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CYTOMORPHOLOGICAL ASPECTS OF SOME OTO-RHINO-LARINGOLOGY (O.R.L.) CANCERS IN THE CANINE AND FELINE

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In the canine and feline species from Romania, cancers located in oto-rhino-laringeal area have a dominant oto-rhino-laringologic distribution lacking noteworthy in the larynx area. These have a low- to average frequency, not exceeding 2 – 3%. We analyzed a number of 17 clinical cases of which 14 in canine species and 3 in feline species. In these 17 clinical cases, after clinical and paraclinical examination which showed the presence of a tumor in ENT area, a cytomorphologic examination was performed by fine needle puncture or by saline lavage. The interpretation was accomplished under the microscope with a magnification ranging between 600 X and 1,000–2,000 X. We observed that cavum, nasal fossa, sinuses and middle ear malignant neoplasms evolve generally very fast and the therapy is ineffective. While both non-Hodgkin malignant lymphoma, and lymphoepithelioma can be identified in the humans in these anatomical areas, these cancers could not be identified in the investigated canine and feline. Also, the presence of tumoral virus Ebstein-Barr could not be identified. Between canine and feline investigated the sarcoma/carcinoma ratio was equal, but tumors of nervous origin were identified only in the canine species. Clinical, all these have the following common elements: areal distorsion implying specific symptomatology for the co-interested anatomical area; mucosa ulceration; development of an exuberant epithelium with a sessile or pediculate cauliflower-like appearance. In conclusion, the malignant neo-formation frequency is lower within general malignancy but the high frequency of some inflammatory and cancer-mimicking aspects in veterinary clinic requires correct positive and differential diagnosis. In order to properly deal with these demands, a bio-puncture from the affected area, and a cytomorphological examination must be performed.

Key words: canine, feline, cytomorphology, ENT cancers.

INTRODUCTION

Cancers in some anatomical Oto-Rhino-Laringology areas in the canine and feline from Romania have a dominant Oto-Rhino-Laringology distribution lacking noteworthy in the larynx area. (Balint Emilia, N. Manolescu, 2010). Among these, the highest incidence is noticed in the naso-otic area and the lowest incidence in the sinusal and “cavum” areas. Reported to the total malign neoplasias in the two species we conclude that for Romania, the O.R.L. cancers have a low-to average frequency, not exceeding 2–3% (Emilia Balint, N. Manolescu, 2010). Their distribution on morphological forms in Romania shows a quasi – equality among epithelial and connective tissue cancers. The rarest cancers have a nervous origin. Scientific data show the same aspects regarding these neoplasias incidence, which do not exceed 2–3 % from the total cancers in the two species (Stephan I. Withrow and David M. Vail, 2007). The same authors show the morphological O.R.L cancers distribution, noticing that cancers with conjunctive origin are dominant in the canine,

while epithelial cancers are dominant in the feline. Regarding the above facts, it is to be noted (according to Sarafoleanu Dorin, 1987) that generally in the humans the incidence of malignant tumours is lower in the Europeans comparative to Asians where the incidence is higher. The similitude between humans and cats is to be taken into account as well, regarding the incidence of the cytomorphological aspects of O.R.L. cancer dominated by the epithelial malignant tumors.

MATERIALS AND METHODS

In the 17 clinical cases (14 canine and 3 feline), after clinical general,paraclinical and radiological examination (which revealed the presence of an O.R.L. neo-formation), the cytomorphologic examination was performed by fine needle puncture (for cavum and external and middle ear) or by saline lavage for nasal cavity and sinuses. The harvested lavage was centrifuged at 1000 rotations/minute for 5 minutes. Smears from sediment, stained with classical panoptic technique, were made. The interpretation of both lavage and bio-puncture under the microscope with a magnification ranging between 600 X and 1,000–2,000 X, was performed.

RESULTS AND DISCUSSIONS

Our casuistry, investigated from cytomorphologically point of view showed the following aspects:

• 7 cases consisted of nasal cavities neoplasms as:

– Vegetant adenocarcinoma – 2 cases;
– Estesiocarcinoma – 1 case;
– Fibrosarcoma – 2 cases;
– Massive undifferentiated carcinoma – 1 case;
– Squamos carcinoma – 1 case.

• One neoplasm was identified in the cavum, as an invading malignant melanoma within adjacent vertebral bone structures.

• Two neoplasms in the fronto-ethmoidal sinuses, consisting of:

• Vegetant adenocarcinoma – 1 case;
• Osteoclastic osteosarcoma – 1 case.

The last site of the investigated neoplasms (7 cases) was the external pavilion of the ear, or the middle ear. These neoformations showed the cytomorphological aspects of:

– Rhabdomyosarcoma – 1 case;
– Osteoclastic osteosarcoma – 2 cases;
– Fibrosarcoma – 1 case;
– Squamos carcinoma – 1 case;
– Undifferentiated vegetant carcinoma – 1 case;
– Sensory cell carcinoma – 1 case.

Regarding these cases evolution, and therapeutic results, there must be noted that cavum, nasal fossa, sinuses and middle ear malignant neoplasms evolve generally very fast and the therapy is ineffective.

Only the extern ear cancers have a long evolution, similar to carcinoma neoplasms of the tegument. These can really benefit from surgery followed by chemotherapy.

From comparative oncology point of view, the following aspects can be highlighted:

• While both non-Hodgkin malignant lymphoma, and lymphoepithelioma can be identified in the humans in these anatomical areas, these cancers could not be identified in the investigated canine and feline.

• The following differences were noted in the investigated canine and feline:

– A sensitive sarcoma/carcinoma equal report;
– Tumours of nervous origin were identified only in the canine species;

Carcinomas and non-Hodgkin lymphomas reach the highest frequency in humans.

The diagnosis assessment is very important for the clinical practice and this can be accomplished only by fine needle bio-puncture followed by cytomorphological evaluation, thus leading to a correct differential diagnosis between an inflammation and a benign or malignant tumour.

Clinically, all these have a common denominator:

• areal distorsion implying specific symptomatology for the co-interested anatomical area;
• mucosa ulceration;
• development of an exuberant epithelium with a sessile or pediculate cauliflower-like appearance.

CONCLUDING REMARKS

1. The malignant neo-formation frequency is lower within general malignancy.
2. The high frequency of some inflammatory and cancer-mimicking aspects in veterinary clinic requires correct positive and differential diagnosis.
3. In order to properly deal with these demands, a bio-puncture from the affected area, and a cytomorphological examination must be performed.

Figure 1. Cavum tumor.

