

## Rare case of an adipose nodule in the supraclavicular region

Pinto A\*<sup>1</sup>, Suárez M<sup>2</sup>, Scigliano H<sup>1,2</sup>

<sup>1</sup> Laboratório de Anatomia Patológica Dr. Albino Oliveira (Unilabs), CHEDV – Hospital São Sebastião, Santa Maria da Feira, Portugal

<sup>2</sup> School of Health – Polytechnic Institute of Porto (ESS-P.PORTO), Portugal

Received: March 2017/ Published: November 2017

<https://doi.org/10.26537/citotech.v0i3.2281>

### **\*Corresponding Author:**

Ana Pinto

[ana.raquel.pinto@lap.pt](mailto:ana.raquel.pinto@lap.pt)

### **ABSTRACT**

Fat masses in the cervical and supraclavicular regions are relatively rare, with lipoma being the most frequent and hibernoma the rarest.

This paper reports the case of a 72-year-old patient with a history of right supraclavicular nodular lipomatous mass, who underwent a fine needle aspiration biopsy. The cytological results raised a suspicion of hibernoma, which was later confirmed by the histological study of the surgical specimen.

**Key-words:** lipoma, hibernoma, fetal lipoma, fine needle aspiration biopsy, cervical mass

## INTRODUCTION

Tumours located on the level of the cervical region, shoulders, superior mediastinum and supraclavicular region are often regarded as cervico-mediastinal nodules or masses<sup>1</sup>. These include several pathologies, such as sequelae of traumatic injuries, inflammatory lesions, benign or malignant neoplasia or congenital disorders<sup>2</sup>.

Regarding imaging and anatomopathology, masses with these topographies may have a cystic or solid aspect. The former are more frequent, and they are mainly associated with congenital disorders. The solid ones are often associated with lymph node diseases and less frequently to diseases of the adipose tissue or the lymphatic vascular disease<sup>2</sup>. They can also be single or bilateral.

Lipomatous masses in the supraclavicular region are rare. They appear mostly in men aged between 30 and 50 years, and their causes are unclear<sup>3</sup>. Morphologically, a fine needle aspiration cytology can be used to achieve a diagnosis; however, it requires confirmation through histology.

This paper reports a rare case of lipomatous mass in the supraclavicular region, whose suspected cytological diagnosis was later confirmed by histology.

## CLINICAL HISTORY

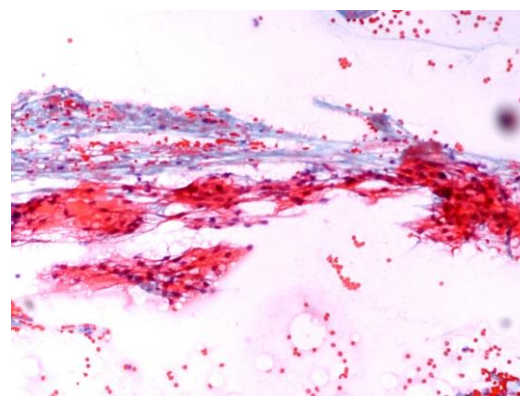
The patient is a 72-year-old woman with chronic diabetes and hypertension, who lives in a rural village of Trás-os-Montes. She attended a medical consultation due to a “nodule” located in the right supraclavicular region, which had evolved for nearly three years, having increased in size in the months prior to the consultation. No evidence of local or general inflammatory signs was found. The patient complained about local pain and mild dysphagia, which was probably associated with diffuse goiter.

The patient underwent a cervical x-ray which showed a dense, subcutaneous nodular mass of well-defined contours, with no apparent deep plane adherence; in turn, a subsequent cervical echography revealed a well-limited hypoechoic mass. The patient was then submitted to a fine needle aspiration.

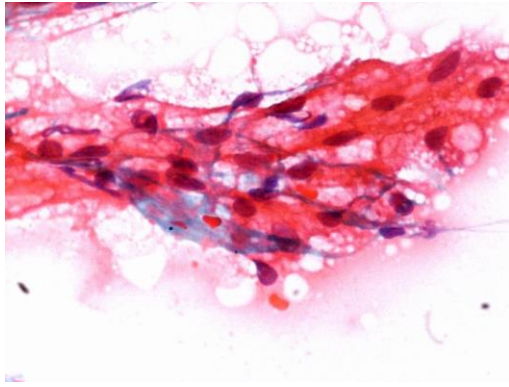
## CYTOLOGICAL FINDINGS

All the assessed smears were fixed with 95% ethanol and stained by *Papanicolaou* staining technique. Through the microscope it was possible to observe scarce cellularity, made of sheets of elongated and round cells with microvacuolized, seldom microgranular, cytoplasm, as well as euchromatic central nuclei with no atypia, suggestive of fetal lipoblasts. Equally important was the presence of some “mature” adipocyte-like cells (**Fig.1** and **Fig.2**).

