rhinoscopy remains to be the main stay in establishing the diagnosis of rhinoliths [7]. In our case the diagnosis was established without complexity since it was visible having obliterated the entire nasal cavity and causing deformity of the external nose. Following long standing rhinoliths, sinusitis may occur [2,19]. Initially clinicians thought the patient had a benign sinonasal tumor due to long standing duration of the nasal mass and. Presence of calcification. Calcification has been observed in both malignant and benign tumors in the nasal cavity. Malignant tumors such as osteosarcomas, chondrosarcomas and squamous cell carcinomas can cause bone destruction and if a rhinolith has been present for a long time, it may cause destruction of the nasal mucosa with formation of bone or cartilage sequestra similar to what may be seen in patients with malignant tumors of the sinonasal cavity [6].

Following long-standing rhinoliths septal perforation due to pressure necrosis, erosion of the nasal septum and the medial wall of the maxillary sinus and also perforation of the palate may occur but no reports of associated cancer have been reported [6,7,20]. The patient we are hereby reporting had septal perforation post removal of the giant rhinolith and this may be attributed by pressure necrosis.

Though computerized tomography (CT) scan alone cannot differentiate a rhinolith from other calcified nasal masses yet a rhinolith must be considered in the differential diagnosis of a calcified nasal mass in a patient with a history of an intranasal foreign body or uncertain history of a nasal foreign body. In a patient with a rhinolith, CT scan helps to

demonstrate complications such as sinusitis, expansion of the nasal cavity and displacement or perforation of the nasal septum or the palate [13,14,16].

Regarding the treatment of rhinoliths, most are removed anteriorly with the help of topical local anaesthesia for pain control [13,16] similar to what has been to our case. However, when septal or antral perforation occurs, then a more extensive surgery may be necessary [6]. Septal repair wasn't done to our case since the rhinolith was removed on outpatient basis.

4. Conclusion

Any child presenting with unilateral foul smelling nasal discharge must be considered to have a nasal foreign body until proven otherwise. Clinicians must have a high index of suspicion so as to establish the diagnosis of a rhinolith based on symptomatology, history of foreign body introduction into the nose and rhinoscopy. Simple removal with the help of topical local anaesthesia remains to be the treatment of choice though endoscopic removal is also suitable if the equipment permit. Giant rhinoliths sometimes require lateral rhinotomy approach to facilitate their removal.

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Ethical approval

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Consent

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Author contributions

ZSA-Conceptualization, writing original draft of the manuscript.

FB- Conceptualization and reviewing the prepared original draft of the manuscript.

AAK- Conceptualization and reviewing the prepared original draft of the manuscript.

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N/A.

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None.

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