

Morpho-Clinic Study of a Guttural Pouch Squamous Carcinoma

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Abstract. The squamous cell carcinoma is a very rare tumor in guttural pouch localization. Its development and growth are associated with the compression to the nasopharynx dorsal wall, which leads to dysphagia and subsequently exaggerate weight loss of the patient. Also, dysphagia leads to hydro-electrolyte abnormalities. On the necropsic examination we found a huge tumoral mass, covered by serosa, located below of the atlas vertebrae, till the ventral region of the mandibular angle and oral within the intermandibular space. Histological exam noticed the squamous cell type, with a large heterogeneity; some cell with huge nucleus, and others with small, hyperchromatic nucleus.

Keywords: squamous cell carcinoma, guttural pouch, cancer.

INTRODUCTION

Guttural puoches are paired diferticula filled with air, located ventral to the atlas, dorsocaudal to the farinx, and rostrrodorsal to the retropharyngeal lymph nodes. Each pouch is divided into medial and lateral compartments by a stylohyoid bone. The lateral walls of each guttural pouch contain the VII, IX, X, XI, XII cranial nerves, the cranial sympathetic trunk, the internal carotid artery and branches of the external carotid artery (Freeman, 1980).

The function of the guttural pouches remains undefined, although some investigators have suggested that the pouches play a role in cooling the arterial supply to the brain.

The main disorders of the guttural pouch are: tympany, empyema and mycosis. The guttural pouch cancer is very rare. Of these we can mention: squamous cell carcinoma, round cell sarcoma, fibroma and melanoma.

The exact cause of guttural pouches tympany is unknown, but numerous reports have implicated a congenital redundancy of the salpingo-pharyngea plica, which acts as one-way valve that apparently permits the airflow into but not out of the pouch (Błazyczek, 2004).

Empyema is usually unilateral and is often a sequela of an infection by *S. equi* subs. *equi* (Verheyen, 2000).

Guttural pouch mycosis is a fungal disease of the guttural pouch that typically affects the dorsocaudal region of the medial compartment, although lesions affecting larger areas including the lateral compartment have been seen. *Aspergillus nidulans* and *A. fumigatus* have been isolated from the lesions (Ludwig, 2005).

Anamnesis – mare, 12 years old.

Anamnesis talks about discreet dysphagia, which has started six months ago, with progressive evolution till the impossibility of the swallowing in the last days, both for water and fodder, progressive weight loss and drooling saliva in huge quantities.

Physical examination. Physical exam notices a patient in poor body condition, and drooling saliva in huge quantities.

The mare presented respiratory difficulties, with buccal respiration, the reason why we made the tracheotomy. The patient had the head turn to the right side, and the palpation of the left retropharyngeal region revealed a painless, hardy, immobile mass. We couldn't localize the mass's borders. The patient presented tachycardia, tachypnea, accelerated pulse rate, prolonged skin tent, reduced jugular fill and decreased urine output.

Tab.1

Haematological abnormalities

Plasma Cell Volume %	Haemoglobin mg/dl	Erythrocyte million/cm ³	Total Leukocyte/ cm ³
60	9.7	2.43	3200

Tab. 2.

Plasma abnormalities

Total protein g/dl	Sodium mmol/l	Chloride mmol/l	Potassium mmol/l
4.1	101	113	2.5

Nasogastric intubation was impossible to perform; the tube couldn't enter in the esophagus. The R-X exam of the retropharyngeal region noticed a large mass, located below of the atlas vertebrae till the ventral region of the mandibular angle. The oral limit could not be notice because of the mandibular bone (fig. 1).

Endoscopic exam revealed a formation in the nasopharynx dorsal wall, mass which covered the entry in esophagus and partial the entry in larynx (fig. 2). Endoscopic exam of the right guttural pouch revealed no abnormalities, but the exam of the left guttural pouch was impossible to perform.