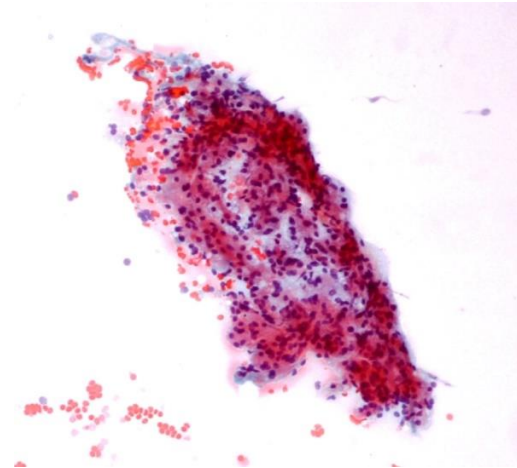
Cells were spread on a pseudomyxoid aspect background, associated with scarce and small lymphocytes and some elongated structures like capillaries (**Fig.3**, **Fig.4** and **Fig.5**).



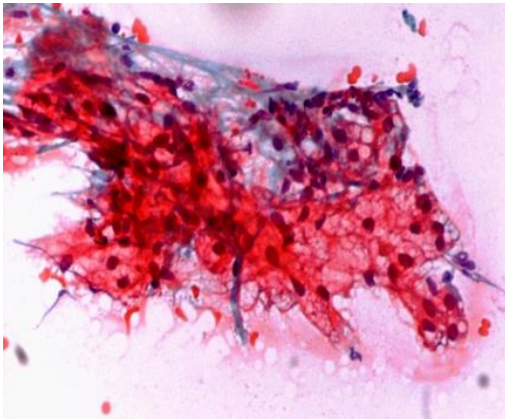
Sheets of round, elongated cells with clear cytoplasm (Papanicolaou stain, 40x).



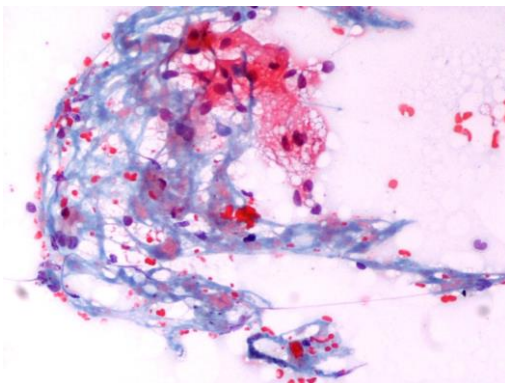
**Fig.2**—Cells with clear, microvacuolized or microgranular cytoplasm and central euchromatic nuclei, with no atypia (Papanicolaou stain, 400x).



**Fig.5** – Background features with small lymphocytes, no macrophages or Hassall bodies (Papanicolaou stain, 40x).



**Fig.3** – Morphological features of the punctured mass. Some clusters of adipose fetal cells can be observed, crossed through capillary-like structures (Papanicolaou stain, 400x).



**Fig.4** – Background features, with pseudomyxoid-like material and scarce fetal adipocytes (Papanicolaou stain, 400x).

The suggested cytological diagnosis was hibernoma. The patient was then submitted to an surgical excision of the cervical mass.

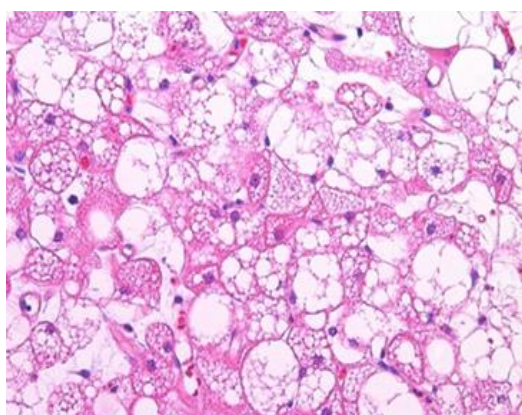
#### MACROSCOPIC FEATURES AND MICROSCOPIC DIAGNOSIS

Concerning macroscopic features, the surgical specimen consisted of a well-limited nodular mass, involved in a thin capsule, measuring 5x3 cm and weighing 16 g. The cut surface revealed a compact, grey-whitened tissue with firm consistence (**Fig.6**).



