Abstract: Hibernoma is a rare tumour arising from brown fat. We present a case report of hibernoma of the upper back region in a 43 year old female and describe clinical, radiological and histopathologic findings following local excision.

Keyword: hibernoma, brown fat, brown fat tumour.

Hibernoma gross appearance

Hibernoma, low power view, H&E section

Background: Hibernoma is a rare tumour with features of differentiation towards brown fat(1). It occurs predominantly in young adults with an average age of 38 years and a slight male preponderance. The most common site is thigh, followed by shoulder, back, neck and chest among the common sites(2), although inter scapular region has been reported to be the most frequent site of occurrence(3). It is a painless, slow growing tumour of the subcutis with about 10% cases being intramuscular(4). Prognosis, post surgical excision, is good(5).

Case Report: A 43 year old female patient presented with complaints of swelling over the back. Magnetic resonance imaging (MRI) showed a well defined, relatively T1 and T2 weighted hyper intense mass, measuring 7.8x6.3x3.2cm, seen in subcutaneous plane in the upper back region on right side. Short tau inversion recovery (STIR) showed partial suppression. There was vascularity (flow void) seen within the lesion and in the periphery. There was no evidence of infiltration of adjacent muscles. These imaging features were more in favour of hibernoma than lipoma. There were no features to suggest liposarcoma. Grossly, the tumour was partially encapsulated. Cut surface appeared lobulated and tan to orangish in colour. There were focal areas of congestion. On microscopic examination, the tumour was arranged in sheets and lobules of small sized and large adipocytes with eosinophilic granular cytoplasm and multivacuolations. Interspersed amongst them were few mature adipocytes. There were minimal infiltrates of lymphocytes. No lipoblasts were seen.

Discussion: Brown adipose tissue is arranged in lobules separated by fibrous septae containing blood vessels and nerve fibres. Two types of cells are seen at low power; many cells have granular cytoplasm due to abundance of mitochondria and seen at the centre of lobules. Other cells are seen towards the periphery of lobules and have palestaining cytoplasm due to multiple lipid vesicles(6). At high power, the nuclei are predominantly centrally placed and compared to those of white adipocytes, are large and surrounded by eosinophilic cytoplasm(7). Hibernomas are uncommon benign tumours with differentiation toward brown fat(2). There are six subtypes recognised; granular or eosinophilic variant, mixed variant, pale variant, lipoma-like variant, myxoid variant and spindle cell variant. The granular variant predominates containing many multivacuolated brown fat cells with abundant, granular cytoplasm and a small, central nucleus. The mixed variant contains evenly distributed pale and eosinophilic hibernoma cells. Pale variant consists of pure pale brown fat cells. In the lipoma-like variant brown fat cells form small clusters surrounded by white fat. The myxoid (showing myxoid stroma) and spindle cell (showing combining features of hibernoma and spindle cell lipoma) variants are rare. Myxoid liposarcoma can show cells with abundant granular cytoplasm resembling hibernoma cells. Hence, myxoid variant of hibernomas may be confused with myxoid liposarcoma(2,4). These tumours are associated with high vascularity. Computed tomography (CT), magnetic resonance imaging (MRI) and angiography can be helpful in establishing a diagnosis radiologically(5). MRI shows a well defined hyperintense mass with high vascularity and partial suppression on STIR.
Conclusion:
Hibernomas are rare tumours. Whichever variant they may present with, these tumours show completely benign behaviour. Usually, there is no recurrence following complete excision. An occasional myxoid variant of hibernomas may be confused with liposarcoma.

References:
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