

Radiological Case Report / Caso Clínico

Parotid Hemangioma in a Child: an Uncommon Imaging Diagnosis*Hemangioendotelioma da Parótida: um Diagnóstico Imagiológico Incomum*Gisela Rio¹, Nuno Almeida Costa², João Soares Fernandes³, Helena Torrão², Pedro Oliveira Silva¹¹Department of Radiology, Hospital Braga, Braga, Portugal²Department of Radiology, IPO, Porto, Portugal³Department of Neuroradiology, Hospital Braga, Braga, Portugal**Address**

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Abstract

Noninflammatory masses of the salivary gland region in children are extremely rare. Nevertheless, hemangioma of the parotid gland is the most common tumor of the salivary glands in childhood, accounting for about 50% of all cases.

Physical examination is usually diagnostic in typical cases and imaging modalities can strengthen the suspected diagnosis in difficult cases.

We present the case of a 1 month and 18-day-old child with right submandibular of sudden onset and painless swelling. There was no alteration of the overlying skin. Ultrasound demonstrated an enlarged and heterogeneous gland with increased vascularization that could represent either an infectious process or a vascular malformation. Magnetic Resonance Imaging performed later demonstrated a lobulated mass replacing almost the entire right parotid gland and confirmed the diagnosis of hemangioma. The child then started treatment with propranolol and the swelling reduced considerably.

This case illustrates an atypical presentation of a parotid hemangioma with no involvement of the skin overlying the lesion, thus making diagnosis challenging. Therefore, it is essential to know the imaging features associated with hemangioma of the parotid gland in order to be able to identify this lesion on radiological studies and avoid an unnecessary biopsy.

Keywords

Swelling; Hemangioma; Vascular malformation; Parotid gland; Ultrasound; Magnetic resonance imaging.

Resumo

Os tumores não inflamatórios das glândulas salivares são extremamente raros em crianças. O hemangioma da glândula parótida é, no entanto, o tumor mais comum das glândulas salivares na infância, representando cerca de 50% dos casos. O exame físico é geralmente diagnóstico nos casos típicos e os exames de imagem podem auxiliar no diagnóstico nos casos mais difíceis. Apresentamos o caso de uma criança de 1 mês e 18 dias de idade com tumefação submandibular direita indolor, de início súbito. A ecografia demonstrou uma área hipocogénica com aumento da vascularização que poderia representar um processo inflamatório /infeccioso ou uma malformação vascular. A Ressonância Magnética realizada posteriormente demonstrou uma formação lobulada que substituiu praticamente toda a glândula parótida e confirmou a suspeita de hemangioma. A criança iniciou o tratamento com propranolol e a tumefação diminuiu consideravelmente.

Este caso ilustra uma apresentação atípica de um hemangioma parotídeo, uma vez que não existe envolvimento da pele suprajacente à lesão, dificultando desta forma o diagnóstico. Conhecer as características imagiológicas do hemangioma da parótida é por isso essencial para se chegar ao diagnóstico imagiológico e evitar biópsias desnecessárias.

Palavras-chave

Tumefação; Hemangioma; Malformação vascular; Glândula parótida; Ecografia; Ressonância magnética.

Introduction

Hemangioma of the parotid gland, also known as hemangioma, represents only 1% to 5% of all salivary gland tumors, however, it is the most common tumor of the salivary glands in childhood.¹ The female sex is affected three times more frequently than the male sex; the mean age of onset is around 4 months, and most of them are diagnosed during the first 16 months of life.²

Congenital hemangiomas are classified on the basis of the pathological anatomy as capillary or cavernous type. Congenital capillary hemangiomas prevail in the first year of life and represent 90% of the tumors involving the parotid gland, whereas cavernous hemangiomas occur in older

children and adults and most patients are older than 16 years of age.¹

Capillary hemangiomas manifest as a soft tissue mass that becomes evident shortly after birth and grows rapidly during the first year of life, undergoing slow spontaneous regression during late childhood. Since resolution is usually complete by adolescence, only 10% need treatment.³

Cutaneous involvement of the overlying skin is found in more than 50% of the cases and there may be cutaneous hemangiomas³ associated.

This case illustrates an atypical presentation of a parotid hemangioma without involvement of the skin overlying the lesion, causing a diagnostic challenge. Therefore, it is

essential to understand the imaging features associated with hemangiomas of the parotid gland in order to confirm the diagnosis and avoid unnecessary biopsy.

