Pediatr Radiol (2005) 35: 1107–1109
DOI 10.1007/s00247-005-1500-0

CASE REPORT

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Hairy polyp of the pharynx obscured on physical examination by endotracheal tube, but diagnosed on brain imaging

Received: 16 February 2005 / Revised: 12 April 2005 / Accepted: 19 April 2005 / Published online: 4 June 2005

Abstract We report a case of hairy polyp of the pharynx diagnosed on brain MRI in order to stress the need to examine carefully all tissues included on an imaging study, even those outside the clinically stated region of interest, and to remind practitioners to consider unusual as well as common etiologies for neonatal respiratory distress. Our case is unique in that thorough examination of a brain MRI, ordered in the evaluation of presumed central apnea, led to the correct diagnosis.

Keywords Respiratory distress · Neonate · Nasopharyngeal obstruction · Hairy polyp · MRI

Introduction

Although hairy polyps are an unusual etiology for respiratory distress in the newborn, they are the most common congenital nasopharyngeal mass [1, 2]. These lesions might be soft and can be obscured by endotracheal intubation, so they can be easily overlooked during physical examination. Thorough examination of a brain MRI led to the correct diagnosis in our case.

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Case report

A baby girl presented with poor feeding, noisy breathing, and cyanosis shortly after birth. She was born at 38 weeks' gestation after an uncomplicated pregnancy to a healthy 35-year-old woman. APGAR scores at 1 and 5 min were eight and nine, respectively. Initial oxygen saturations were between 60 and 80%, and they improved to the nineties after the infant was placed under an oxygen hood with a FiO_2 of 60%. However, air movement was reported to be poor, and the infant was intubated. On evaluation, no congenital abnormalities were evident, and her nares were patent. Oral cavity and oropharyngeal examination was reported as limited secondary to endotracheal intubation. Chest radiograph was normal. She was transferred to our institution with a diagnosis of presumed central apnea.

Brain MRI was requested to evaluate for central nervous system abnormalities. Although the brain appeared normal, a heterogeneous partly enhancing pharyngeal mass was found (Fig. 1). In order to assess the extent of the mass and rule out intracranial or intraspinal connection, the pediatric otolaryngology service ordered dedicated head and neck CT. It demonstrated a 2.5-cm mass with mainly fatty attenuation protruding in a polypoid fashion into the pharyngeal airway (Fig. 1). There was no evidence of intracranial or intraspinal communication.

When the infant was 11 days old, she was taken to the operating room, and the mass was found attached to the pharynx by a fibrous stalk. It was covered with fine hair. The mass did not affect nearby important structures, such as the eustachian tubal orifices, and was easily removed at its base with suction. There was no residual mucosal defect. After surgery, the patient was extubated without difficulty and had an uncomplicated post-operative hospital course. Follow-up visits at 1 and 7 months after surgery showed no recurrence and no further respiratory or feeding difficulties.

Histopathology revealed a non-cystic soft-tissue mass with mature squamous epithelium containing skin appendages with a fibroadipose and cartilage core.

Discussion

Hairy polyps are a rare benign tumor that can occur anywhere in the body [1]. They are particularly unusual in the pharynx, but when they do occur there, they most commonly arise as a pedicled mass from the lateral wall of the nasopharynx or the superior aspect of the soft palate [1]. These lesions are rare, with an incidence of fewer than 1:40,000 live births and only 137 cases reported. However, despite their rarity, they are the most common congenital nasopharyngeal mass [2–4]. Hairy polyps of the pharynx are detected at or shortly after birth secondary to respiratory distress or feeding difficulties [2]. However, depending on the size, which can range between 0.5 and 6 cm, and location of the lesion, they might be detected as an incidental finding in late childhood or in adulthood [1–4]. They might also present as a visible mass in or protruding from the mouth, although, as in our case, visualization can be problematic because of the location of the mass and the presence of an endotracheal tube.

The differential diagnosis for a congenital nasopharyngeal mass is extensive. The use of CT and MRI can shorten the list of differential diagnoses. On imaging, hairy polyps are characterized as a polypoid lesion consisting mainly of lipid with a usually fibrous stalk and no intracranial or intraspinal extension [5]. In our case, the low attenuation seen on CT and high precontrast T1 signal on MRI both supported a predominantly lipid-containing lesion. The lesion's stalk showed attenuation and signal consistent with fibrous tissue, which enhanced slightly, as expected for fibrous tissue. These tissue characteristics eliminated lesions such as neuroblastoma, hemangioma, and embryonic cysts of thymic, lingual, or thyroglossal origin. The absence of intracranial or intraspinal extension helped to exclude craniopharyngioma, Rathke cyst, pharyngeal pituitary remnant, glioma, meningocele, or neurenteric cyst. However, based on imaging alone, the lesion could not be distinguished from a teratoma, hamartoma, or dermoid [2].

