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Sphenochoanal polyp in children. Diagnosis and treatment*

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SUMMARY

Two cases of sphenochoanal polyp (SCP) in children are reported. SCPs originate in the sphenoid sinus cavity, and extend into the choana via the ostium. Symptoms associated with the syndrome include nasal blockage and headaches. Endoscopical examination reveals the presence of a choanal polyp, and the sphenoid origin of the polyp can be determined by CT scan. In cases where the middle meatus is obstructed, an opacity of the maxillary sinus is often observed. SCPs cannot be distinguished from antrochoanal polyp (ACP) by histological means. The treatment of the SCPs involves surgical removal and enlargement of the sphenoid sinus ostium. Ignorance surrounding the existence and the treatment of this syndrome may result in insufficient treatment and the consequent recurrence of the disorder.

Key words: endoscopic sinus surgery, children, sphenochoanal polyp, nasal polyp, sphenoid sinus

INTRODUCTION

The first report of an antrochoanal polyp was made by Killian (1906) and was defined as the expression in the posterior part of the nasal cavity or into the choana of a benign tumour originating from the maxillary sinus mucosa. The location of such a polyp in the sphenoethmoidal recess is a relatively rare occurrence (Weissman et al., 1991). In this paper, we report two cases of sphenochoanal polyp (SCP) with special attention to the value of nasal endoscopic examination, CT scan examination, and histological findings. The pathogenesis and the surgical treatment of SCP are also presented.

CASE REPORTS

Case 1

An 11-year-old boy presented with right nasal obstruction, infraorbital pain, snoring, and chronic posterior purulent discharge. Physical examination revealed a septal deformation consecutive to a childhood trauma, and a blue smooth polyp located in the right nasal cavity and in the nasopharynx. Immunological investigations (prick tests, IgE level) were negative. CT scan showed completely opaque right nasal cavity, right maxillary sinus (Figure 1); the sphenoid sinus was also opaque, but this opacity was interpreted only as a consequence of the polyp presence, which could block the sphenoethmoidal recess. Endonasal sinus surgery was performed under general anaesthesia. First, the polyp was removed and then, through a middle meatal antrostomy, the maxillary sinus was explored and the mucosa removed. The site of the origin of the polyp was not found in the maxillary sinus. Histological examination revealed a cyst cavity surrounded by an oedematous stroma, covered by a normal stratified respiratory epithelium. The post-operative diagnosis was "antrochoanal polyp". Four months later, the patient presented with similar symptoms, and a recurrence of the polyp at the same location was observed. The CT scan showed an opacity of the right sphenoethmoidal recess and right sphenoid sinus (Figure 2). The maxillary antrum was normal and enlarged. During surgery using an endonasal approach we found a polyp originating from the sphenoid sinus; the removal of the polyp was easy, and a wide sphenoidotomy was performed. The site of the origin of the polyp was located in the inferolateral part of the right sphenoid sinus. The antrostomy examination revealed a normal aspect of the maxillary mucosa. Histological examination of the polyp led to a similar conclusion, i.e. "antrochoanal polyp". After three-year follow-up no recurrence was observed.

Case 2

A seven-year-old boy complained of right nasal blockage, snoring, moderate hearing loss, and headache. Physical examination revealed a solitary mass located in the choana. A serous otitis media was also present. Immunological investigations (prick tests, IgE assessment) were negative. Axial and coronal

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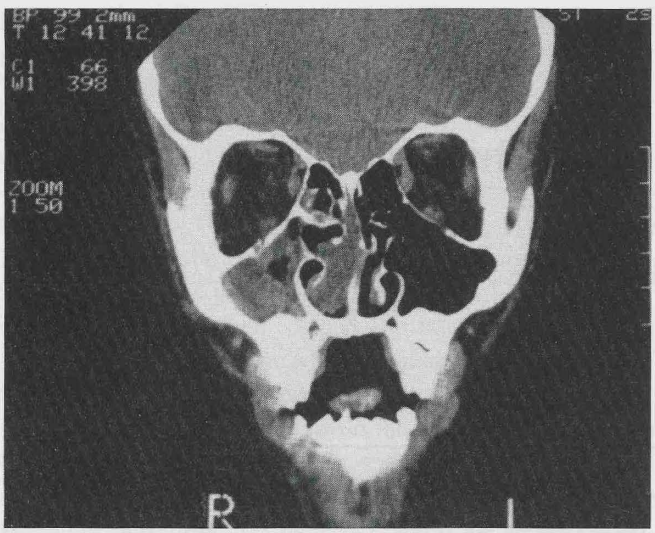

Figure 1. Case 1: pre-operative CT-scan (coronal section). The right maxillary sinus and the right nasal cavity are opaque. This opacity was interpreted as a nasal polyp, and the sphenoid sinus filled was interpreted as a consequence of the nasal polyp (ostium blockage).