We performed euthanasia, and the necropsic exam revealed in the left retropharyngeal region a tumoral mass, which had 27/10/10 cm, with many lobules, into the right guttural pouch. Tumoral mass was covered by serosa, and had a lot of ulceration points (fig. 3, fig.4). On the section, it presented mineralization points, the consistency was extremely tough, and the vascularisation was very abundant.

Histological exam reveals a mass of connective tissue with a large vascularisation, with collagen fibres and a lot of fibroblasts; very rare groups of lymphocytes among capillary vessels. Into connective tissue mass are structures that look like nerve histology.

Into vasculoconnective tissue are some spots, bigger or smaller, with infiltrative growth, with squamous cell type, without basal cell on the periphery. Squamous cells have a great heterogeneity in shape and dimension, ones with huge nucleus and others with small and hyperchromatic nucleus, with very low mitotic index. From place to place, inside the squamous cells area, keratotic globes are present.

Histological diagnosis – squamous cell carcinoma.

Guttural pouches tumors are very rare. Of these we can mention: squamous cell carcinoma, round cell sarcoma, fibroma, melanoma (Carmalt, 2002). Guttural pouches squamous cell carcinoma is a very rare tumor. More frequent localizations of this type of tumor in horse are: eyes, lips, nostrils, penis and prepuce (Baba, 2007).

More frequent clinical signs in squamous cell carcinoma are dysphagia, dyspnea, mucopurulent or hemorrhagic nasal discharge. All of the clinical signs are in connection with the development and growth of the tumor, associated with/without metastasis, especially in the retropharyngeal lymph nodes. This tumor mass realized a compression on the nasopharyngeal dorsal wall. This compression on the nasopharyngeal dorsal wall caused the

dysphagia, because the elevation of the soft palate in swallowing was impossible, the entry in the esophagus was hidden. Also, the compression on the glottal orifice determined the respiratory distress.

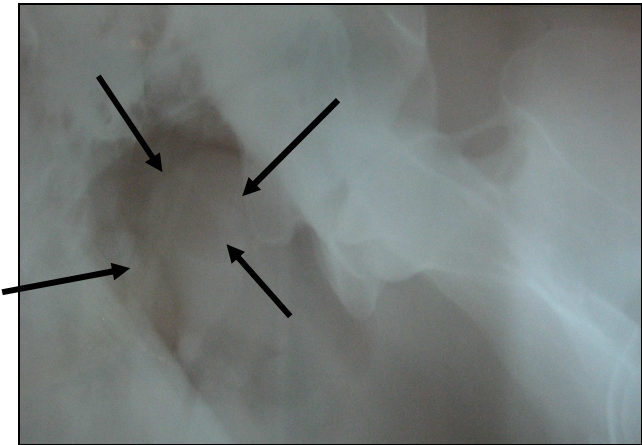


Fig. 1.
R-X of the tumoral mass. Caudal region.

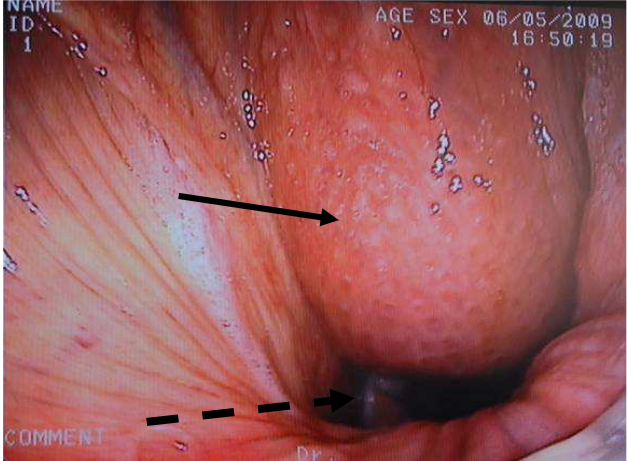


Fig. 2.
Endoscopic view of the pharynx.
Full arrow – nasopharyngeal dorsal wall compressed by tumor
Broken arrow – glottal orifice



