

Nasal septum giant pyogenic granuloma after a long lasting nasal intubation: case report*

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SUMMARY

The authors present a case of Pyogenic Granuloma (PG) arising from the nasal septum in the posterior nasal cavity of a patient male sex, caucasian, 32 years old, with a previous history of cranioencephalic trauma, several neurosurgeries for different subsequent neurological problems and the use of a nasogastric tube for feeding (nasal intubation) during 30 days. He underwent surgery in St. Vincent de Paul Hospital (Rio de Janeiro) on May 18, 1993, for the tumor removal and straightening of the nasal septum. Under endoscopic guidance the complete excision of the tumor mass was perfectly done thanks to the excellent exposure of the lesion, provided by the enlarged telescopic view, and the wide access afforded by the septum straightening plus the cartilaginous septum mobilization through the maxilla-premaxilla approach of Cottle, allied to the lateralization and volume reduction of the right inferior nasal concha, simultaneously performed, thus making lateral rhinotomy or "degloving" unnecessary. The patient is until now (2004) completely free of the lesion operated on. This is the first report in the literature of such a lesion associated to nasal intubation as the triggering agent.

Key words: pyogenic granuloma, lobular capillary haemangioma, nasal intubation, nasal cavity tumors, nasal mucosa trauma

INTRODUCTION

It is well known that the longer the endotracheal tube is in place, the more likely it is that further damage will occur, thus increasing the likelihood of laryngeal and tracheal ulcer and granuloma formation [1]. On this subject, extensive literature is available. However, despite our best efforts, no information was found on any type of granuloma of the nasal cavity associated to nasal intubation or the use of intranasal devices as stents, splints, inflatable bags (for epistaxis control) or else. Nonetheless, some cases of Pyogenic Granuloma (PG) and/or Lobular Capillary Haemangioma (LCH) located in the nasal cavity were found and two of them deserve special consideration because they are good documents of a causative relationship between PG and a specific and common kind of trauma of the nasal mucosa [2,3]. They report 2 cases of PG after nose packing. The rarity of PG arising in the posterior nasal cavity is stressed [2].

LCH and PG are two designations for the same disease. But the first one would be more appropriate because according to

Bhattacharyya et al. [2] and Miller et al. [4], the lesion is neither pyogenic nor granulomatous. Mills et al. [5] suggested that the accurate, descriptive term for PG is LCH because it emphasizes the essential component of the lesion, namely, a circumscribed aggregate of capillaries arranged in one or more lobules. Nevertheless, PG is still the most popular terminology [3].

In the present paper, our purpose is to report a case of PG (LCH) pedunculated to the nasal septum in the posterior nasal cavity, right side, resected from a patient with a previous history of a 30 days use of a nasogastric tube for feeding (nasal intubation). As far as we know, this is the first report in the literature of such a lesion associated to nasal intubation as the triggering agent.

CASE REPORT

In 1993, a patient, 32 years old, caucasian, male sex, came to consultation with the complaint of a chronic right side nasal obstruction and a history of cranioencephalic trauma, that

occurred 26 years before (1967), followed by several neurosurgical procedures for different subsequent neurological problems. The first one was done on April 16, 1987 (Miguel Couto Hospital, Rio de Janeiro). It was a left sub-temporal craniectomy for evacuating an acute subdural haematoma, as a consequence of cranioencephalic trauma produced by an accidental fall from about 4 meters high. On this occasion, a tracheostomy was done and a nasogastric tube for feeding placed in the right nasal cavity. Certainly, one of the thick and hard former PVC nasogastric tubes, because the modern thin silicone nasoenteric catheters were not available in Brazil before 1976 [6]. After 30 days, the tracheostomy was closed and the nasogastric tube taken out. He has never had a nasotracheal intubation. Orotracheal intubations were used for the general anesthesias performed later for two further neurosurgeries.

Nasal examination using a 30°/4 mm diameter fiberoptic Storz/Hopkins endoscope revealed a conspicuous polypoid tumoral mass in the posterior nasal cavity, right side, clearly pedunculated and attached to the nasal septum near the posterior edge of the vomer (the area V of the nose, [7]). There was also an obstructive septum deflection involving the areas IV



Figure 1. Macroscopic view of the tumor resected.