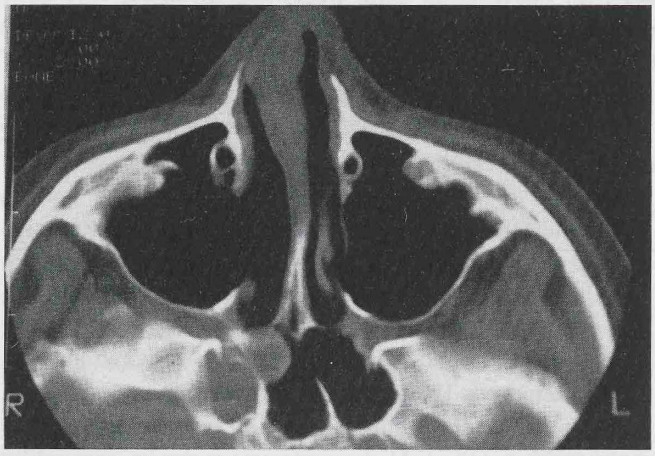

Figure 2. Case 1: At four-month follow-up, recurrence of the polyp was observed in an axial CT-scan section. An opacity of the right sphenoethmoidal recess and the right sphenoid sinus is found. The maxillary antrum was normal and sufficiently enlarged.

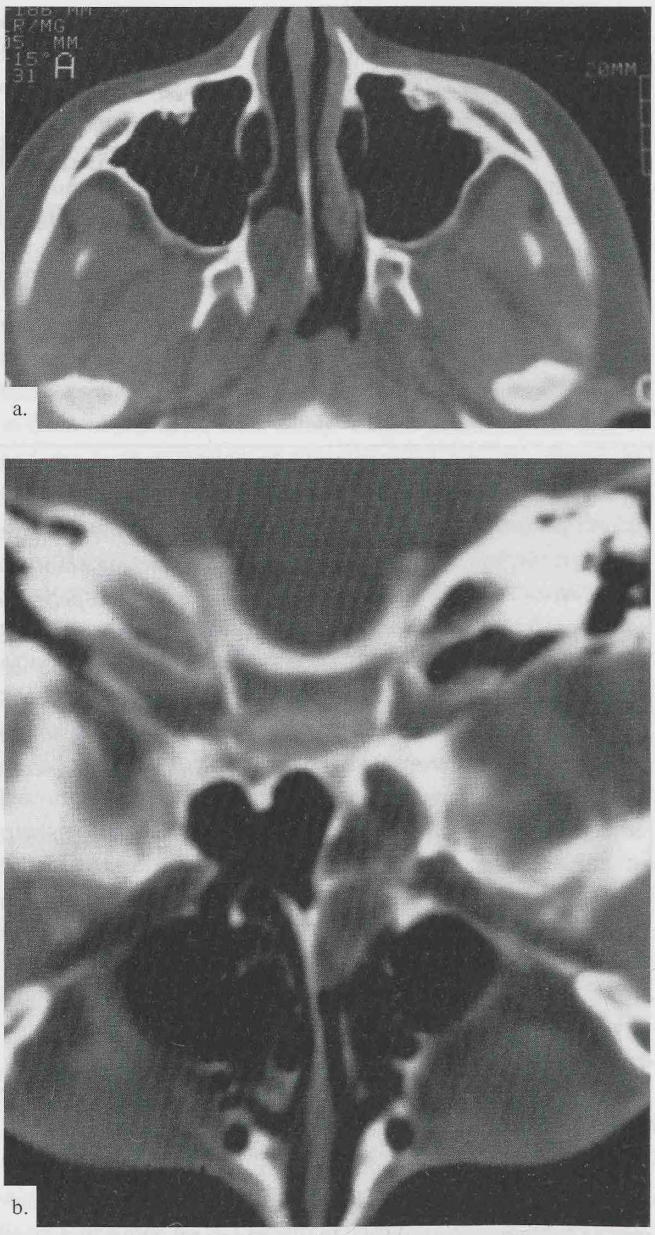

Figure 3. Case 2: Axial CT-section showing the right sphenoid sinus to be filled with soft tissue, and a small polyp was present in the right part of the epipharynx. Ethmoidal sinuses and maxillary sinus are normal

CT-scans demonstrated the right sphenoid sinus to be filled with soft tissue, and a small polyp was identified in the right part of the epipharynx (Figure 3). Endoscopic removal of the polyp was performed under general anaesthesia and a sphenoidotomy was performed to ensure that the sphenoidal part of the polyp was completely removed. The histological appearance of the polyp showed a cyst with oedema and moderate inflammation of the stroma surrounded by normal respiratory epithelium. A sphenochoanal polyp was diagnosed. At six-month follow-up no recurrence was observed.

