Critical Surgical Affections at Pharyngeal Region in Horses

Mosbah E., Rizk A., Karrouf G., Hahn J., Abou Alsoud M. and Zaghloul A.

Department of Surgery, Anaesthesiology and Radiology, Faculty of Veterinary Medicine, Mansoura University, Mansoura, Egypt; King Fahd Medical Research Center, King Abdulaziz University, Jeddah, Saudi Arabia; Clinic for Horses, University of Veterinary Medicine, Hannover, Germany; Biology Science Department, King Abdulaziz University, Jeddah, Saudi Arabia.

Corresponding author email: esammosbahmohamed@yahoo.com

Abstract

The present study was performed for diagnosis and surgical management of critical surgical affections at the pharyngeal region in horses. It was carried out on a total number of 10 horses. Radiographical and histopathological examinations were performed to confirm the diagnosis in addition to endoscopic examination for subepiglottic cyst. Surgical and endoscopic interventions were performed. A subepiglottic cyst was diagnosed in a mare as a voluminous mass rostral to the epiglottis through endoscopic examination. A thyroglossal duct cyst was found in a filly foal as a large banana like, cystic fluctuant mass at the left retropharyngeal region. A melanotic melanoma was detected in a mare as a distinct midline cranial ventral cervical mass. Guttural pouch empyema was recorded in 7 horses. It could be concluded that surgical and endoscopic treatments were curative for management of such affections without recurrence. Also, thyroglossal duct cyst should be included as a differential diagnosis when encountering a foal with a fluid filled mass at the lateral retropharyngeal region.

Key words: Subepiglottic cyst, thyroglossal duct cyst, melanoma, guttural pouch empyema, horses.

Introduction

Several types of developmental cysts have been reported in the cervical region of mammals. Most originate from the branchial arches and have similar manifestation across different species. The embryonic thyroid migrates as the thyroglossal duct from the base of the tongue to its final location in the cervical region. A cyst at the region of the duct is a relatively common developmental disorder in man and is referred to as thyroglossal duct cyst while subepiglottic cyst is believed to be the equine parallel. The usual location is the midline of the neck, in the region of the hyoid bone.

Subepiglottic cysts in horses are believed to originate from the thyroglossal duct. Such cysts are well documented as a course of dysphagia in horses from a few months old, up to 10 years old. They are likely present from birth, but remain undetected until the horse begins exercise training. Several methods have been reported for treating pharyngeal and cervical cysts. All methods attempt to eliminate all secreting epithelium while minimizing damage to surrounding tissue.
Melanomas of the retropharyngeal and adjacent parotid tissue are well recognized in gray horses. Various treatments have been used for equine melanomas, including surgical excision, cryotherapy, chemotherapy, immunotherapy or combination of these treatments.

Guttural pouch empyema, tympany and mycosis are three primary disease conditions of the guttural pouch which characterized by marked unilateral or bilateral voluminous swelling in the parotid region. Several surgical approaches were studied on experimental and clinical cases.

The present study aimed to throw light on diagnosis of rarely occurred surgical affections at the pharyngeal region in horses and to justify the role of surgical intervention for their treatment.

Materials and methods

Animals, restraint and anesthesia: A subepiglottic cyst (n= 1), thyroglossal duct cyst (n= 1), melanoma (n= 1), and guttural pouch empyema (n= 7) were diagnosed at the pharyngeal region in 10 horses. Nine cases were admitted to the Mansoura Veterinary Teaching Hospital, Faculty of Veterinary Medicine, Mansoura University, Mansoura, Egypt in the period from January 2008 to April 2012. While the last case was admitted to clinic for horses at the University of veterinary medicine, Hannover, Germany at February, 2010. Diagnosis of such surgical affections was based on history, clinical, histopathological, radiographical and endoscopic examinations. Horses were premedicated with intravenous injection of acepromazine (Vetranquil 1%, Libourne Cedex, France) at a dose of 0.05 mg/kg BW. Anesthesia was induced and maintained by infusion of a freshly prepared mixture of 500-mg xylazine HCl, 40-mg midazolam, and 2-g ketamine HCl dissolved in 1 L of 5% dextrose for cases subjected to surgery in recumbent position while detomidine ([Domo sedan ®] 0.02 mg / kg iv) was given for sedation and levomethadone ([LPolamivet ®] 0.1 mg / kg iv) was administered in cases subjected to surgery in standing position.