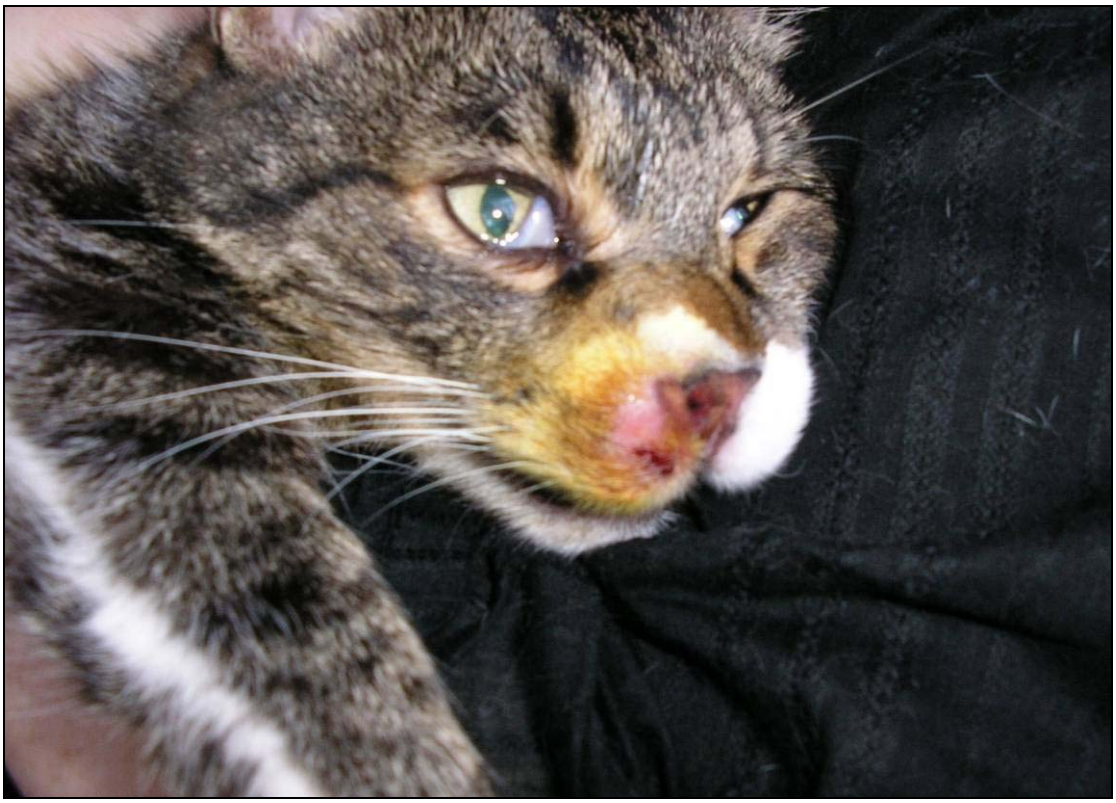


Figure 2. Nose tumor.

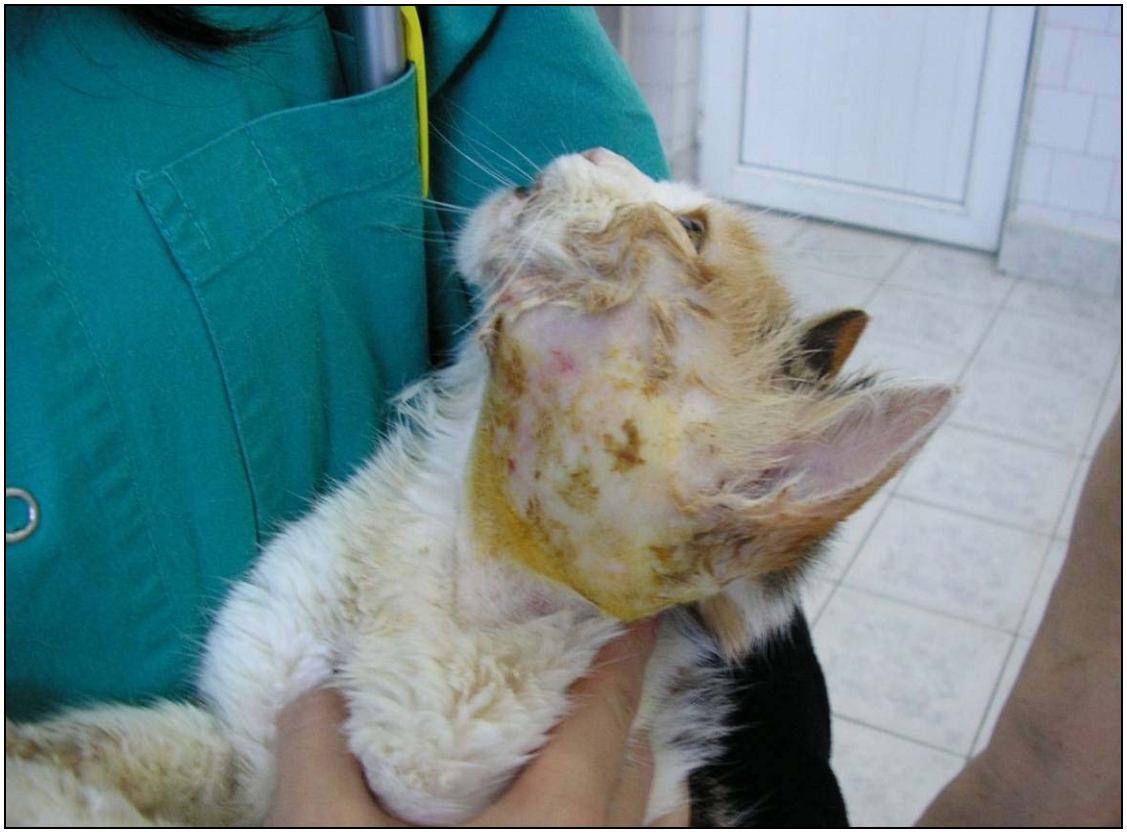


Figure 3. Ear tumor.

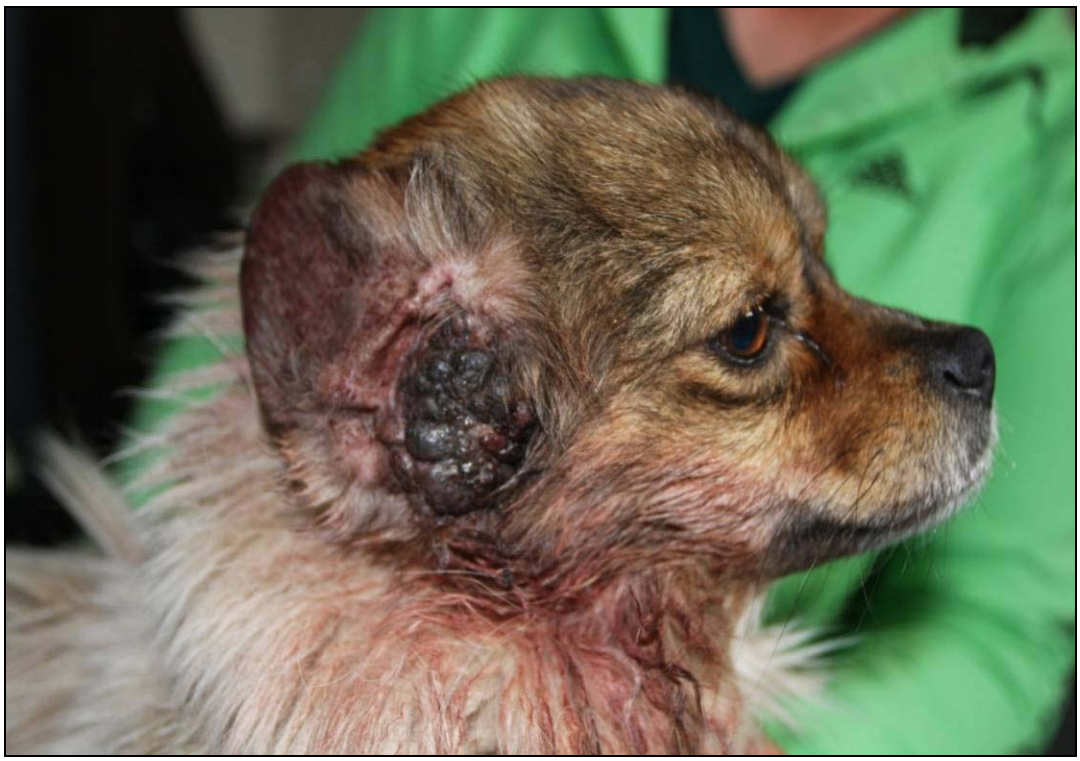


Figure 4. Ear tumor.