Fig. 3.
Macroscopic view of the tumor



Fig. 4.
Section through the tumoral mass

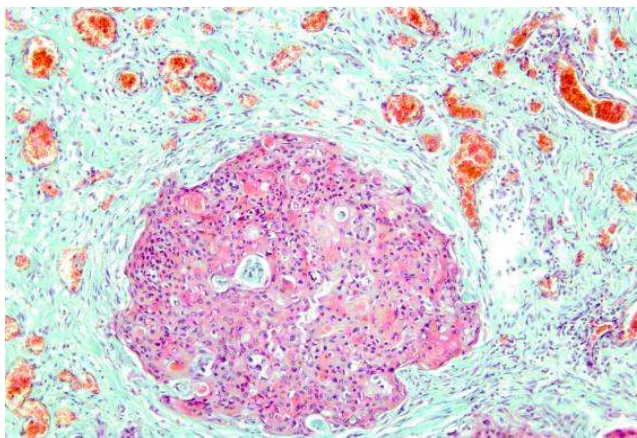


Fig. 5.
Microscopic view of the tumor
Connective tissue with a large vascularisation,
with collagen fibres and a lot of fibroblasts
Keratozic globes are present inside the
squamous cells area

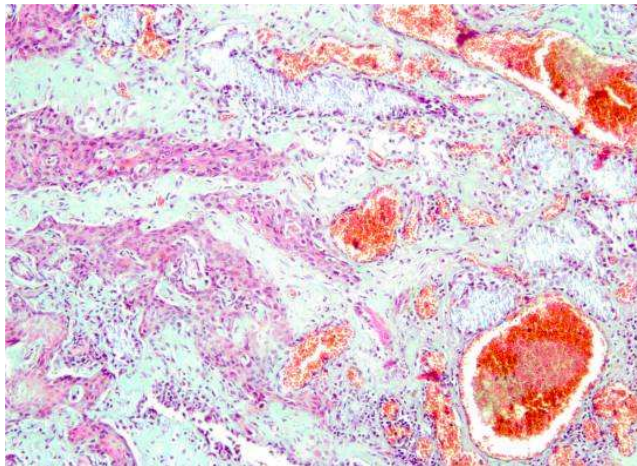


Fig. 6.
Microscopic view of the tumor
Squamous cells have a great heterogeneity in
shape and dimension, with infiltrative growth

Hematological and biochemical abnormalities are in connection with dysphagia.

Plasma cell volume (PCV) is 60 % because of the impossibility of deglutition. This PCV is 60 % in the conditions in where total erythrocyte numbers is only 2.43 millions. PCV above 50 means hypovolemia. Prolonged skin tent (8 seconds) resulted because of the hydric deficiency in subcutaneous connective tissue. The level of total protein is very low. On healthy patient, hypovolemia and PCV above 50 % lead to increased protein level. Decreased protein level could be explained in 2 ways. First, because of tumoral cell metabolism, which is turn to catabolism, and second one, because of the impossibility of deglutition. Drooling saliva determines hyponatremia and decreased bicarbonate. Chloride is above normal range, and this state, associated with low bicarbonate level, determines metabolic acidosis.

It is interesting that the tumour mass had a huge dimension, and pushed on sympathetic nervous trunk, the mare did not develop Horner's syndrome signs. Some authors mentioned about melanoma growth in guttural pouch. This tumor often is the result of the metastasis from parotid gland. The evolution of the melanoma located inside of the guttural pouch is used by some authors as prognostic factor, because at this level tumor growth is not influenced by any external factors (Knottenbelt, 2003).

In a study on 5 cases with melanoma in parotid gland, Fintl (2004) noticed on the endoscopic examination guttural pouch metastasis. Both parotidian region were swollen, one of them had 18 cm dimension and other 10 cm. These tumoral masses compressed on the nasopharyngeal dorsal wall resulting dysphagia and respiratory difficulties.

The intravitam diagnosis of squamous cell carcinoma is possible only through endoscopic biopsy or through transcutaneous puncture. Squamous cell carcinoma has a poor prognosis, especially because the approach is difficult and the owner notices the swollen only when dysphagia is present. In this situation euthanasia is recommended.

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