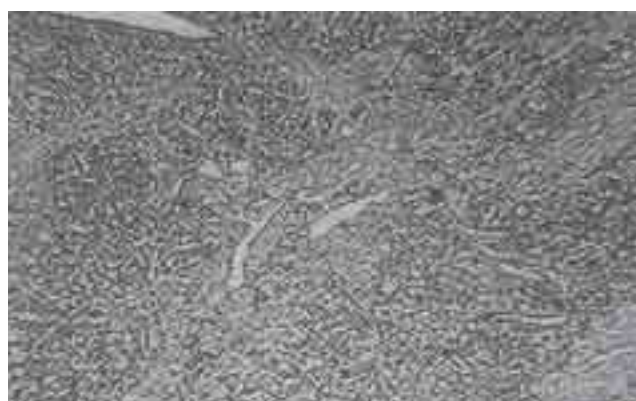


Figure 2. Microscopical section of the lesion. HE stain x 160.

and V of the nose [7] and hypertrophy of the right inferior nasal concha. Skin tests were positive for selected inhalants. Mucopurulent secretion was seen in the right middle nasal meatus and plain x-rays views of the sinuses revealed a moderate swelling of the right maxillary sinus mucosa. Accurate radiological assessment was done prior to surgical intervention in order to exclude intracranial connection or extension.

He underwent surgery for straightening the septum, through the Maxilla-Premaxilla Approach of Cottle et al. [8], lateralization plus volume reduction of the right inferior nasal concha [9] and complete excision of the tumoral mass, on May 18, 1993 in the St. Vincent de Paul Hospital in Rio de Janeiro. Under endoscopic guidance this was perfectly done thanks to the excellent exposure of the lesion, both for visualization and surgical manipulation, provided by the enlarged telescopic view, and the wide access afforded by the bony septum straightening, allied to the cartilaginous septum mobilization plus the right inferior nasal concha lateralization and volume reduction, simultaneously performed, thus making lateral rhinotomy or “degloving” unnecessary. The tumor resected was sent to pathology and the result was: histological and clinical features consistent with the diagnosis of PG (Figures 1 and 2). The patient has been seen for the pertinent follow up and remains until now (2004) completely free of the lesion operated on and the mucosa of the area from where it was resected is looking as normal as the rest of the nasal mucosa. The use of the fiberoptic endoscope offered an excellent view of that area for the immediate detection of any eventual recurrence of the lesion operated on. This successful outcome confirms that local excision is effective treatment for PG [2,4,10].

DISCUSSION

PG is not a granulomatous disease, but granulation tissue that is generated in response to local inflammation. It was originally thought to be a botryomycotic infection, but now is thought to be a response to minor trauma with secondary invasion by microorganisms. Similar lesions can also occur during pregnancy and may be hormone related [11].

No specific aetiologic agent has been found for PG, which is considered an inflammatory overgrowth, rather than a true neoplasm [12]. Kerr [13] considered PG as an overzealous healing response to trauma. Although its aetiology is unclear, PG has long been associated to pregnancy, oral contraceptives and trauma [14].

Kapella et al. [15] reported three cases of LCH of the nasal cavities (two adult and one paediatric). Two had as trigger factor a nasal microtrauma, the third one an oestro-progestative impregnation. Pezzin-Palheta et al. [16] also reported a case of intranasal PG that would have been triggered by digital trauma [17]. Lance et al. [12] presented a case of Pyogenic Granuloma Gravidarum (PGG) occurring in the nasal fossa, an unusual location for this lesion.

Simo et al. [18] report two cases of children probably nose pickers with intranasal PG. Ogunleye and Nwaorgu [19] report-

ed a case of a 45 days old Nigerian boy with a nasal obstruction since birth caused by a PG which was successfully removed and Miller et al. [4] reported a case of LCH arising from the inferior turbinate and floor of the nasal cavity in a patient 52 years old.

The underlying cause of LCH is thought to be local trauma to the skin or mucous membranes, which triggers the formation of this exuberant inflammatory response. Hormonal stimulation has been implicated in causing a variant of LCH called Granuloma Gravidarum (GG) which occurs most commonly on the gingiva during pregnancy. These lesions often regress spontaneously after birth. Intranasal presentation although uncommon is mainly seen in the anterior portion of the nasal septum (Little's area) and on the tip of the nasal conchae [4]. Fonseca et al. [20], in Brazil, related a case of LCH arising from the right inferior nasal concha in a female patient of 25 years old and successfully operated on through the "degloving" approach.