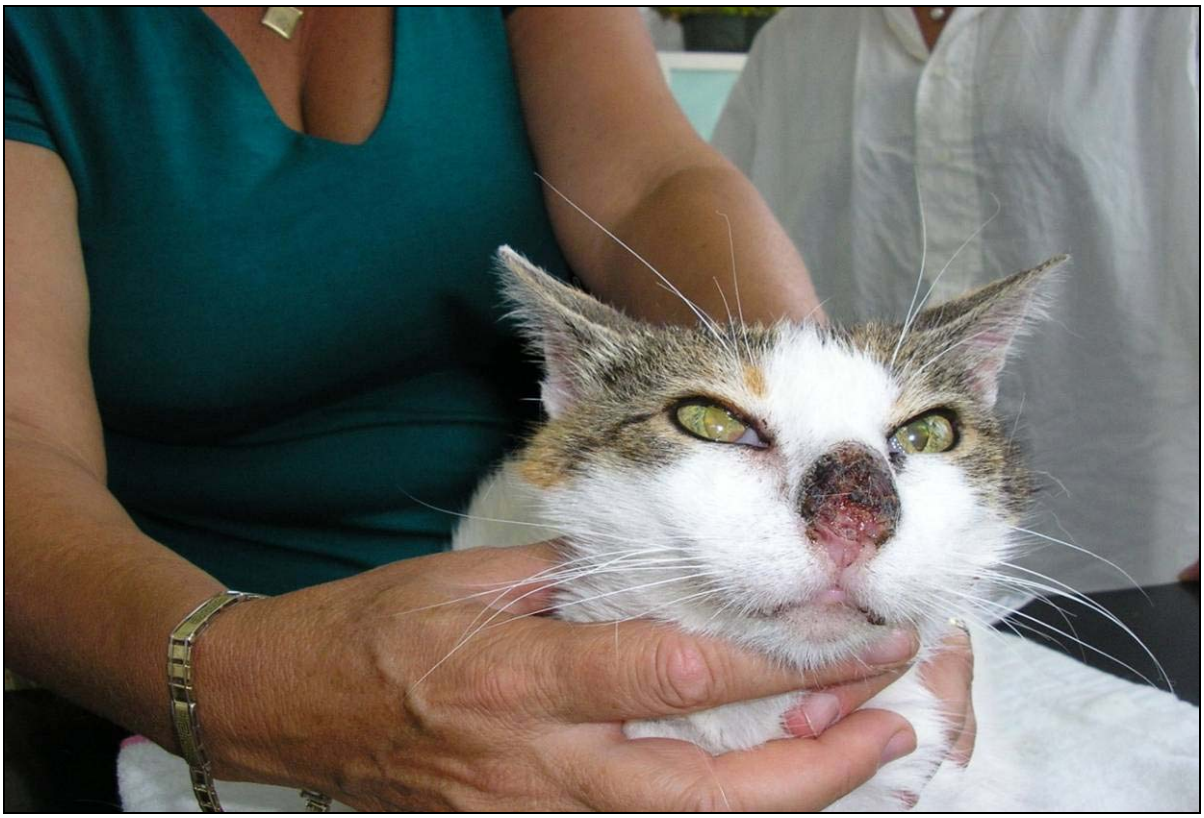


Figure 5. Nose tumor.

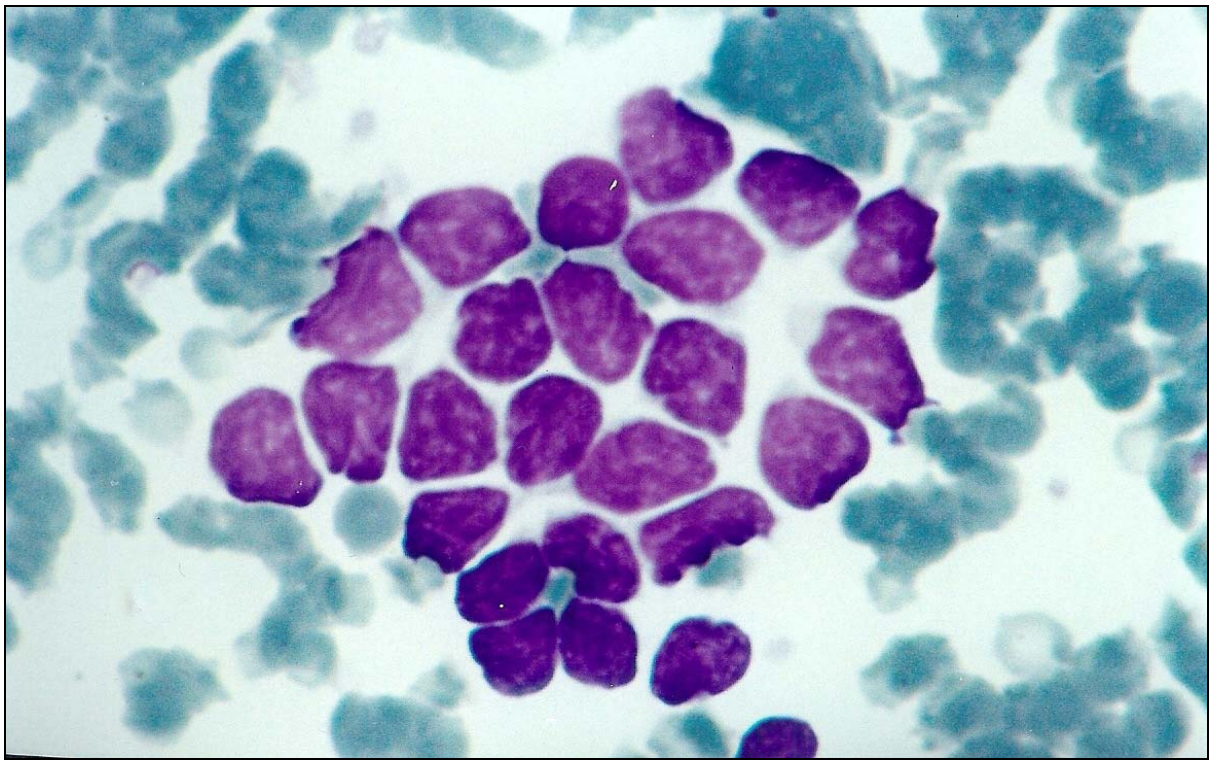


Figure 6. Nasal vegetative-like adenocarcinoma: We can notice a tumor strand made of epithelial undifferentiated cells that proliferate under the shape of adenoid-like vegetations – glove finger shape.

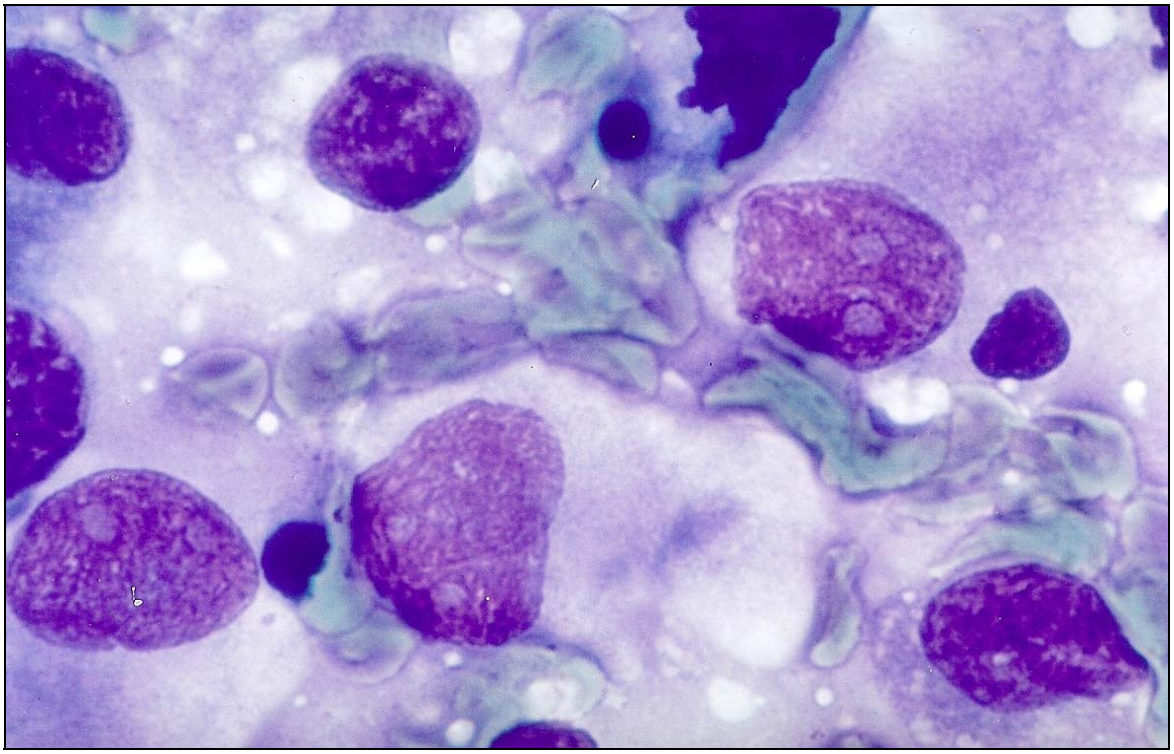


Figure 7A. Estesiocarcinoma. These images are mainly represented by mixt origin (neuro-epithelial) cells, presenting themselves as large elements, having broad and slightly basophil cypoplasm; the nuclei are atypical, are situated in the vecinity of the peripheric area of the cell, have lax chromatin and allow the 2 or 3 basophil nucleolus to be noticed.