Case Report

A 1-month and 18-day-old girl presented to the emergency department for a recent onset of right swelling in the preauricular area that had been progressing for about two days. Physical examination confirmed the presence of painless swelling, which seemed to cause a slight erosion of the angle of the mandible. There were no other important features, namely redness of the surrounding skin or cutaneous marks. The pregnancy and delivery had been unremarkable and the child was otherwise healthy.

Ultrasound demonstrated an hypoechoogenic area with lobulated contours that involved almost all superficial lobe of the parotid gland (fig. 1).

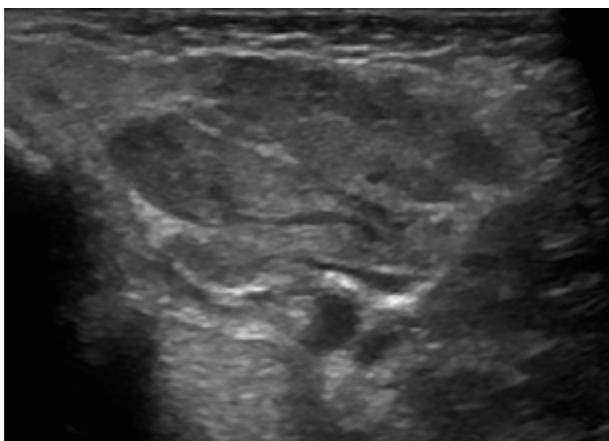


Figure 1 – Ultrasound image of the right parotid gland shows an enlarged and heterogeneous gland with an hypoechoic area replacing almost the entire superficial lobe.

On Color Doppler ultrasound there was increased internal vascularization with numerous large blood vessels within the mass (fig. 2).

The hypothesis of an infectious process (parotiditis) was considered as the most probable diagnosis, even though the hypothesis of vascular malformation was also thought of, and imaging reevaluation was advised after proper treatment. One week later the symptoms remained similar and a new ultrasound was performed, with overlapping findings.

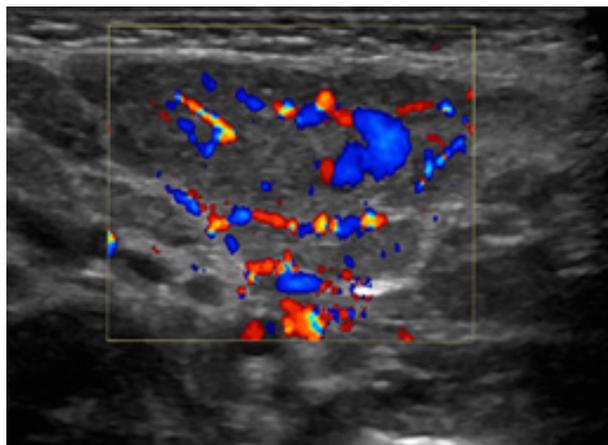


Figure 2 – Color Doppler ultrasound showed marked vascularity within the gland.

Magnetic resonance imaging (MRI) demonstrated the presence of a lobulated lesion centered to the right parotid space replacing almost the entire gland. The lesion was isointense to the muscle on T1 weighted images and hyperintense on STIR. There were also large vessels within the mass that could be seen as flow voids (Fig 3).

After gadolinium administration, an intense and homogeneous enhancement was seen as well as multiple prominent vascular structures.

These imaging features confirmed the diagnosis of hemangioma of the parotid gland. Since this lesion caused compression of the sternocleidomastoid muscle with associated symptoms, treatment with propranolol was started. The child did not develop any adverse effects from the treatment and after one year there was a marked regression of cervical swelling.

Discussion

Noninflammatory masses of the salivary gland region in children are extremely rare.⁴ Hemangioma of the parotid gland, also known as hemangioma, represents only 1% to 5% of all salivary gland tumors, however, it is the most common tumor of the salivary glands in childhood.¹

Because of its benign nature, clinical and imaging diagnosis is essential in order to avoid unnecessary biopsies.⁵

The diagnosis of a hemangioma of the parotid gland is based on the typical clinical history of a mass that becomes evident after birth and shows rapid growth. The natural

