Cytological diagnosis of deep-seated cellular hemangioma of the parotid gland by using cell button technique

ABSTRACT

Intraparotid hemangioma of the children is a rare neoplasm, posing diagnostic dilemma to the diagnosticians as well as treating clinicians. A 2-month-old male infant presented with a diffuse swelling in the parotid region since birth that was gradually increasing in size. The ultrasonography (USG) report was suggestive of a right intraparotid mass of uncertain etiology; whereas magnetic resonance imaging (MRI) report inclined toward a mass associated with chronic inflammatory pathology. Fine-needle aspiration cytology (FNAC) suggested two differentials — a vascular neoplasm of the parotid gland and a spindle cell neoplasm with increased vascularity. The lesion was reaspirated and a cell button was constructed from the aspirated material to reach a conclusive diagnosis by histopathological evaluation and immunohistochemistry (IHC) before attempting any intervention to treat the infant. The final diagnosis after histopathological and IHC studies was given as deep cellular intraparotid hemangioma. Subsequently, the patient was treated with single sitting bleomycin sclerotherapy. A simple technique of cell button resulted in sparing of hospitalization and surgical procedure in the infant.

Key words: Cell button; cytology; hemangioma; parotid gland

Introduction

Parotid gland hemangioma seldom arises in children and often leads to a diagnostic conundrum.[1] Cytology literature on this relatively rare neoplasm is sparse as the diagnosis on Fine-needle aspiration cytology (FNAC) is difficult owing to
its paucicellularity and hemodilution. The present case highlights the role of FNAC and a simple cytological technique of making cell button in such cases, which plays an important decisive role in the management of this tumor.

**Case Report**

A 2-month-old male infant presented with right-sided cheek swelling that was noted shortly after the birth and was gradually increasing in size. Developmental milestones of the child were within normal range. His birth history and medical history were noncontributory.

On examination, the swelling was diffuse having irregular outer edges, measuring 2 cm × 2 cm. It was slightly red in color, soft, nontender, and was not associated with any elevated temperature or bruit/thrill.

Ultrasonography (USG) exhibited a mass in right parotid gland of uncertain etiology. Magnetic resonance imaging (MRI) revealed a right parotid gland mass involving the deep lobe, measuring 4.5 cm × 1.3 cm in size, and appearing to be hyperintense on T2-weighted (T2W) and hypointense on T1-weighted (T1W) images. The parotid duct was not dilated. A radiological diagnosis of chronic inflammatory pathology was made.

On FNAC, two passes were given to two different areas of right parotid region swelling. Both attempts yielded sanguineous aspirates. The smears were drawn and stained with May-Grunwald-Giemsa (MGG) and hematoxylin and eosin (H&E) stains. The smears were cellular and revealed against a background of hemorrhage, elongated bland spindle cells which were scattered singly as well as arranged in three dimensional groups. The spindle cells exhibited scant-to-moderate amount of cytoplasm with oval-to-spindly nuclei with an even distribution of slightly coarse chromatin. No anaplasia, mitosis, or prominent nucleoli were noted. Occasional acini and ductal structures were also identified. Based on these findings, two possibilities were suggested—a vascular neoplasm of the parotid gland, possibly hemangioma, and a spindle cell neoplasm with increased vascularity.

The lesion was reaspirated and a cell button was made to reach a conclusive diagnosis by histopathological evaluation and immunohistochemistry (IHC) studies before attempting any intervention to treat the infant. The cell button was made by the reaspirated FNAC sample that was blown onto a clean and dry glass slide. The drop was left undisturbed for a few seconds in order to adhere without drying. The slide with the sample was then immersed in 95% ethanol and left to fix. The solidified fixed “cell button” was carefully removed from the slide with a scalpel and processed routinely like any small biopsy and 3-4 mm sections were cut and stained with H&E stain.