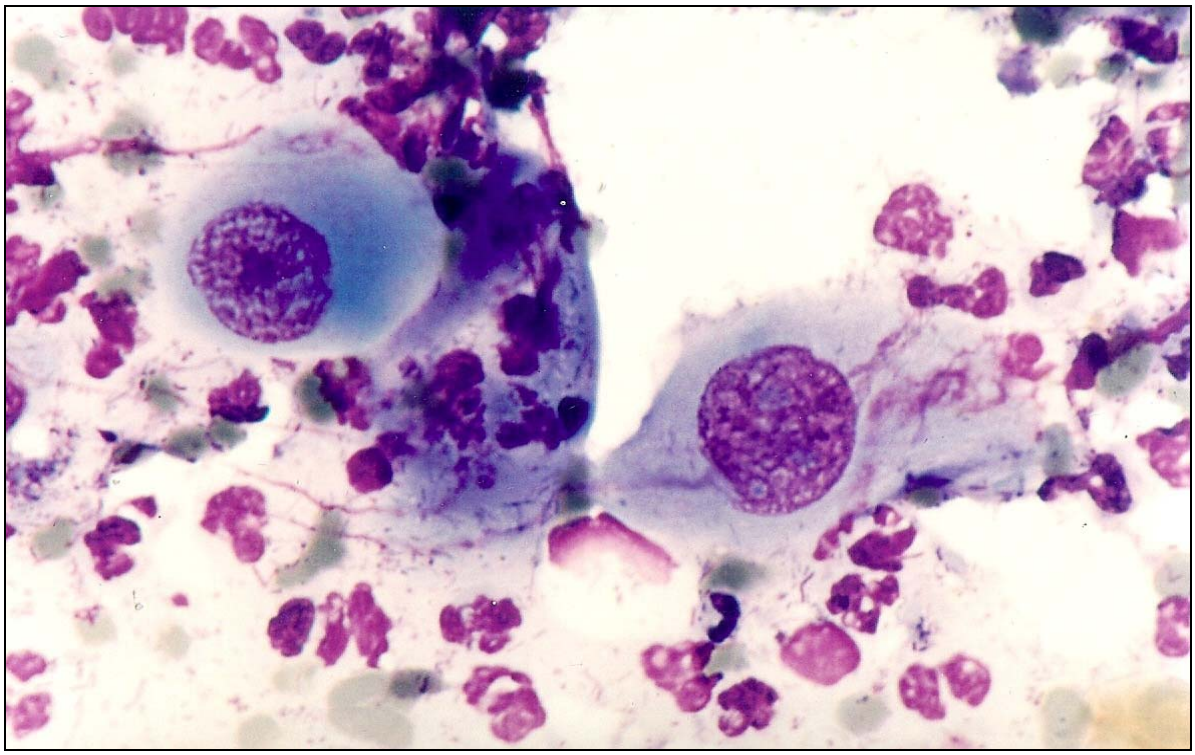


Figure 7B. Estesiocarcinoma. These images are mainly represented by mixt origin (neuro-epithelial) cells, presenting themselves as large elements, having broad and slightly basophil cypoplasm; the nuclei are atypical, are situated in the vecinity of the peripheric area of the cell, have lax chromatin and allow the 2 or 3 basophil nucleolus to be noticed.

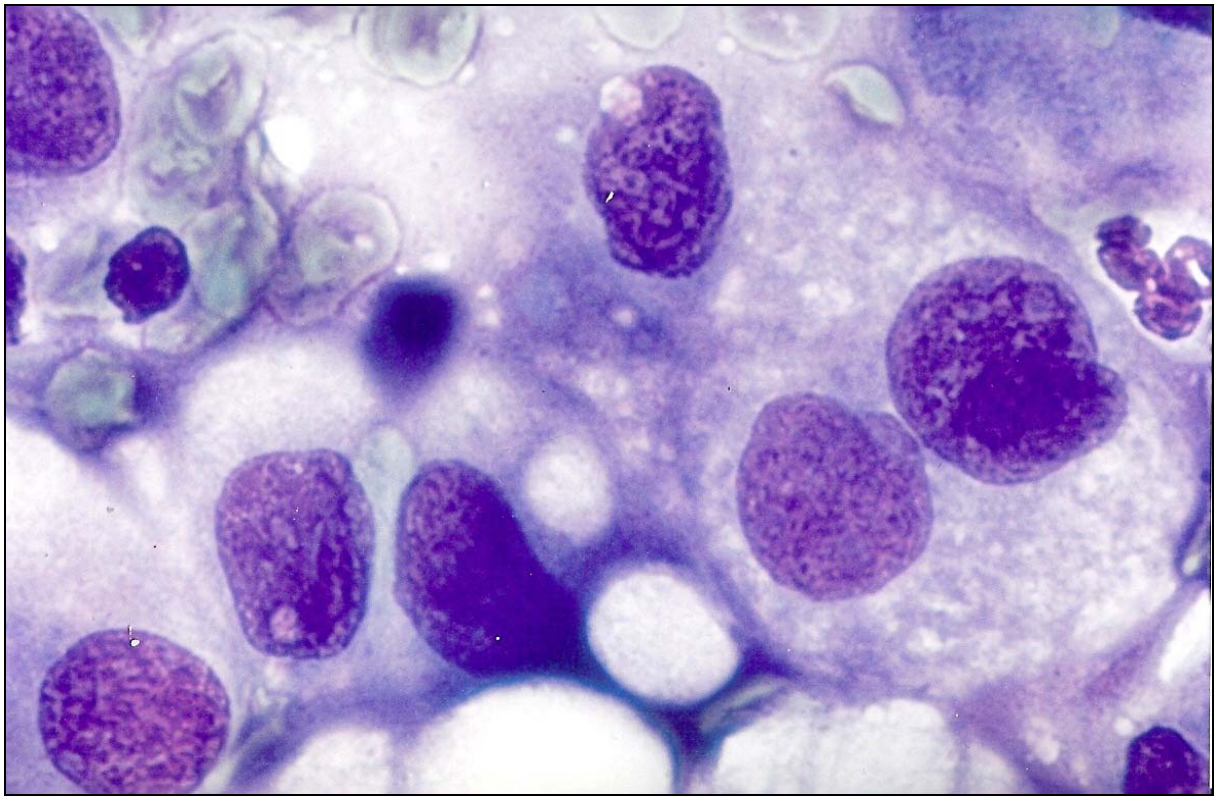


Figure 7C. Estesiocarcinoma. These images are mainly represented by mixt origin (neuro-epithelial) cells, presenting themselves as large elements, having broad and slightly basophil cypoplasm; the nuclei are atypical, are situated in the vecinity of the peripheric area of the cell, have lax chromatin and allow the 2 or 3 basophil nucleolus to be noticed.

