

Hibernoma: A rare entity at Rare location: Case report of 2 cases with review of literature

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Abstract

Hibernoma are rare benign tumors of brown adipose tissue. The tumor was first described in 1906 by Merkel who named them Pseudolipoma. The term Hibernoma was given by Grey in 1914 because of its similarity to brown fat in hibernating animal. Males are more often involved than females. Here we report on two patients of age group 14 years and 60 years male respectively. The tumor presented with swelling temporal region in first patient and with parietal region swelling in other patient.

Keywords: Hibernoma, benign neoplasms, FNAC.

1. Introduction

Hibernoma are uncommon, benign neoplasms of adipose tissue composed of brown fat. [1,2] These tumors are asymptomatic and slow growing. In contrast to lipoma, which is derived from white adipose, hibernoma are extremely rare, with fewer than 200 overall cases reported in the literature [3]. These tumors most often occur in region proximal to the axial skeleton where brown fat existed in the fetus and persisted into the adult life. Most commonly located in inter-scapular region, superior mediastinum, axillae, retroperitoneum and the neck. Our report describes an unusual case as management of unexpected findings in the excision of scalp hibernoma.

2. Case Report

2.1 Case Report 1:

The patient is 14 yrs old boy who presented with a swelling on parietal region of scalp. On local examination, the swelling was 2x1 cms, well defined, firm and located in the superficial subcutaneous plane. The swelling was painless but gradually increasing in size. He gave history of changing coloration of that swelling. It was soft and mobile

over bone, it did not seem tethered to surrounding soft tissue. Overlying skin was normal and swelling not tender to touch. Fine-needle aspiration cytology (FNAC) of the swelling was performed.

2.2 Case Report 2:

A 60 yrs old male patient presented with the palpable soft tissue swelling on right temporal region since 1 yr. On local examination, the swelling was 2x2 cms, well defined, firm and located in the superficial subcutaneous plane. It was painless but gradually increased in size over months. The overlying skin was normal. He had no neurological complaints. FNAC of the swelling was performed.

Smears prepared from the FNAC of both the swellings show similar morphology. Smears are cellular and comprised primarily of clusters of uniform round cells with well defined borders as well as occasional single cells. Cytoplasm was filled with small, uniform vacuoles with granularity. The nuclei often were centrally placed with small nucleoli. A delicate network of capillaries frequently surrounded the cells. No nuclear atypia was present. Taking

into consideration about the cell hibernoma, a cyto-diagnosis of benign adipose tissue tumor consistent with Hibernoma was made in both the cases.

Excision of both the lesions was done. Grossly, specimen of size 2x1 cms and 3x3 cms soft tissue was received in the histopathology section respectively. Histologic examination revealed benign adipocytes with peripheral nuclei but no signs of cellular atypia. Also noted were occasional areas of granular eosinophilic cytoplasm, consistent with the diagnosis of hibernoma in both the cases.



1a & b. Photomicrograph of both the patients
2a & b. cytological features shows hibernoma cells
(Leishmann 200X)

3. Discussion

Hibernomas are rare soft-tissue tumors whose constituent cells resemble those of brown adipose tissue. Brown fat acts as a thermogenic organ in many newborn mammals, including rat and humans. In humans, residual brown adipose tissue is most commonly located in the interscapular region, superior mediastinum, axillae, retroperitoneum and the neck [4,5].

Brown adipose tissue is present in the mammalian fetus and regresses with age in species that do not hibernate. Its dark color results from the higher concentration of mitochondria and increased vasculature that distinguish it from white adipose tissue. The primary metabolic function of this organ is nonshivering thermogenesis, which produces heat rather than ATP. In humans, brown fat develops during the 21st week of fetal gestation in the neck, axilla, mediastinum, periaortic, and perirenal areas: interscapular area, posterior abdominal wall, in the suprailiac and peripancreatic adipose stores, and near autonomic ganglia [6,7].

The aetiology of hibernoma is unknown. Molecular genetics show deletions respectively reciprocal translocation of chromosome 11 which encodes the tumour suppressor gene MEN 1[8].

Due to the hypervascularity, hibernomas may sometimes appear with locally increased skin temperature. They can reach a size of up to 20 cms so that symptoms secondary to compression of adjacent structures may develop [9].

Hibernoma should be included in the differential diagnosis of lipomatous soft-tissue tumors. The imaging findings of hibernoma are not specific, other differential diagnostic considerations for a mass with signal similar to fat or containing large intratumoral vessels include angioliipoma, intramuscular hemangioma with fat, spindle cell lipoma, pleomorphic lipoma, lipoblastoma, hemangiopericytoma and hemangioblastoma, as well as malignant processes including lipoma-like well differentiated liposarcoma and myxoid liposarcoma [10].

IHC is not contributory, but S-100 protein is usually positive in both eosinophilic and pale cells and staining pattern of S-100- positive cell varies from focal to diffuse. Most tumors are CD34 negative. By definition, hibernoma should be negative for CDK4 and MDM2, two markers that characterize well differentiated liposarcoma. In equivocal cases, immunohistochemistry can be supplemented by fluorescence in-situ hybridization (FISH) to exclude amplification of MDM2 and hence exclude atypical lipomatous tumor/liposarcoma. Cytogenetic analyses of hibernomas have consistently revealed structural rearrangements of chromosome 11q13 and 11q21, but these are not unique to hibernomas and have also described in lipoma.

Curative treatment of hibernoma is complete excision. Because the tumor usually has a well defined capsule and does not show infiltrative growth pattern, preserving vital structures is recommended. It should be treated with care to avoid postoperative bleeding or hematoma formation. Incomplete excision of hibernoma has been reported to result in regrowth of the tumor.

4. Conclusion

A reliable preoperative diagnosis of hibernoma can be made based on the combination of clinical findings and cytological features provided the reporting cytopathologist is aware of the differential diagnosis.

Conflict of interest: There is no conflict of interest.

References

- [1]. Merkel H. On a pseudolipoma of the breast. *Beitr Pathol Anat.* 1906; 39:152-7.
- [2]. Grey L. In discussion of MF Bonnel's paper. *Bull Mem Soc Anat (Paris).* 1914; 89:111-2.
- [3]. Cipriano CA, Gray RRL, Fernandez JJ. Hibernomas of the upper extremity: a case report and literature review. *HAND.* 2015; 10:547-9.

- [4]. Hatai S. On the presence in human embryos of an interscapular gland corresponding to the so-called hibernating gland of lower mammals. *Anat Anz.* 1902; 21:369-73.
- [5]. Shaw HB. Contribution to the study of the morphology of adipose tissue. *J Anat Physiol.* 1902; 36:1-13.
- [6]. Ahn C, Harvey JC. Mediastinal hibernoma, a rare tumor. *Ann Thorac Surg.* 1990; 50(5):828-30.
- [7]. Stephen AH, Sanjay RP, John WB. Hibernoma of the pericardium presenting as pericardial effusion in a child. *Ped Pathol.* 1990; 10(4):575-80.
- [8]. Mertens F, Rydholm A, Brosjo O, Willen H, Mitelman F, Mandahl N. Hibernomas are characterized by rearrangements of chromosome bands 11q13-21. *Int J Cancer.* 1994; 58:503-5.
- [9]. Mrozek K, Karakousis CP, Blommfield CD. Band 11q13 is nonrandomly rearranged in hibernomas. *Genes Chrom Cancer.* 1994;9:145-7.
- [10]. Furlong Ma, Fanburg-Smith J, Miettinen M. The morphologic spectrum of hibernoma: a clinicopathologic study of 170 cases. *Am J Surg Pathol.* 2001; 25:809-14.