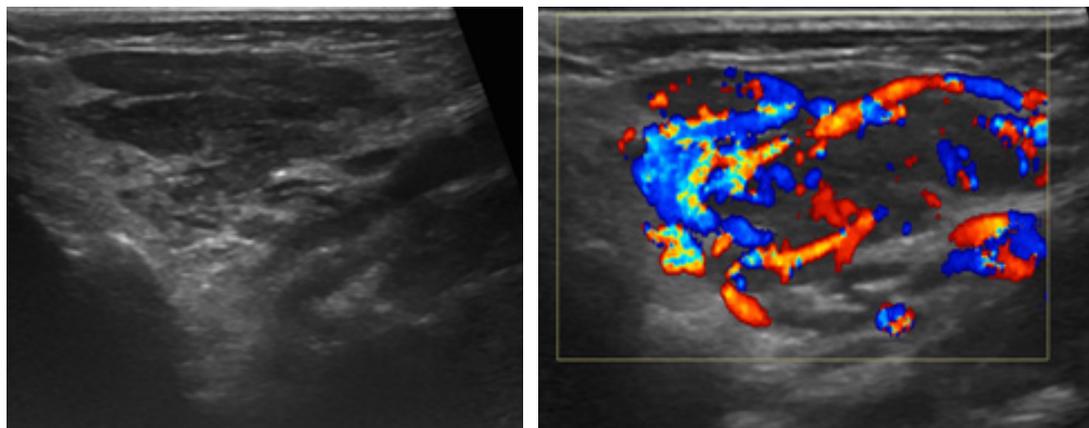


Figure 3 – One week later a new ultrasound showed similar findings, better depicting the hypoechoic lesion. On Color Doppler numerous large intratumoral vessels can be seen.

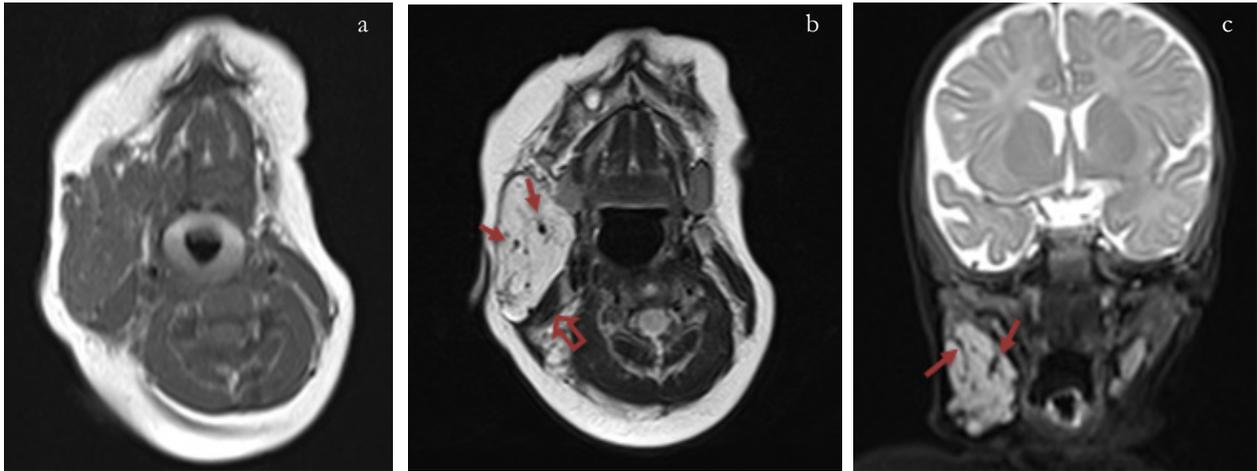


Figure 4 – MRI demonstrates a mass of lobulated contours on the right parotid gland, replacing almost the entire gland, showing isointensity on axial T1WI (a) and hyperintensity on axial T2WI (b) and coronal STIR images (c); numerous intratumoral vessels that can be seen as flow voids (small solid arrows) can be seen. There is also compression of the ipsilateral sternocleidomastoid muscle (open arrow).