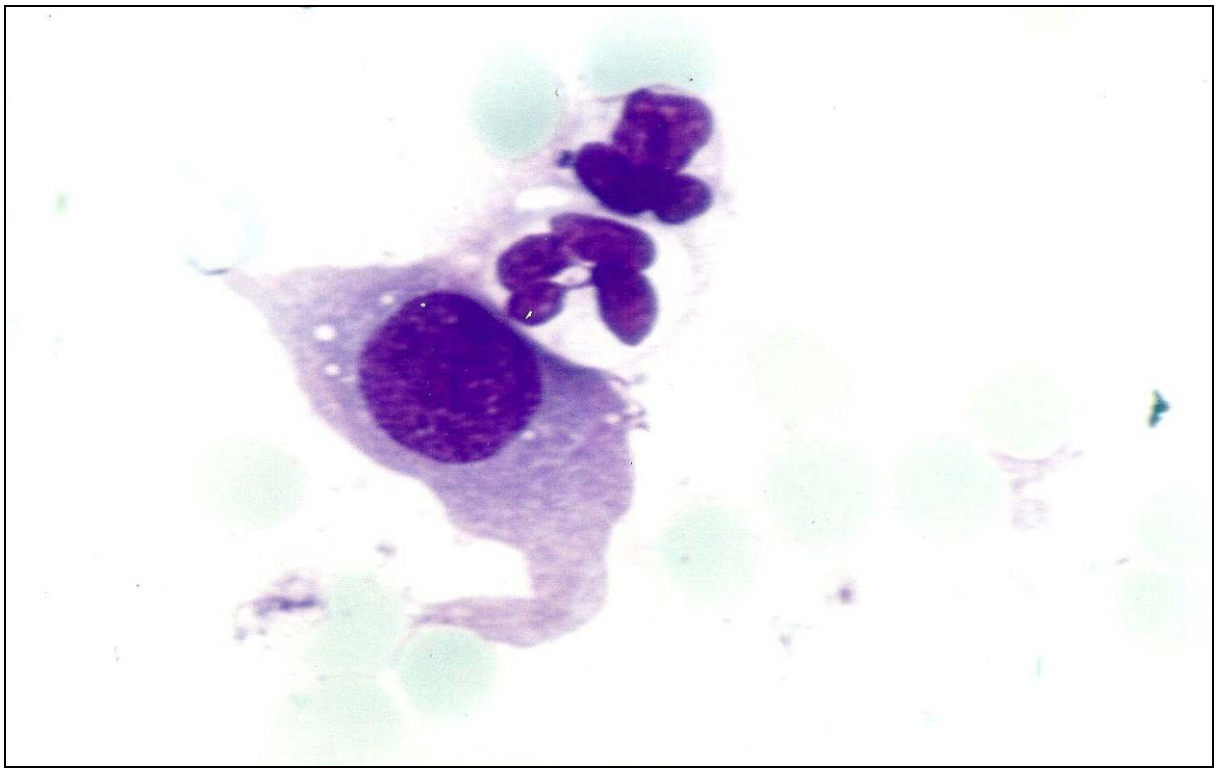


Figure 8. Giant cell fibrosarcoma: A cellular proliferation is noticed, of mesenchymal origin, with fusiform and large sized cells, that are over 40 microns; the cells are highly atypical, having a central nucleus in which the base chromatide prevails, the cytoplasm is elongated, basophil, has extensions and shows numerous vacuoles.

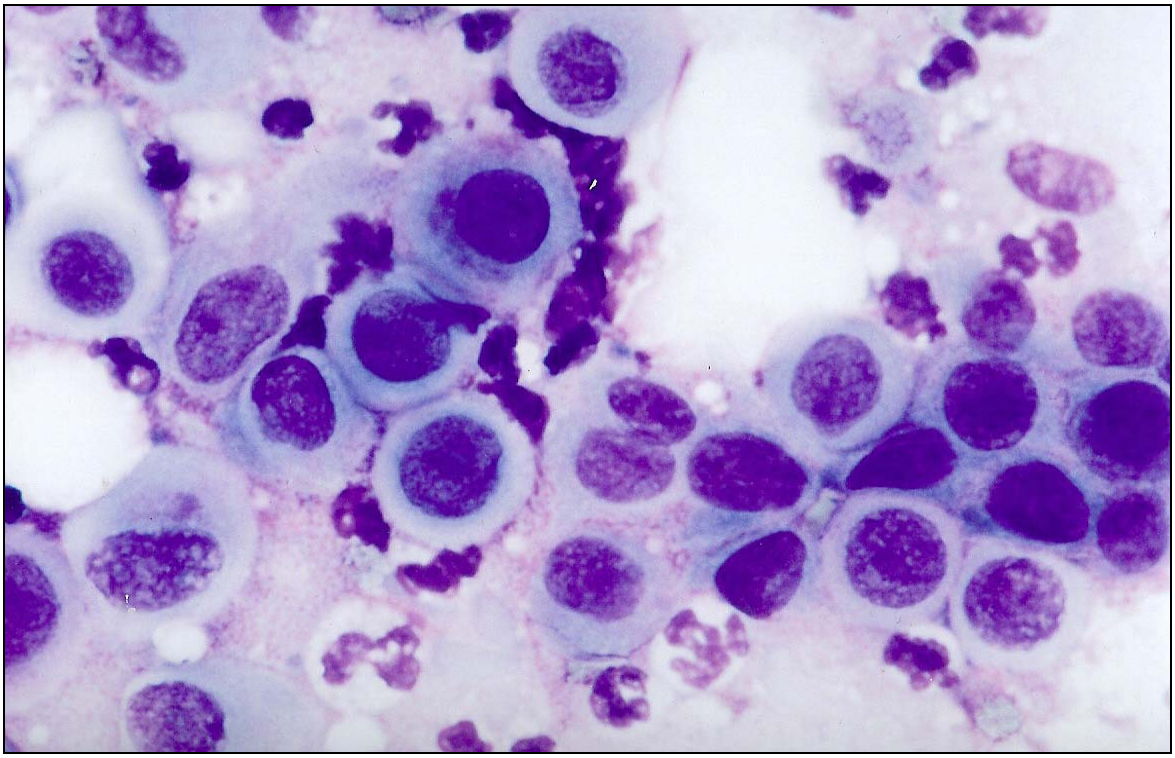


Figure 9A. Squamos carcinoma. The image show an epithlial proliferation with medium sized (aprox. 15-18 microns) squamous cells; the nucleus in relatively round and central; the cytoplasm is variable, turning from acid to base and becoming amphoteric in some places.

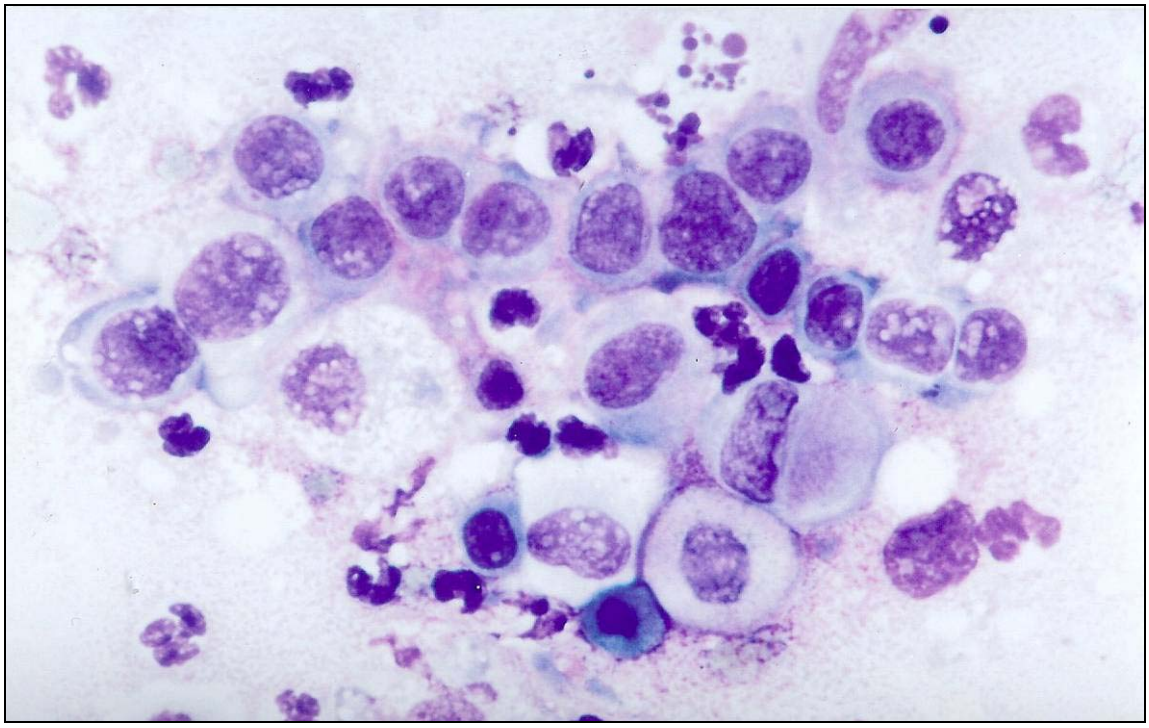


Figure 9B. Squamos cell carcinoma. The image show an epithlial proliferation with medium sized (aprox. 15-18 microns) squamous cells; the nucleus in relatively round and central; the cytoplasm is variable, turning from acid to base and becoming amphoteric in some places.