Surgical interventions: For subepiglottic duct cyst (Fig. 1A), the horse was restraint in a standing position in a chute, surface analgesia using Lidocaine 2% ([Xylocaine ®] 10 ml) via a catheter after transnasal insertion of the endoscope. Five minutes later the base of the cyst was cut and separated off with high-frequency electrocautery (ERBE Erbotom ® T400). The control of epiglottis base and trachea was made with respect to remove cystic material. A latero-lateral radiograph of the head in the retromandibular fossa was performed (Fig. 1B).

For thyroglossal duct cyst (Fig. 2A), a filly foal was restraint in a supine position with extended head and neck. Surgical excision was performed by a combination of careful blunt and sharp dissection between brachiocephalic muscle, parotid salivary gland, jugular vein, common carotid artery, vagus nerve and cranial trachea. A short fibrous pedicle approximately 1cm wide was attached to the cranial pole of the cyst. It was crushed, ligated and cut. The entire cyst was removed (Fig. 2B).

For melanoma (Fig. 3A), the horse was restraint in a supine position. Surgical excision was performed in the mandibular region at the bifurcation of maxillary and lingeofacial vein (Fig. 3B.). The capsulated large mass was removed. Specimens were taken and processed for histopathological examinations.

Seven cases of guttural pouch empyema were treated in a standing position in a chute through Viborg's triangle approach. Drainage of the pouch was accomplished through self-retaining Foley catheter (Fig. 4).
Results

Subepiglottic cyst

Clinical examination of a 4 years old mare showed no particular findings. The patient was clinically normal. The mandibular lymph nodes were large, lobed, firm, elastic, movable and not painful. Endoscopic investigation revealed a mass of about 2 cm diameter located rostral to epiglottis base which extends into a rostro-dorsal direction and directed to the left side. The structure showed a thin-walled capsule filled with fluctuating contents. The Epiglottic apex of both sides of the aryepiglottic folds has no macroscopical changes (Fig. 1A).

Fig 1:

A) Endoscopic picture showing a (2 cm in diameter) mass (subepiglottic cyst) presented rostral to epiglottis base which extends into a rostro-dorsal direction and directed to the left side.
B) Lateral cervical radiographs showing a 2 cm increase in the size of the pars oralis pharyngis (red box), a subepiglottic cyst is located distal to the tip of the epiglottis.
C) Endoscopic image showing the base of the cyst was cut and separated off using a high frequency electrocautery.
D) Endoscopic image showing complete removal of cyst materials.
E) Endoscopic image showing swelling of the epiglottis without dorsal displacement of the soft palate two days postoperatively.
F) Endoscopic image shows a decrease of swelling of the epiglottis, a granulation tissue is observed at the epiglottis base 6 days postoperatively.

Radiographic examination revealed an increase in size of the pars oralis pharyngis in a rostrocaudal extent of about 2 cm. This structure is located directly on the epiglottis and ends about 1 cm distal to the tip of epiglottis (Fig. 1B).
Two days after surgery, a swelling of the epiglottis was observed (Fig.1D) which decreased 4 days post-surgery (Fig. 1E). A mild food-aspiration was identified 2 days after the operation and it was undetectable 6 days later. Granulation tissue was visible at the epiglottis’s base (Fig.1F).

Fig.2:

A) A 2 months filly foal showing a thyroglossal duct cyst as a large, banana like, cystic, fluctuant mass at the left retropharyngeal region.
B) Surgical excision of thyroglossal duct cyst.
C) Thyroglossal duct cyst showing, pseudostratified columnar ciliated epithelium of the cyst wall, H&E., original magnification x 520.
D) Thyroglossal duct cyst showing, thyroid follicle containing colloid, H&E., original magnification x 520.

**Thyroglossal duct Cyst**

A 2 months filly foal suffered from large, banana like, cystic, fluctuant mass at the left retropharyngeal region. It was approximately 16 cm long by 5 cm wide that could be seen and easily palpated. It was neither hot nor painful. There was no cervical lymphadenopathy and thyroid gland was not palpable. Aseptically aspirated fluid was discolored, cloudy and mucoid in nature. Histopathological examination revealed a well defined cyst with a large central lumen. The cyst was lined by stratified squamous epithelium of varying thickness and in other portions by pseudo- stratified ciliated epithelium (Fig. 2C). Thyroid follicles of varying size appeared within the wall lined by cuboidal cells and filled with homogenous pink colloid (Fig. 2D).
Melanoma

A five years old horse showed a distinct midline cranial ventral cervical mass (Fig. 3A). It appeared semispherical in shape and it was hard in texture and not painful. The skin covers the swelling was intact. Surgical exploration of the mass revealed unfriable, encapsulated, black, homogenous tissue separated from adjacent structures (Fig. 3B). It measured approximately 25cm x 23cm x 20 cm. The macroscopical findings clearly indicated a melanoma. Three additional neoplastic nodules of different sizes were situated deeper to the larger one. There was no evidence of metastases with local lymph nodes or other adjacent deep cervical structures. Histopathological evaluation revealed melanotic melanoma with intracytoplasmic dense brownish black pigment (melanin) which obscure the cellular details besides fibrous tissue trabeculae were seen among them(Fig. 3C). Complete healing was achieved without blemish and no recurrence until three years follow-up post surgery as well as no mass was appeared in other regions of the body.