**Fig.6** – Macroscopic aspect of the supraclavicular nodular mass.

At the microscope, the nodular mass was made of adipose tissue with large cells, microvacuolized, occasionally granular cytoplasm, and central euchromatic nuclei, resembling fetal adipose tissue. Some cells with univacuolized cytoplasm and peripheral, euchromatic nuclei, typical of mature adipocytes, were also observed (**Fig.7**). All the observed features corresponded to a hibernoma of benign characteristics.



**Fig.7** – Microscopic features of the neoplastic mass. Present cells are almost exclusively fetal-type adipocytes (Haematoxylin-Eosin stain, 600X).

## DISCUSSION

This paper presented the case of a patient who always lived in an area affected by low temperatures during most of the year, and who went to a doctor due to a cervical mass with nearly three years of evolution, having been submitted to a fine needle aspiration biopsy. The cytological study showed the presence of adipocytes with microvacuolized cytoplasm and central nuclei, which allowed us to suggest a diagnosis of hibernoma, later confirmed by a histopathological evaluation.

The differential diagnosis of cervical and supraclavicular masses includes a wide variety of pathologies with different morphological features<sup>1</sup>.

In such scenario, an ultrasound exam can be useful to differentiate solid masses (lymph

nodes or tumours with salivary glands or thyroid origin) from cystic nodules (cysts of branchial or thyroglossal duct origin), and it is also extremely valuable to direct the cytological needle aspiration procedure<sup>2</sup>.

Clinically, the first approach is to find out if the studied masses are topographically situated in the medium line of the cervical region (typical of a thyroglossal duct cyst) or in the lateral or supraclavicular region (typical of cysts of branchial origin, primary or metastatic lymph node pathology). The second thing to consider is the patient's age. The presence of a solid mass in patients with more than 40 years should be regarded as potentially malignant until the demonstration of its nature through morphological methods. Lymphomas, lymph node metastasis of carcinomas and reactive inflammatory or infectious adenopathies are the most common causes for the development of cervical masses. The less common are lipomatous-type neoplasia, which encompass lipoma in nearly 94%, lipoblastoma (nearly 4.7%) and, even rarer, liposarcoma and hibernoma (nearly 1.3% of the cases)<sup>4</sup>.

In the present case report, the diagnosis was hibernoma, a benign neoplasia made of fetal-type adipose tissue, often called "fetal lipoma" or "lipoma of the immature adipose tissue". It was first described in 1906 by Merkel, and there aren't many cases reported in literature<sup>5</sup>. The majority appears in adults, and only 5% in children and young adolescents<sup>6</sup>. Little is known about its aetiology. Since its morphology is similar to that of the adipose tissue of hibernating animals, hence related to thermogenesis, some studies have pointed the geographic location and low temperatures of the areas where the patients live as factors that might trigger the development of this neoplasia, which is in accordance with the case here presented<sup>6</sup>.

An important factor for the clinical and anatomopathological diagnosis is the fact that hibernoma topography corresponds to the

places where fetal adipose tissue can normally be found, including in adulthood, such as the face, scapular region, neck, shoulder, upper mediastinum and, more rarely, in the retroperitoneum<sup>3,7,8</sup>

The cytological diagnosis is always challenging, and should only suggest the existence of this type of tissue. Therefore, some microscopic differential diagnoses with other lipomatous masses should always be considered, such as those presented on **Table 1**<sup>8</sup>.

**Table 1. Cytological differential diagnosis of lipomatous masses in the cervical and supraclavicular regions**

Fibrolipomatous hamartoma
Xanthelasma macrophage reaction
Remains of the ectopic thymic tissue
Lipoblastoma
Myoblastoma of granular cells
Hibernoma
Lipoma
Liposarcoma

Fibrolipomatous hamartoma is a pseudo-neoplastic mass uncommon in the supraclavicular region, made up of a combination between mature adipose tissue and dense fibrous tissue. Both components can be observed in the cytology, which is devoid of microvacuolized lipoblasts. The diagnosis is only achieved through histology<sup>8</sup>.