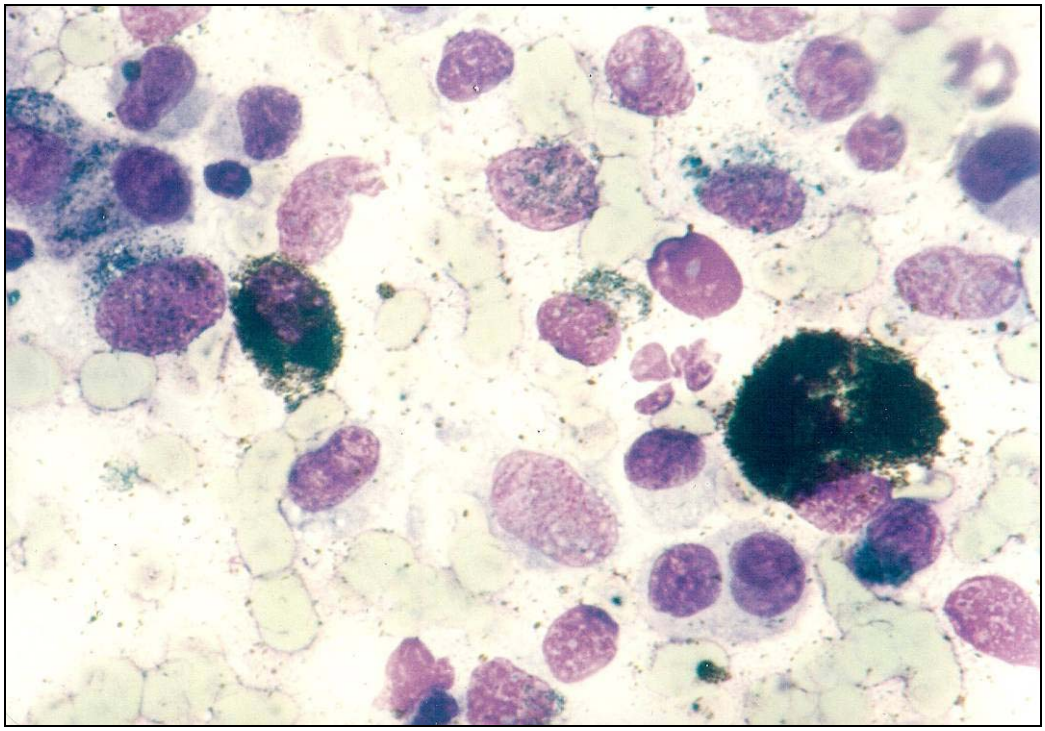


Figure 10A. Cavum-malignant melanoma: We can see a proliferation of cell of nervous origin; the melanoma cells hold a high degree of cellular atipism and various shapes of cytomorphological aspects; among these we can notice either cells that have their nucleus shielded by a massive presence of melanoma granules of big sizes, compared to other cells present that contain small granules strictly inside the cytoplasm.

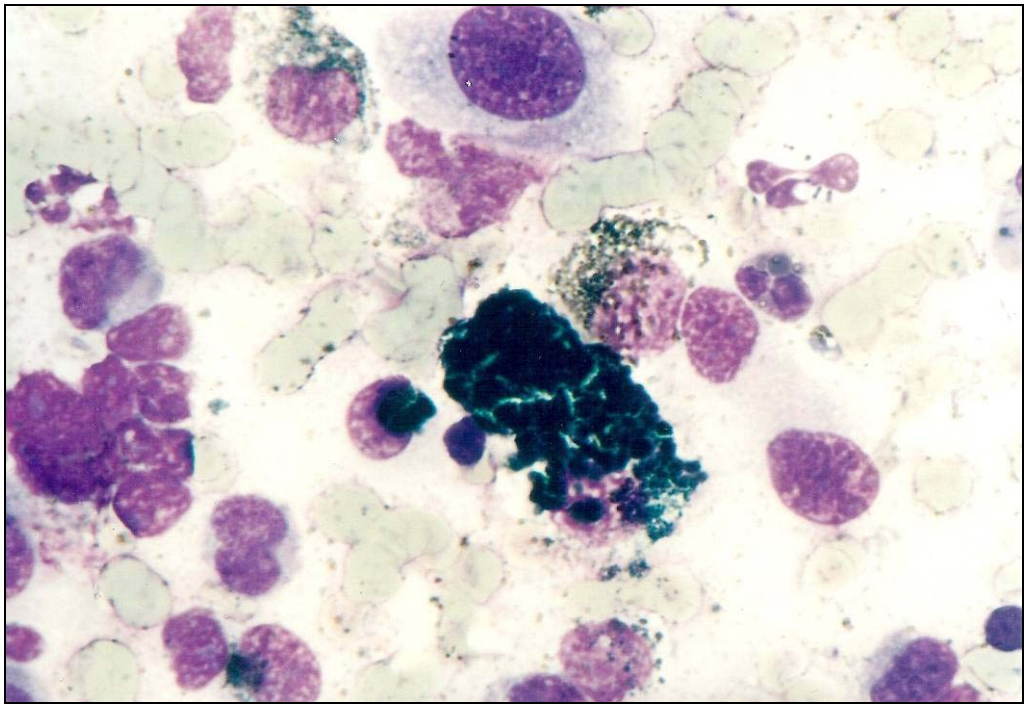


Figure 10B. Malignant melanoma. We can see a proliferation of cell of nervous origin; the melanoma cells hold a high degree of cellular atipism and various shapes of cytomorphological aspects; among these we can notice either cells that have their nucleus shielded by a massive presence of melanoma granules of big sizes, compared to other cells present that contain small granules strictly inside the cytoplasm.

