Rare Presentation of Hibernoma as a Cystic Swelling

Abstract
Hibernoma is a rare benign tumor of brown fat origin. It presents as a painless, slowly growing soft tissue tumor mimicking lipoma or liposarcoma, usually affecting adults, with a slight male predominance and a peak of incidence between the third and fourth decades of life. This is a case report of 35-year male, who presented with a mobile, fluctuant and transilluminant, swelling of 7 cm × 5 cm, on medial aspect of the right upper leg. Ultrasonography showed well-defined cystic lesion of varied echotexture with dense internal echoes and septation. Lesion was excised in-toto. On gross examination, it was a subcutaneous, multiseptate cyst containing clear serous fluid with cholesterol crystals with a solid area of 3 cm × 2 cm. Histopathological examination revealed large tumor cells with abundant granular (multivacuolated) cytoplasm. Postoperative recovery period was uneventful. We present this case as cystic degeneration in case of hibernoma.

Keywords: Cystic swelling, dermoid cyst, hibernoma, multivacuolated cytoplasm

Introduction
Lipoma is considered as universal tumor and its prevalence increases with age. About 2% of people are affected with lipoma.[1] Hibernomas are nonmalignant lipomatous tumors, a slow growing and painless with prevalence of 1.6% of all lipomatous tumors.[2] Brown fat is abundant in newborns. Brown fat cells come from mesoderm, primary function being thermoregulation by nonshivering thermogenesis. It is also present and metabolically active in adult humans[3,4] but its prevalence decreases as humans age.[5] Several names have been used to describe the lesion, including lipoma of immature adipose tissue, lipoma of embryonic fat, and fetal lipoma. In adults, inter-scapular region, mediastinum, retroperitoneum, back, and thigh are the most common areas of residual brown fat and, sometimes, it is located in head-and-neck area.[6,7] It usually affects adult males in their thirties and forties. It is clinically and radiologically indistinguishable from benign lesions like lipoma or liposarcoma.

Case Report
A 35-year-old gentleman presented with a single painless, progressive 7 cm × 5 cm size swelling on medial aspect of right upper leg. There was no history of any inciting factors. The lesion was nontender, fluctuant, transilluminant and was free from skin and underlying tissues. Ultrasonography (USG) [Figure 1] showed well-defined cystic lesion with collection which showed varied echotexture with dense internal echoes and septation. Peripheral small calcific foci of size 7.4 mm were noted along the inferior wall. Underlying muscles were normal. Imaging features favored the possibility of epidermoid/dermoid cyst. All hematological and biochemical parameters were within normal limits. Excision of swelling was done under local anesthesia [Figure 2]. On gross examination, it was a multiseptate cyst containing clear serous fluid with cholesterol crystals and solid area of 3 cm × 2 cm identified which was tan yellow color, firm to hard. Histopathological examination [Figure 3a and b] revealed unremarkable epidermis and dermis with subcutaneous located encapsulated tumor mass. Large tumor cells were arranged in organoid pattern, with granular (multivacuolated) cytoplasm and small central nuclei. Mature adipocytes were seen at the periphery. Sections from cystic areas showed similar cells and no capsular lining was identified. Areas of hyalinization, myxoid degeneration, hemorrhage, and granulation tissue along with few cholesterol clefts and scattered similar tumor cells were noted.

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The patient has been asymptomatic in the follow-up period of 1 year till date.

Discussion

The first person who described this tumor was Merkel in 1906, who labeled it as pseudo-lipoma. The term Hibernoma coined by Gery in 1914, when he observed the similarity in hibernating animals fat cells and cells present in this tumor. Furlong et al. have studied 170 cases of hibernoma and showed most common anatomic locations as lower extremity and thigh 32%, trunk 23%, upper extremity 21%, head and neck 14%, and abdominal cavity/retroperitoneum 10%. Out of 170 cases, 58% were males and 42% were females. The tumor occurs usually in middle-aged patients with mean age of 38 years. Four morphologic variants of hibernoma were identified: (1) typical hibernoma constituted 82%, (2) myxoid hibernoma constituted 8.2%, (3) lipoma-like variant constituted 7%, and (4) spindle cell hibernoma constituted 2.8%.

Hibernomas are classically slow-growing, but sometimes it can grow fast and cause pain when the adjoining structures get compressed. Their average size is 5–10 cm, but may be found as much as up to 20 cm. Majority of the Hibernomas are subcutaneous as in our case with only 10% being intramuscular. There is no reported malignant transformation in Hibernoma. USG is initial investigation of choice followed by fine-needle aspiration cytology for tissue diagnosis. Later computed tomography (CT) or magnetic resonance imaging can be done if required to know the relation of the surrounding structures for excision. 18F-fluorodeoxyglucose position emission tomography may be needed to differentiate from other tumours. Angiography may be needed, as some Hibernomas are hypervascular. Uniform hyperechogenicity is characteristic of Hibernoma on USG, but in our case, it was described as a well-defined thick-walled exophytic cystic lesion in subcutaneous location, suggestive of dermoid or epidermoid cyst. CT scan shows the lesions as isointense or slightly hypointense compared to the subcutaneous fat, with enhancement after contrast enhancement.

Macroscopically, hibernoma is a well-circumscribed, encapsulated, lobulated soft greasy mass of usually 5–10 cm size. Cut surface reveals yellow to red brown appearance with rare areas of hemorrhage. It was cystic with a very small solid component in our reported case. Microscopic sections reveal encapsulated tumor comprising large multivacuolated cells and univacuolated cells. Multivacuolated cells have eccentric vesicular nucleus and characteristically fine granular, vacuolated cytoplasm. Abundant capillaries with a lack of mitosis or atypia are a usual feature. The presence of atypia and lipoblasts helps to differentiate liposarcoma from lipoma and hibernoma. These adipocytic tumors can be reliably diagnosed with the help of molecular markers such as MDM-2, CDK-4, and p-16. Chromosomal aberration is present in hibernomas with reciprocal translocation in chromosomes 9 and 11. Incomplete excision may result in local recurrence of the tumor, thereby warranting a complete resection for this type of neoplasm.

Conclusion

Hibernoma is a benign soft tissue tumor clinically and radiologically mimicking lipoma or liposarcoma. Cystic
variant of hibernoma is a rare entity. Treatment includes excision of the lesion in-toto. Histological examination will clinch the diagnosis.

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Conflicts of interest
There are no conflicts of interest.

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