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M Sasikala
Department of Veterinary Pathology, VCRI, Namakkal Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

A Arulmozhi
Department of Veterinary Pathology, VCRI, Namakkal Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

GA Balasubramaniam
Department of Veterinary Pathology, VCRI, Namakkal Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

S Kathirvel
Department of Surgery and Radiology, VCRI, Namakkal Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

S Vigneshwaran
Department of Surgery and Radiology, VCRI, Namakkal Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Corresponding Author:
M Sasikala
Department of Veterinary Pathology, VCRI, Namakkal Tamil Nadu Veterinary and Animal Sciences University, Tamil Nadu, India

Pathology of giant lipoma in a non-descript dog: A case report

M Sasikala, A Arulmozhi, GA Balasubramaniam, S Kathirvel and S Vigneshwaran

Abstract
A nine years old non-descript male dog was presented to Veterinary Clinical Complex, Namakkal with the history of progressively growing mass at the neck region. On clinical examination, a large firm mass with irregular surface was noticed in the right prescapular region of the animal. Fine needle aspiration cytology (FNAC) exhibited that there were large number of lipid globules along with adipocytes with eccentrically placed flat nuclei. The tumour mass was excised surgically and weighed around 3.16 kilograms. There were yellow, soft, lobulated masses with oily surface noticed on incision. Histopathological examination revealed the mature adipocytes with eccentrically placed nuclei without mitotic figures. The case was confirmed as lipoma based on cytology, gross and histopathological examination.

Keywords: Dog, skin, lipoma and pathology

Introduction
Lipoma, a benign neoplasm of soft tissues of mesenchymal origin is composed of mature adipose tissue, which affects approximately 16% of dogs [1-3]. Elderly and obese dogs are more prone to develop lipomas especially in females because of their physiological tendency to accumulate greater amounts of adipose tissue [1, 2]. It occurs in various sites, especially subcutaneous region as a solitary mass or multiple lumps and clearly demarcated from the normal surrounding tissues and. Lipomatous tumours mainly affect the subcutis of back, shoulder, head, and neck [4]. Lipomas are classified as simple lipoma, fibrolipoma, angiolipoma, myolipoma, pleomorphic lipoma and spindle cell lipoma according to their specific histological features [5, 6]. Surgical excision is the right choice of treatment for the benign tumors [7]. The present report describes the pathology of a giant lipoma in a non-descript dog.

Materials and Methods
A nine years old male non-descript dog was brought to Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal for treatment with the history of large growing mass in the neck region. The dog showed difficulty in walking, feeding, drinking and normal locomotion due to the over weight of the growing mass in the neck region. On clinical examination, there was a huge mass with soft consistency and irregular surface in the right prescapular region. Fine needle aspiration cytology (FNAC) was performed to collect the samples for cytology and radiography was taken to assess the involvement of bone. Based on the clinical examination, gross appearance and cytology, it was tentatively diagnosed as lipoma and decided to remove the mass surgically.
Blood and serum samples were collected for pre-operative assessment. Surgery was carried out by standard anaesthetic protocol (Premedication - Atropinexylazine, Induction - ketamin and maintanance-isoflurone). Postoperative care was given with oral antibiotics, analgesics and wound dressing. The removed mass was weighed and the tissue pieces from multiple sites were collected in 10% formalin for histopathological examination. The paraffin embedded tissues were sectioned at 4µ thickness and stained by routine haematoxylin and eosin [8].

Results
Clinical examination of the animal showed dullness, depression, abducted forelimbs and difficulty in walking. On physical examination, non ulcerated, immovable, painless, huge soft

mass with irregular surface (Fig.1) was noticed in the right prescapular region.

Radiographic examination of prescapular region evinced that there was no involvement of bone. The haemato-biochemical parameters were within the normal range. Fine needle aspiration material contained shreds of tissues with oily content. The smear from FNAC revealed the sheets of uniform balloon shaped mature adipocytes loaded with fat globule (Fig.2). The fat cells showed large univacuolated cytoplasm with eccentrically placed flattened dark nuclei (Fig.3). Based on the clinical picture, gross and cytological examination it was presumptively diagnosed as benign lipoma.

It was decided to perform surgery to relieve the animal from the additional weight on the neck region and to return the animal to its normal locomotion, feeding and drinking. The mass was removed surgically under general anaesthetic protocol. The tumour mass was excised surgically and weighed around 3.16 kilograms.

Grossly, the tumor was yellow coloured, well-defined by the capsule and the surface was irregular and protruding out (Fig.4). On incision, there were yellow coloured soft lobulated masses, soft and the cut surface was oily. The cut section of the tumor mass measured about 42 cm in length and 28 cm width.

Histopathologically, the subcutaneous mass showed sheets of numerous uniform large polyhedral cells (Fig.5 & 6) encircled by thin fibrous septa. Each adipocytes loaded with large fat globule which push the nucleus in to periphery and nucleus become flattened due to compression by the large fat globule. The adipocytes showed distinct cell border and univacuolated cytoplasm (Fig.5) with eccentrically placed nuclei (Fig.6). There was no mitotic figure. There were no areas of haemorrhage and necrosis.

Discussion

Clinical examination of a non-descript male dog showed non ulcerated, immovable, painless, huge soft mass with irregular surface at the right prescapular region. The huge mass on the neck region affects the dog for its feeding, drinking and normal locomotion. The FNAC smears from the mass exhibited the benign tumour of fat origin namely lipoma.

Lipoma is the most frequent benign neoplasm of mature fat cells of mesenchymal origin. It is frequently observed in humans and dogs while in other species it is relatively rare [9]. Lipomas occur approximately in about 16% of dogs [10]. The most often sites for this tumour are subcutaneous regions of trunk, gluteal and proximal limbs [11]. Lipomas are usually found in older dogs of 9-11 years old [12] and its incidence increases with age [13].