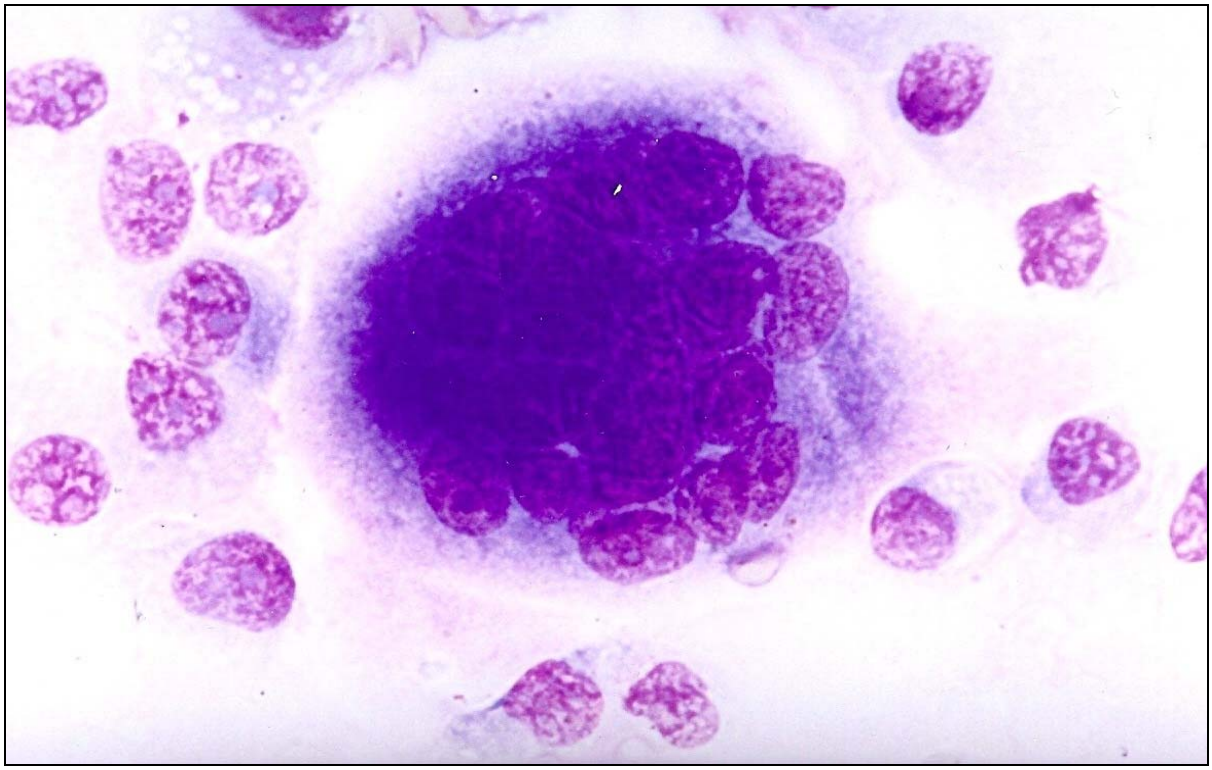


Figure 11A. Sinuses-osteoclastic osteosarcoma. The image shows a cellular proliferation of mesenchymal origin, mainly osteoblastic, accompanied by giant multnucleated cells that characterize the osteoclast.

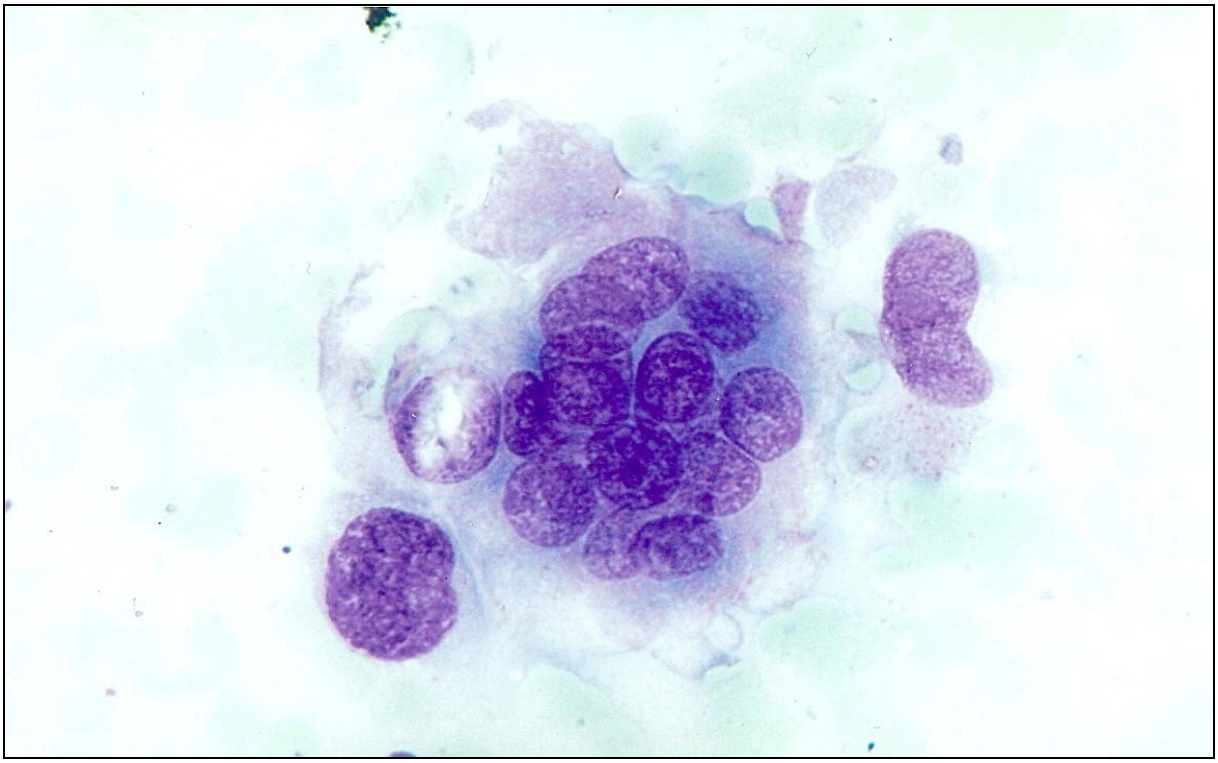


Figure 11B. Osteoclastic osteosarcoma. The image shows a cellular proliferation of mesenchymal origin, mainly osteoblastic, accompanied by giant multnucleated cells that characterize the osteoclast.

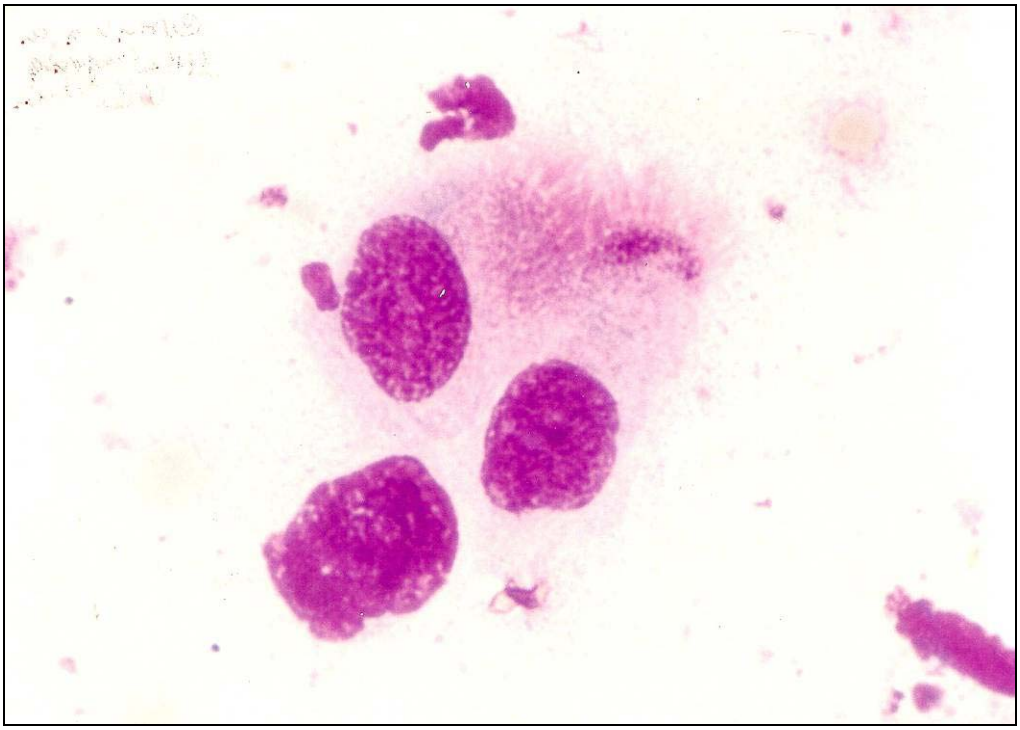


Figure 12A. Medium ear-sensory cell carcinoma. Cellular proliferation of mixed neuro-epithelial cells that characterise the mid ear sensory carcinoma the cells have a large size (aprox. 40 microns) and have a dense nucleus at the base pole of the cell; at the apical pole, these cells show a large amount of microvilli that are specific to this cellular type.