Guttural pouch empyema

Guttural pouch empyema was recorded in 7 horses with the average age of 2 years. It was manifested by intermittent unilateral or bilateral nasal discharge, parotid swelling, extended head and difficulties in
swallowing and breathing. Four cases had a past history of strangles infection. Ventral drainage of the guttural pouch through Viborg's triangle was performed in all cases with satisfactory results.

Fig. 4:

A) A 2 years old horse with unilateral guttural pouch empyema.
B) The site of Viborg's triangle.
C) Ventral drainage of pus from the guttural pouch through Viborg's triangle.
D) Permanent application of Foley catheter for continuous drainage and flushing of guttural pouch.

**Discussion**

Pharyngeal cysts in horses are most commonly found in the subepiglottic tissue and referred to as subepiglottic cyst that was suspected to be congenital in origin. Occasionally pharyngeal cysts appear at the dorsal pharynx. They are believed to be remnants of Rathkes pouch. In the embryo; Rathkes pouch gives rise to the craniopharyngeal duct, which is the precursor of the anterior pituitary gland.

Diagnosis of subepiglottic cyst is typically made by upper airway endoscopy and lateral cervical radiograph. Subepiglottic cysts manifest clinically in exercise intolerance and abnormal noise on inspiration. Occasionally other clinical signs appear such as dysphagia, oesophageal obstruction, cough and nasal discharge. Treatment options for subepiglottic cyst include excision via laryngotomy, standing transendoscopic electrosurgical resection. The goal of surgery is complete removal of the secreting epithelial lining of the cyst while avoiding excessive removal of pharyngeal mucosa which may result in cicatrization beneath the epiglottis. Following surgical removal of our case, the mare returned to her prior level of use.
Thyroglossal duct cyst was presented adjacent to the thyroid at the most distal end of the thyroglossal duct. It should be included as a differential diagnosis when encountering a foal with a fluid filled mass at the lateral retropharyngeal region. Differential diagnoses included: Eustachian tube diverticulums, guttural pouch abnormalities such as tympany or empyema, branchial cyst, ultimobranchial cyst, esophageal and tracheal duplication cysts, and salivary mucocele.

The finding of a cranial ventral soft cervical swelling in foals, combined with the fact that the mass was congenital and initially yielding clear serous fluid with identification of colloid-filled thyroid follicles upon histological examination directed the diagnosis towards thyroid duct cyst. Healing was achieved with cosmetic results after surgical excision of the cyst with no evidence of recurrence up to 4 years observation. Cysts can be differentiated histologically on the basis of their lining epithelium. The lining of thyroglossal duct cysts consists of pseudostratified, ciliated columnar epithelium and stratified squamous epithelium.

Melanomas most frequently occur in gray horses, and it is believed that a disturbance in melanin metabolism occurs during the graying process, leading to overproduction and accumulation of melanoblasts in the dermis. Horses with melanomas of the parotid region almost invariably have obvious external swelling. The case reported in this study is unusual, as there was no external evidence of the tumor and the primary mass was sub-epithelial in origin being situated in the connective tissue at the retropharyngeal region. To our knowledge, this is the first report to describe a novel location of melanoma in such region in horses. Also surgical excision was performed as the tumor mass seems to be well differentiated from the adjacent tissue.

Melanocytic nevi are readily treated in this manner as they are frequently well defined and solitary. However, if the margins of excision cannot be achieved; there is a very high incidence of recurrence. The presence of multiple adjacent vital structures precludes the radical resection of melanomas, unless they are small and surrounded by apparently normal parotid salivary glands.

Guttural pouch empyema had been manifested through intermittent nasal discharge, parotid swelling and difficulty in breathing and swallowing. Similar findings were reported by. Four cases of guttural pouch empyema had a past history of strangles infection, the result which coincides with that reported by. Surgical intervention was indicated for successful treatment of horses with guttural pouch empyema to eliminate the discharge and inspissated pus. Viborg's triangle was the approach of choice, the results which were endorsed by other authors. To the authors knowledge this is the first report to describe a unique (novel) location of the thyroglossal duct cyst and melanoma at the retropharyngeal and mandibular regions respectively.

References