There are two illustrations of PG of the nasal septum in Ash & Raum's [21] "An Atlas of Otolaryngic Pathology" but without any mention to its aetiology or any further worthy detailed information on the subject. However, they point out that PG histological features are not distinguishable from those of LCH. For Mills et al. [5], PG is a LCH that has a unique lobular organization and it is easily distinguished from that of other forms of vascular tumors.

According to Batsakis [22] "*PG is the result of an exaggerated response to relatively minor trauma. Found in a universal distribution of the body, it is very common in the oral mucosa. Following intubation, PG may occur on tonsils or the laryngeal mucosa. Granuloma Gravidarum (GG), predominantly a lesion of the gingiva, is identical in appearance to PG. Appearing in the early months of pregnancy, it usually disappears at the termination of gestation.*" GG or Pregnancy Tumor (PT) is properly speaking a PG of pregnancy [10].

There is a report relating PG to nose-boring: boring of the nose and ear-lobes to allow the wearing of decorative studs is a common custom in caste Hindu women [23]. These authors, in the Madras Medical College Department of Dermatology (India), studied 100 women who had had this boring done. Thirty three gave a history of PG developing at the site of the nose-boring, but none had developed such a lesion at the ear-boring site. For them, these findings suggested that the tissues of the alae nasi are abnormally susceptible to this reaction. The lesions were usually seen on the outer aspect of the alae nasi and only occasionally on the inner aspect [23].

Lameu [24], in Rio de Janeiro (Brazil), in a personal communication declared that in his large experience with nasoenteric intubation for feeding he was used to see patients using silicone catheters (10 F) for years without any nasal or paranasal complication. Then, these kinds of catheters would be harmless to the nasal mucosa integrity.

The most common misdiagnosis for LCH of the tongue was carcinoma and for the nose, papilloma or polyp [5].

Some pathologists call "Granuloma Pyogenicum" the Capillary Haemangiomas presenting a pronounced inflammatory component but "*I do not make this distinction because they are the same kind of lesion, demanding the same treatment and furthermore, it is impossible to distinguish between a Capillary Haemangioma secondarily inflamed, which often is the case in the nose, and a so called Granuloma Pyogenicum*" [25]. Many observers have concluded that PG is a non specific capillary reaction that occurs in a setting of repeated trauma or irritation [5].

In the present case, we are convinced that PG was triggered by the trauma of the nasal mucosa, inflicted by the nasogastric tube (nasal intubation) exactly in the nasal cavity area narrowed by the obstructive septum deflection. The tumor was found attached to the septum mucosa exactly at this place. Additionally, there was a secondary invasion by microorganisms provided by the increased colonization of the mucous secretion stimulated by the presence of the nasogastric tube. An increase of bacterial growth was shown in the intubated nasal cavities [26]. For PG formation, our patient was in similar conditions to those of the patients reported by Bhattacharyya et al. [2] and Sheen et al. [3]. It is: some degree of trauma (produced by the nasogastric tube or the nasal packing) plus increased colonization of the mucous secretion (a common condition in both situations) and probably some degree of infection.

CONCLUSIONS

This case adds to the literature an intranasal occurrence of PG certainly triggered by microtrauma of the nasal mucosa, produced by the long lasting nasal intubation. Together with the ones reported by Sheen et al. [3]; Bhattacharyya et al. [2]; Simo et al. [18]; Kapella et al. [15] and Pezzin-Palheta et al. [16], it would validate the theory that microtrauma of the mucosa is the most probable aetiological agent for intranasal PG formation.