The H&E stained sections revealed lobules separated by thin strands of normal connective tissue. The lobules contained plump spindle shaped endothelial cells lining vascular spaces with inconspicuous lumens. Some areas were more solid and organized containing a proliferation of endothelial cells. No significant mitotic figures were seen.

![Figure 1: (a) Clinical presentation, (b) MRI showing lesion in parotid region, (c) smear showing oval-to-spindle-shaped cells in clusters and also scattered singly against a hemorrhagic background (MGG stain, ×100), (d) cellular smears showing cluster of spindle-shaped cells arranged in compact, 3-dimensional coils (MGG stain, ×400)](image)

![Figure 2: (a) Smear showing 3-dimensional clusters of spindle-shaped cells (H and E stain, ×100), (b) a group of spindle-shaped cells (H and E stain, ×200), (c) section showing lobules of spindle-shaped cells and endothelial cells lined vascular spaces (H and E stain, ×100), (d) section showing solid and organized area exhibiting proliferation of endothelial cells along with small open spaces lined by uniform plump to flattened cells (H and E stain, ×400)](image)
On IHC, prominent vascular spaces lined by CD-34 positive flattened endothelial cells were seen, which confirmed the endothelial origin of the tumor. Thus, a final diagnosis of deep cellular hemangioma of the parotid gland was made and the patient was taken up for conservative management by single sitting injection sclerotherapy by bleomycin, which led to visible regression of the lesion. Complete regression occurred over a period of 1 year with no further complications.

Discussion

Hemangiomas are benign vascular tumors that often present in an unusual or aggressive fashion in the salivary glands, mainly involving the parotid gland.[3]

Deep-seated hemangiomas often create a diagnostic challenge due to nonspecific clinical signs as compared to superficial hemangiomas, which impart a bluish discoloration to the overlying skin and are associated with thrills/bruits. Clinical symptoms of rapid increase in the size with local compressive symptoms may appear alarming and can mimic an aggressive malignancy. The diagnosis is further confounded by the fact that often the reports from radiology are given as solid mass or abscess, whereas on cytology, its nondiagnostic blood only.[4]

Surgical excision during the growing phase is not recommended by some authors due to the risks of major blood loss and facial nerve injury,[5] and also some have stated that most of these cases spontaneously regress with the increasing age. Therefore, FNAC is of a great benefit to an infant, like in our case, because it not only acts as a minimal invasive tool but it also eliminates the use of excisional biopsy.

FNAC aspirates of vasoformative lesions are heavily admixed with blood, it is therefore good rationale to make cell buttons, which is a simplified technique for preparation of cell blocks. It not only produces better diagnostic yield and cell preservation but can also be used to employ IHC. The material obtained in the cell button is often more concentrated that results in a better idea of tissue architecture and does not require multiple serial sections as compared to conventional cell blocks.[6]

In the present case, FNAC suspicion of vasoformative lesion prompted the formation of cell button that led to a conclusive diagnosis of deep cellular hemangioma of the parotid gland and in turn spared the infant from hospitalization and surgical procedure. Our cytological findings were similar to those of the previously reported cases.[3,4] However, these findings are nonspecific and cannot be considered diagnostic. In infants, many lesions of head and neck can be composed of spindle cells that include pleomorphic adenoma, fibromatosis, and sarcomas. The predominance of epithelial cells against a chondromyxoid background in pleomorphic adenoma, as well as the pleomorphic spindle cell pattern in sarcomas, allows differentiation of these entities from the bland spindle cells of hemangioma.[7] Cell button preparation followed by IHC proved to be most useful in identifying the specific nature of these spindle cells. Cell button sections revealed open spaces within a conglomerate of spindle cells. CD-34 highlighted the endothelial cells that line these spaces, thereby allowing us to categorize the lesion as vascular and not fibrous in origin.

It is thus recommended and emphasized that wherever repeated aspirates are yielding blood admixed material, cell button/cell block should be routinely employed to make the diagnosis.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/ their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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