The differential diagnosis cannot disregard the xanthelasma-like macrophages or histiocytes clusters – related to inflammatory diseases in solid masses or cystic structures. Macrophages with such morphology are large, with microvacuolized cytoplasm, and euchromatic usually peripheral nuclei. Sometimes small lymphocytes or polymorphonuclear neutrophils are associated. The presence of giant, multinuclear cells facilitates the differential diagnosis. Macrophages are usually isolated or as groups with a tendency for disaggregation; tingible

bodies or iron pigments can be present in their cytoplasm. These features are never observed on a hibernoma. The immunohistochemical study with CD68 (positive among macrophages) might be useful to differentiate these entities<sup>8</sup>.

In cytology study, the ectopic remains of thymic tissue can be mistaken with hibernoma. The mature adipose tissue, lymphoid aggregates and the presence of Hassall bodies in the thymic remains allow cytotechnicians to make a differential diagnosis.

A lipoblastoma is a benign neoplasia made of lipoblastic cells, with a lobe-like architecture in histology, especially prevalent in children and situated in the buttocks. These features do not match the ones of a hibernoma.

The granular cell myoblastoma (*Abrikossoff* tumour), is a tumour made of cells with a typically microgranular cytoplasm, cytologically similar to the hibernoma. Multivacuolized cells are rarely present, and its cervical location is also rare. An immunohistochemical study is of little use, since hibernoma and myoblastoma are both positive for the S100 protein. On the other hand, a study with CD31 might sometimes prove useful, given its positivity in the hibernoma and negativity in the myoblastoma<sup>8</sup>.

The “classical” lipoma is rarely located in the cervical and supraclavicular regions. Unlike hibernoma, it can present cells with univacuolized cytoplasm and peripheral euchromatic nuclei, which might be associated with fetal lipoblasts. The presence of this latter type of cells in cytology smears of adult patients and in adequate topographies should guide towards a diagnosis of hibernoma<sup>4,5</sup>.

As far as the liposarcoma is concerned, the myxoid background and the capillary-like vascularization, as observed in this case report, could lead us to suggest this differential diagnosis; however, this hypothesis was excluded due to the absence of atypical lipoblasts – which sometimes have a

multivacuolized appearance – and the uncommon location for liposarcoma. A pre-operative cytological diagnosis of hibernoma vs. liposarcoma is crucial for the surgical approach of the cervical mass. The treatment for hibernoma comprises a simple surgical excision with an adequate surgical margin, while the treatment of liposarcoma involves excision with wider surgical margins and an intensive follow-up of the patient<sup>7</sup>.

## CONCLUSION

In this paper, we presented a case of hibernoma, a rare and benign lipomatous neoplasm, emphasizing the value of the imaging findings, as well as the cytological criteria for diagnosis and the possible differential diagnoses.

## REFERENCES

1. Rafal R, Dall'Igna D. Punção aspirativa por agulha fina em tumores cervicais. SBORL 2002; 68(3): 395-8.
2. Knappe M, et al. Ultrasonography-Guided Fine-Needle Aspiration for Assessment of cervical metastasis. Archives of Otolaryngology – Head and Neck Surgery 2000; 126 (9): 1091-96.
3. Souza R, Junior A, Rapoport A. Doença de Madelung (lipomatose cervical benigna simétrica) relato de 2 casos. Radial Bras 2003; 36(2): 121- 122.
4. Nardi C, Barreto L, Carvalho L. Cervical Hibernoma and lipoblastomatosis. Erinstein 2013; 11(1): 111-3.
5. Lemos M, Kindblom L, Kindblom J. Fine-needle Aspiration characteristics of hibernoma. Cancer Cytopathology 2001; 93(3): 206-209.
6. Bongionni F, Pomposelli E, Pennoni M. Functional Diagnosis of hibernoma by Imaging under Propanol treatment: A case Report. Health Med informal 2015; 6(3): 1000190.
7. Shruti G, Sandhy P, Nander P. Hibernoma at an unusual location: diagnosis of fine needle aspiration cytology & literature review. Med Res Health Sci 2014; 3(4): 1054-1057.
8. Cibas E, Ducatman B. Cytology diagnostic principle and clinical correlates. Elsevier 2009. 3rd ed. 451-494.