REFERENCES

1. Balestrieri F, Watson CB (1982) Intubation Granuloma. *Otolaryngol Clin N Am* 15: 567-581.
2. Bhattacharyya N, Wenokur RK, Goodman ML (1997) Endoscopic excision of a giant pyogenic granuloma of the nasal cavity caused by nasal packing. *Rhinology* 35: 44-46.
3. Sheen TS, Ko JY, Hsu YH (1997) Pyogenic Granuloma - An uncommon complication of nasal packing. *Am J Rhinol* 11: 225-227.
4. Miller FR, d'Agostino MA, Schlack K. (1999) Lobular capillary haemangioma of the nasal cavity. *Otolaryngol Head Neck Surg* 120: 783-784.
5. Mills SE, Cooper PH, Fechner RE (1980) Lobular capillary haemangioma: the underlying lesion of pyogenic granuloma. *Am J Surg Pathol* 4: 471-479.
6. Vianna R, Lameu E, Maia F (1986) Manual de suporte nutricional Ed. Cultura Medica, Rio de Janeiro (in Portuguese).
7. Cottle MH (1987). The examination of the nose. In: *Rhinology: the collected writings of Maurice H. Cottle*. The American Rhinologic Society, USA. p 154.
8. Cottle MH, Loring RM, Fischer GG, Gaynon IE (1958) The "Maxilla-Premaxilla" approach to extensive nasal septum surgery. *Arch Otolaryng* 68: 301-313.

9. Neves-Pinto RM (1995) Turbinate surgery: when and how to perform it. In M Tos, J. Thomsen, V Balle. *Rhinology: a state of the art*. Kugler Publications, Amsterdam, The Netherlands, pp. 89-95.
10. Bhaskar SN, Jacoway JR (1966) Pyogenic granuloma – clinical features, incidence, histology, and result of treatment: report of 242 cases. *J Oral Surg* 24: 391-398.
11. Richtsmeier WJ, Johns ME (1982) Bacterial causes of granulomatous diseases. *Otolaryng Cl N Am* 15: 487.
12. Lance E, Schatz C, Nach R, Thomas P (1992) Pyogenic Granuloma Gravidarum of the nasal fossa: CT features. *J Comput Assist Tomogr* 16: 663-665.
13. Kerr DA (1951) Granuloma pyogenicum. *Oral Surg.* 4:158-176.
14. Jones JE, Nguyen A, Tabae A (2000) Pyogenic granuloma (pregnancy tumor) of the nasal cavity. A case report. *J Reprod Med* 45: 749-753.
15. Kapella M, Panosetti E, Rombaux P, Delos M, Weynand B (2001) Lobular capillary haemangioma of the nasal cavity: observation of three specific cases. *Acta Otorhinolaryngol Belg* 55: 241-246.
16. Pezzin-Palheta AC, Gosling FJB, Gosling G, Gosling D, Palheta Neto FX (2002) Granuloma piogênico do septo nasal: relato de um caso infrequente na clinica (Pyogenic granuloma of the nasal septum). *Rev Soc ORL Rio de Janeiro* 2: 98-100. (Original in Portuguese).
17. Gosling FJB (2002) Personal communication.
18. Simo R, Carpentier J, Rejali D, Gunawardena WJ (1998) Paediatric pyogenic granuloma presenting as a unilateral nasal polyp. *Rhinology* 36: 136-138.
19. Ogunleye AO, Nwaorgu OG (2000) Pyogenic granuloma, a cause of congenital nasal mass: case report. *Ann Trop Paediatr* 20: 137-139.
20. Fonseca MT, Lacerda MAC, Silva RTF, Barreiros AC (2001) Hemangioma nasal e gravidez : relato de caso e revisão da literatura (nasal hemangioma and pregnancy: a case report and review of the literature.) *Arq Fund Otorrinolaringol* 5: 87-91 (Original in Portuguese)
21. Ash JE, Raum M (1949) *An Atlas of Otolaryngic Pathology* 4th ed. The US Armed Forces Institute of Pathology, Whashington, DC (USA), pp. 67, 194.
22. Batsakis JG (1979) *Tumors of the head and neck, Clinical and pathological considerations*. 2nd ed. The Williams & Wilkins Company, Baltimore, USA.
23. Premalatha S, Thambiah AS (1979) Pyogenic granuloma following the trauma of nose-boring. *Brit J Dermatol* 100: 455-458 .
24. Lameu E (2002) personal communication.
25. Hellquist HB (1990) *Pathology of the nose and paranasal sinuses*. Butterworths and Company, London.
26. Westergren V, Otori N, Stierna P (1999) Experimental nasal intubation: a study of changes in nasoastral mucosa and bacterial flora. *Laryngoscope* 109: 1068-1073.

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