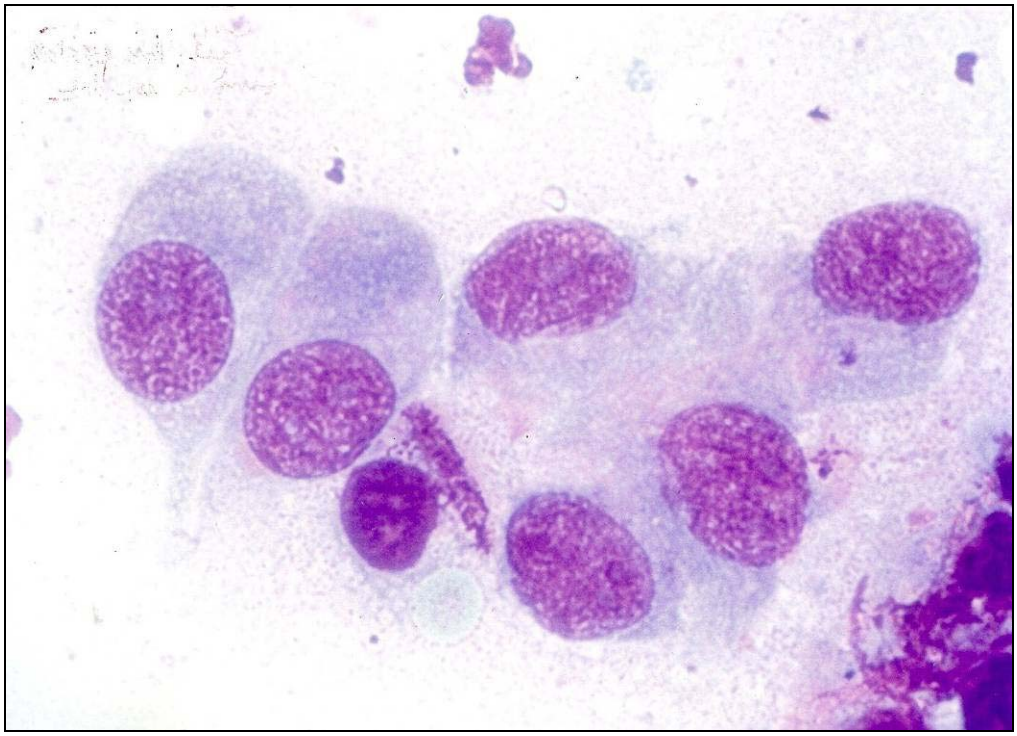


Figure 12B. Sensory cell carcinoma. Cellular proliferation of mixed neuro-epithelial cells that characterise the mid ear sensory carcinoma the cells have a large size (aprox. 40 microns) and have a dense nucleus at the base pole of the cell; at the apical pole, these cells show a large amount of microvilli that are specific to this cellular type.

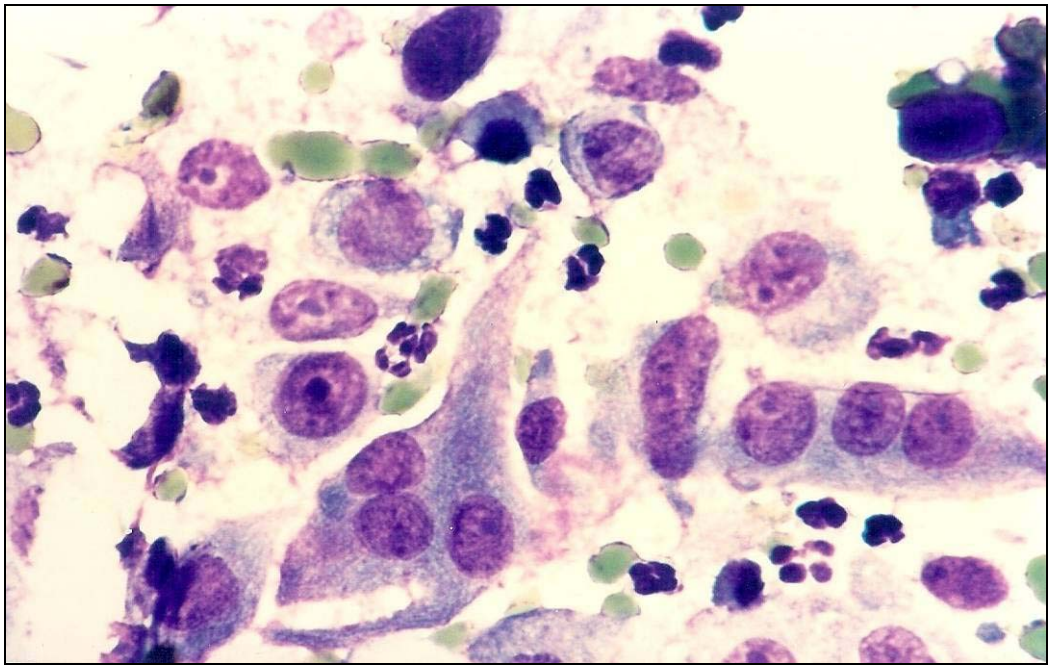
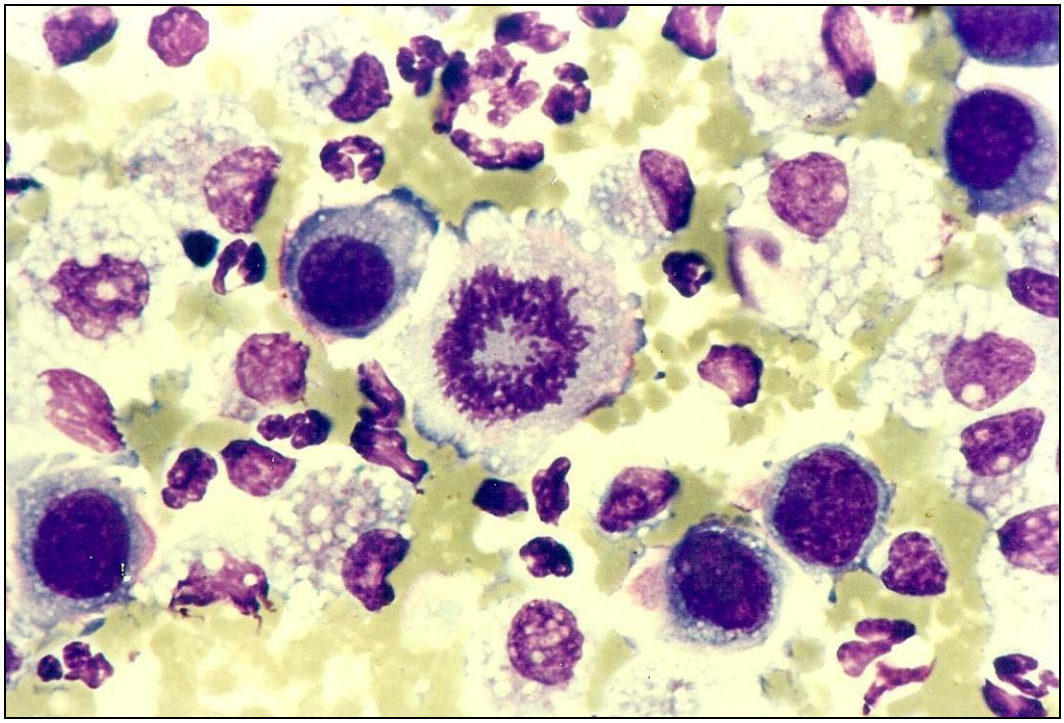


Figure 13A. Rhabdomyosarcoma. The presence of mesenchymal origin cells that characterise the rhabdomyoscrcoma through the high degree of cellular atypism, along with frequent giant multi-nucleated cells; under these conditions, we have to proceed to a clear diferentiation between the giant cells present in rhabodmyosarcoma, that always show cytoplasmatic extensions, usually present in a large number (Fig. 19 show 3 cytoplasmatic extensions of the giant multi-nucleated cells); these images are totally different from those of the giant cells present in the case of the osteoclastic sarcoma (Figs. 15 and 16), which are round giant cells, that show no extensions and sometimes are accopanied by a brush-like edge.



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