Lipoma is most common in overweighed dogs especially in adult female obese dogs. In the present case, it is reported in a non-descript, non-obese male dog and is contrary with the early reportsin which the tumours were recorded in female, pure breeds and obese dogs [1, 2].

The surgically excised lipoma was very huge, weighed around 3.16 kg and hence it is called as giant lipoma [14]. The over weighed giant lipoma on the neck region is the characteristic feature of this study because the size of the lipomas recorded by earlier author was only around 80-360 grams [14].

Grossly, an encapsulated solitary mass showed multiple lobulation consisted of yellow greasy adipose tissue and these gross lesions are in accordance with the findings of Goldsmith and Hendrick [14].

Microscopically, delicate fibrous septa intersected the lipoma mass and formed irregular lobules. The supporting structure contained the nutrient blood vessels. Each adipocyte loaded with large fat globule which push the nucleus in to periphery and nucleus become flattened due to compression by the large fat globule. These microscopic observations were also made by earlier authors [15, 16].

The micro-traumas cause rupture of the fibrous septa and there by breakage in the connection between the skin and deep fascia. This might have resulted in prevention of migration of fat and permitting the proliferation of adipose tissue [15]. Metabolic disorder, endocrine and genetic factors have also been proposed as the cause of the uncontrolled growth of adipose tissue [1].

There was no recurrence after three months of surgery. Hence, this case is considered as the successful surgical management of a giant lipoma.

Fig 1: Presence of huge subcutaneous mass with irregular surfaces at the right prescapular region

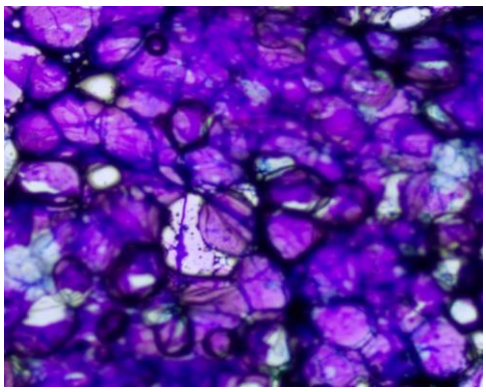

Fig 2: Cytology: Sheets of uniform balloon shaped adipocytes loaded with fat globule (Giemsa, 400).

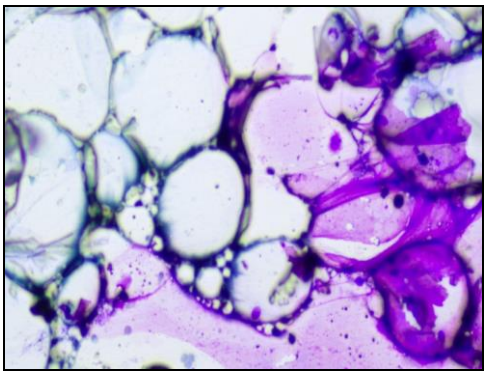

Fig 3: Cytology: Uniform cells (adipocytes) showing large univacuolated cytoplasm with eccentrically placed dark nuclei (Giemsa, 1000).

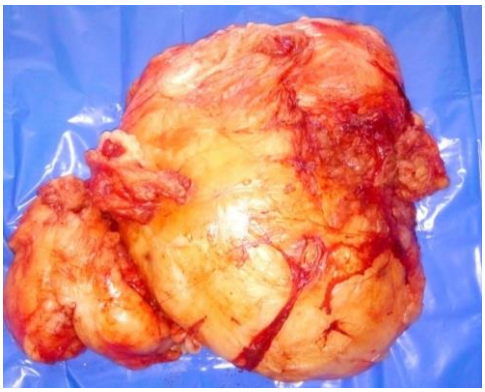

Fig 4: Large and soft yellow coloured mass covered with capsule.

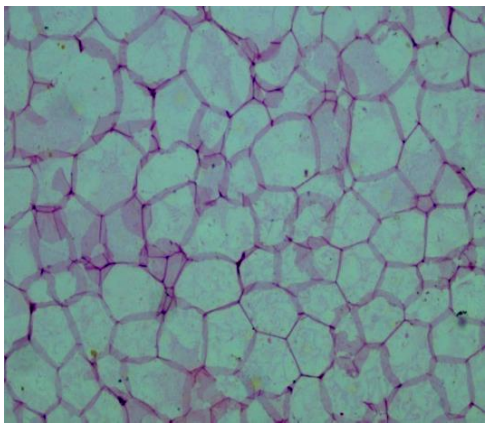

Fig 5: Adipocytes showing distinct cell borders and single clear lipid vacuole (H&E, 400).

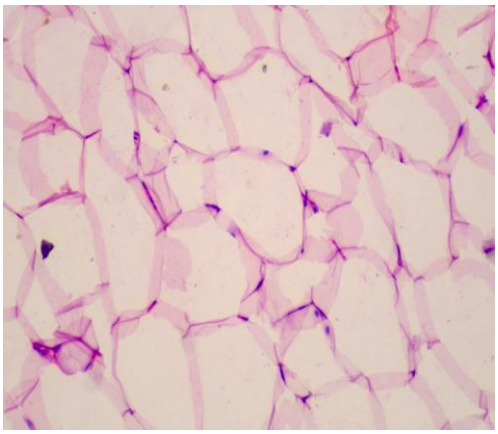

Fig 6: Neoplastic adipocytes exhibiting a single clear lipid vacuole with compressed nuclei at the periphery (H&E, 1000).

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