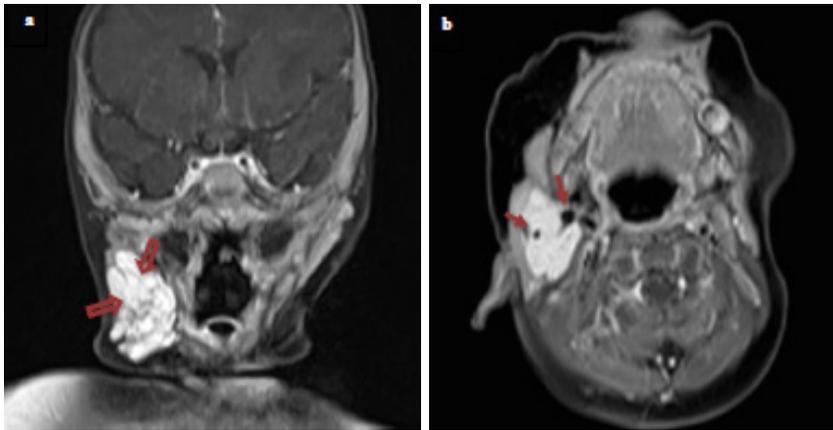


Figure 5 – Coronal (a) and axial (b) contrast-enhanced T1WI images show intense enhancement of the solid portion of the mass. Extension into the deep lobe is well shown (b). Numerous large vessels (small solid arrows) can be seen within the lesion as well as non-enhancing septae (open arrows).

history is a mass that rapidly increases in size in childhood followed by a gradual and continuous involution up to 5 to 8 years.⁵ The presence of associated “strawberry skin” spots or the involvement of the skin overlying the lesion helps to confirm the diagnosis; if these findings are absent, the diagnosis may become challenging. Imaging studies help to make the diagnosis in those difficult cases.³

Ultrasonography is part of the initial approach given its safety, low cost and the possibility of being performed without sedation.⁵ It also allows the exclusion of infectious etiology.¹ The typical ultrasound findings of a hemangioma consist of the presence of a homogeneous mass that replaces almost the entire parotid gland, with lobulated contours, fine internal septa and various intratumoral vascular structures.^{6,7} The identification of numerous vessels within the lesion is essential for the radiological diagnosis.⁵

Magnetic resonance imaging demonstrates the presence of a mass in the parotid gland with lobulated contours, which is isointense to muscle in T1-WI and hyperintense in T2-WI, with prominent vascular flow voids within.¹ After gadolinium administration there is homogenous enhancement and the identification of large tortuous vessels within the lesion.⁵ MRI also provides useful information on the size and deep extent of the tumor and its relationship to adjacent structures.⁶

The solid component of the hemangiomas distinguishes these lesions from other vascular lesions, including cystic lymphatic malformations (cystic hygroma), as the later does

not demonstrate extension beyond the parotid and does not contain prominent vessels.⁵

Other differential diagnoses consist of rhabdomyosarcoma, which is rare in childhood; congenital infantile fibroma, usually an heterogeneous lesion (unlike hemangioma); solitary infantile myofibromatosis, which is a hypovascular lesion; and sialoblastoma, which in addition to being very rare does not present flow voids on MRI.⁸

Given the high probability of spontaneous regression, parotid hemangiomas may not receive treatment. Nevertheless, their rapid growth may cause cosmetic problems, and also, rarely, signs of heart failure may appear in cases of significant shunt. In addition, obstruction and/or distortion of adjacent structures as well as mass ulceration are potentially serious complications.³

Surgical resection is not recommended because of the risk of damage to the facial nerve and the favorable prognosis with expectant management.¹

In the past, large symptomatic hemangiomas were treated with systemic corticosteroids. However, various studies have reported the advantages in using propranolol in the treatment of infantile hemangiomas.⁹⁻¹³ Propranolol showed to be clinically effective, resulting in fewer surgical interventions needed, and well tolerated with minimal adverse effects. Therefore, propranolol should be the first line treatment used for complicated hemangiomas.³

Conclusion

In patients with a typical clinical history, the diagnosis of hemangioma of the parotid gland is usually straightforward. However, in atypical cases, when there is no involvement of the skin overlying the lesion, the diagnosis can be

challenging. Thus, it is important to know its imaging features in order to be able to identify this lesion on radiological studies and avoid unnecessary biopsies.

Received / Recebido 04/01/2019

Acceptance / Aceite 18/02/2019

Ethical disclosures / Divulgações Éticas

Conflicts of interest: The authors have no conflicts of interest to declare.

Conflitos de interesse: Os autores declaram não possuir conflitos de interesse.

Financing Support: This work has not received any contribution, grant or scholarship.

Supporte financeiro: O presente trabalho não foi suportado por nenhum subsídio ou bolsa.

Confidentiality of data: The authors declare that they have followed the protocols of their work center on the publication of data from patients.

Confidencialidade dos dados: Os autores declaram ter seguido os protocolos do seu centro de trabalho acerca da publicação dos dados de doentes.

Protection of human and animal subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Proteção de pessoas e animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia da Associação Médica Mundial.

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