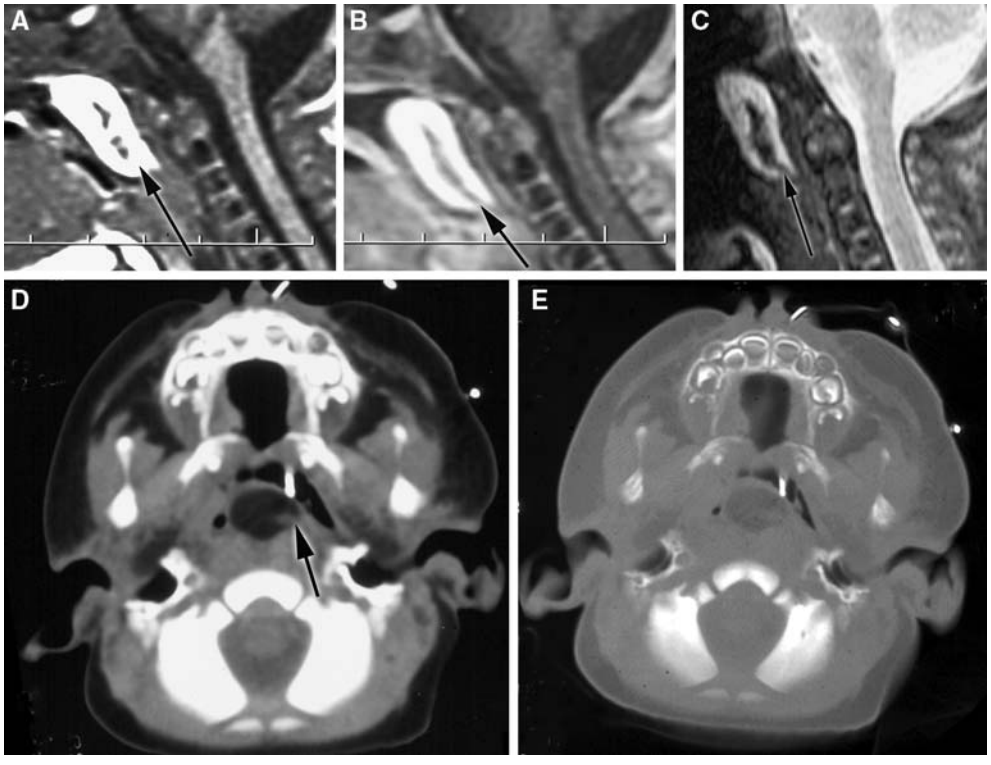

Fig. 1 CT and MRI of a newborn girl presenting shortly after birth with poor feeding, noisy breathing, and cyanosis. **A** Midline sagittal T1-weighted MRI shows a polypoid pharyngeal mass that is mainly high-signal with a low-signal central stalk (*arrow*). **B** Midline sagittal T1-weighted MRI after IV contrast medium shows that the lesion's stalk (*arrow*) slightly enhances, but the rest of the lesion does not enhance. **C** Midline sagittal T2-weighted fast spin-echo (*FSE*) MRI shows the lesion to be mainly high-signal with a moderately low-signal central stalk (*arrow*). **D** Axial CT at the level of the pterygoid plates, displayed in soft-tissue window, shows the pharyngeal mass to be of predominantly low attenuation, containing a moderate-attenuation stalk (*arrow*). The combination of low attenuation on CT with high signal on both FSE T2-weighted and T1-weighted MRI is diagnostic of lipid. The stalk's imaging character is consistent with fibrous tissue in that it shows moderate attenuation on CT, low-to-moderate signal on both FSE T2-weighted and T1-weighted MRI, and mild enhancement. **E** Axial CT at the same level, displayed in the bone window, shows no bony involvement

Hairy polyps are composed of a mesodermal core with an ectodermal lining. The mesodermal core typically consists of fibroadipose tissue, although it might include muscle or cartilage. The ectodermal lining consists of mature stratified squamous epithelium with skin appendages [1]. Hairy polyps lack tissue of endodermal origin [2]. There is no consistent classification of hairy polyps in the literature. They have been classified as teratomas, hamartomas, dermoid cysts, and choristomas [6]. Hairy polyps have most commonly been classified in the literature as teratomas, but they do not have tissue from all three germinal cell layers, which is diagnostic of teratomas. In addition, teratomas occur equally in males and females, but hairy polyps are six times as likely to affect females as males [1, 2]. Furthermore, unlike teratomas, there have been no reports of malignancy arising from a hairy polyp. Hamartomas consist of excessive histologically normal tissue in an anatomically normal location. This is also not consistent with hairy polyps, as normally the pharynx does not contain stratified squamous epithelium. Dermoids are cystic lesions that contain desquamated epithelial products [7]. A hairy polyp is distinct from a dermoid, because the polyp does not include ectodermal inclusion cysts within its mesodermal core [2]. A choristoma is a benign mass consisting of histologically normal tissue in an anatomically abnormal location [1, 6]. Therefore, in our opinion, choristoma is the most accurate classification of the hairy polyp. This classification is merely descriptive and gives no indication of its etiology [4].

The embryogenesis of pharyngeal choristomas is unclear. In 10% of cases they are associated with other first or second branchial arch malformations, and in another 10% of cases they are associated with a cleft palate, but not a cleft lip [2].

Choristomas of the head and neck are best treated by simple surgical excision at the pedicle base [1, 6, 7]. The definitive diagnosis is made by histopathologic analysis. Consistent with their classification as benign lesions, there have been no reports of recurrence after complete excision [6].

In summary, although the overall incidence of pharyngeal hairy polyps is low, they are the most common congenital nasopharyngeal mass. For neonates presenting with respiratory distress, hairy polyps are an important diagnostic consideration and are usually detected on direct physical examination or by flexible endoscopy. However, in our case, the diagnosis was not suspected prior to diagnostic imaging, likely because of the presence of an endotracheal tube. Our case provides a reminder that all portions of imaging studies must be carefully evaluated, even those outside the clinically stated region of interest, and that all possible etiologies for respiratory distress in the newborn must be considered before reaching a diagnosis of exclusion.

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