DISCUSSION

Sphenochoanal polyp is an uncommon disease. The first report of SCP is generally attributed to Zuckerkandl, and SCPs and ACPs have been also described by Prusad et al. (1970). Two publications relating to this subject have recently appeared in the radiology literature (Weissman et al., 1991; Hayes and Lavelle, 1989). We wish to describe the differences and the similarities between the sphenochoanal polyp (SCP) and the antrochoanal polyp (ACP) as exemplified by the two case histories, and to give diagnostic and therapeutical guidelines. The point of origin of the ACP is located either around the maxillary sinus ostium or in the mucosa of the maxillary sinus (Berg et al., 1998). The SCP has a pedicle arising from the sphenoid sinus' mucosa (case No. 1) or from the sphenoid sinus ostium's mucosa (case No. 2). The SCP extends through the sphenoid ostium into the sphenoethmoidal recess, and then into the choana. Histologically, SCPs and ACPs are similar in appearance (Berg et al., 1998). The centre of the polyp consists of a cyst (or microcysts) surrounded by oedematous stroma with some infiltration of inflammatory cells. The external surface of the polyp is covered by respiratory epithelium in which some metaplastic areas can be found. It is not possible to differentiate ACPs from

SCPs by light-microscopical examination (cases Nos. 1 and 2). The pathogenesis of ACP is related to expansion of an intramural cyst of the maxillary sinus (Berg et al., 1998), secondary to a cyst's lymphatic vessel thrombosis caused by inflammation due to sinus infection (Piquet et al., 1992). The cyst grows following the thrombosis, and protrudes into the nasal cavity. There is no evidence to suggest that the pathogenesis of SCP is different from that of ACP. Since little information is gained from pathological examination, clinical presentation is crucial for the diagnosis. The symptoms of SCP consist of nasal blockage due to the progression of the polyp into the nasal cavity and the choanae and headaches causing by blockage of sphenoid sinus. In some cases, patients experience conductive hearing loss resulting from obstruction of the Eustachian tube by the polyp, as demonstrated in case No. 2 or as reported by Weissman et al. (1991). The clinical presentation of SCP and ACP is often similar (unilateral nasal blockage), and endoscopic examination of the nasal cavity shows a polyp located in the choana. It is believed that the origin of the SCP pedicle is in the sphenoethmoidal recess, whereas ACPs originate in the middle meatus. In the two cases cited in this paper, endoscopic examination was not so conclusive. We observed only the presence of a diffuse mass in the choana, and it is difficult to differentiate between an ACP and a SCP by nasal endoscopic means alone. There is no association between SCP and allergy or immunological deficiencies and a CT scan is necessary to make the diagnosis. In SCP, coronal and axial CT-scans reveal an unilateral polyp filling the sphenoid sinus and extending through its ostium into the posterior choana (Weissman et al., 1991). In ACPs, the polyp is located in the maxillary sinus, and extends into the choana. These two disorders can be distinguished by CT scans (Weissman et al., 1991; see Figure 3), although difficulties may be encountered if a sinusitis exists following maxillary sinus blockage by the SCP. In this case, the maxillary sinus may appear opaque and an incorrect diagnosis of ACP may be made, as in case No. 1 (Figure 1). In a study involving five observations, Weissman et al. (1991) did not report such an eventuality. The treatment of SCP requires a surgical intervention and there are certain similarities between the treatment of SCP and ACP. The sphenoidal part of the polyp should be removed to avoid recurrence, as demonstrated in case No. 1. Endoscopic transnasal surgery is the advisable approach. The nasal part of the SCP is removed, the sphenoid sinus is enlarged, and the sphenoid sinus cavity is explored to identify the origin of the pedicle which is then removed in its totality. Some differences in the treatment of ACP and SCP should be emphasized. For ACP (Kamel, 1990), the insufficiency of removal by an endoscopic approach can be corrected with a Cadwell-Luc approach (Piquet et al., 1992). In children, a transseptal approach of the sphenoid sinus is not advisable during growth, so that total removal should be performed only by endoscopic approach. SCP surgery can be more difficult than the surgery of ACP by a middle meatus approach, and more dangerous since the internal carotid artery and the optic nerve are present in the sphenoid lateral wall. The CT scan is useful in identifying the location of these elements. Another problem is that choanal polyps are usually found in children or adolescents (both children in our report), and as the sphenoid sinus is the last to develop during the growth, a hypotrophic sphenoid sinus could be encountered during the surgical approach, leading to difficulties in totally removing the SCP and for opening the sinus sufficiently.

CONCLUSION

When a choanal polyp is found, two hypotheses exist: ACP or SCP. Endoscopic examination and CT scan are necessary to: (1) give a diagnosis; (2) evaluate the volume of the polyp in the nasal cavity and in the sinus; (3) identify the origin of the pedicle; and (4) locate the surgical landmarks for sphenoid sinus surgery. The major factors leading to an incorrect diagnosis of ACP when a SCP is present are: (1) the ignorance of the SCP pathology; and (2) a SCP causing obstruction of the maxillary sinus, obstruction, which could wrongly lead to the diagnosis of ACP. An incorrect diagnosis leads to an inappropriate surgical procedure with no exploration of the sphenoid sinus, and sometimes an antrostomy which could have been avoided. This error exposes the patient to the risk of SCP recurrence, by development of the pedicle present in the sphenoid sinus. Surgical control of sphenoid sinus must be complete and should be performed by an experienced rhinosurgeon.

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