

THE USE OF ENDOSCOPY IN DIAGNOSIS AND TREATMENT OF A HORSE WITH RHINOESTRUS SPP.

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Abstract

Background: Larvae of *Rhinoestrus purpureus* (Diptera: Oestridae) are known to cause nasal myiasis in domestic and wild animals such as equines, giraffes and rhinos, and can also affect humans.

Case description: This paper reports the case of a 4-year-old Thoroughbred breed horse that was admitted in the veterinary hospital of the Faculty of Veterinary Medicine in Perugia, Italy. The horse was presented with inflammation of the nasal cavities causing dyspnoea, sneezing, coughing and typical nasal discharge.

Methods: A flexible endoscope was used to check the nasal cavities of the horse and the presence of parasitic larvae was determined inside. After the parasitological examination, the larvae found were identified as *Rhinoestrus purpureus*.

Results: Clinical signs were resolved within 6 days after 3 intranasally endoscopic administrations of Clotrimazol, increasing the outcome due to local administration of the substance of choice.

Conclusion: This case report reveals the fact that flexible endoscopy can be used for a better diagnosis and treatment.

Keywords: Endoscopy, equines, *Rhinoestrus purpureus*

INTRODUCTION

Larvae causing obligatory myiasis are numerous and they may affect cutaneous and subcutaneous tissues, wounds, nasopharyngeal cavities (nasal bots), internal organs and the digestive tract (bots) of domestic and wild animals and humans as well. Nasal bots belong to the Family Oestridae, Subfamily Oestrinae, which includes several important genera: *Oestrus* and *Rhinoestrus* infecting horses, *Cephalopina* infecting camels (Akeurin 1945). Nasal bots are widespread in Mediterranean and tropical areas and in affected animals they induce sneezing and nasal discharge which may become caked with dust making breathing very difficult. The mentioned species of larvae are host-specific but sometimes they may be deposited in human eyes inducing a painful ophthalmomyiasis of short duration.

Larvae of the flies belonging to the genus *Rhinoestrus* (Diptera: Oestridae) cause nasal myiasis of domestic and wild animals such as equids, giraffes and rhinos (Colwell et al. 2006). The myiasis caused by larvae of *Rhinoestrus purpureus* and *Rhinoestrus usbekistanicus* (Diptera, Oestridae) are of importance in the horse medicine since it

causes severe respiratory diseases (Di Marco et al. 2001). *Rhinoestrus purpureus* and *R. usbekistanicus* cause inflammation of the nasal cavities, sinuses and pharynx, thus inducing sneezing, coughing and dyspnoea. Damage to the olfactory nerves, encephalomyelitis due to the penetration of the ethmoid bone and of the soft cerebral membrane and lesions of the upper respiratory tract and lungs may also occur (Clayton et al. 2005).

Even though myiasis caused by *Rhinoestrus* larvae are thought to be confined to Asiatic and African countries, recently it has been reported in Europe, specifically in southern Italy. The use of the endoscope in the diagnosis of equine rhinoestrosis in live animals is very useful, since, when present, larvae are very difficult to retrieve in the pharynx without an endoscope. Serological methods for the diagnosis of equine rhinoestrosis are not available and therefore it can be achieved only by the postmortem examination (Otranto et al. 2003)

This paper describes concisely the use of the flexible endoscope for a diagnosis of nasal myiasis by *Rhinoestrus* spp. in a horse and a better treatment due to local administration of the substance.

MATERIALS AND METHODS

This paper report the case of a 4-year-old Thoroughbred breed horse that was admitted in the veterinary hospital of the Faculty of Veterinary Medicine in Perugia, Italy, with a history of anorexia and lethargy for about 2 weeks. The horse was presented with inflammation of the nasal cavities causing dyspnoea, sneezing, coughing and typical nasal discharge. The horse was in poor condition and often lethargic with weight lost. It had poor appetite, abdominal pain and suffered from lack of proper nourishment. The horse had clumps of eggs on legs, belly and mouth and the horse was seen often licking those areas. The horse was seen rubbing his face of nearby objects and biting objects to relieve irritation in mouth which had ulcers. It also presented spontaneous snorting, puffing and coughing.

Heart and respiratory rate were within normal limits. Auscultation of the heart and abdomen revealed no clinical abnormalities. Wheezes were auscultated in both sides of the lung. The mucous membranes were pink and capillary refill time was 2 sec. The mandibular lymph nodes were enlarged, moveable and lobed, but not painful. Palpation of the parotid area and larynx was unremarkable. The coughing reflex occurred spontaneously and on provocation. Neurological examination of the cranial nerves, revealed no abnormalities but the inspection and palpation of the oral cavity revealed severe irritation in gums and puss pockets.

An upper airway and guttural pouch endoscopy was performed subsequent to the physical examination. We used a flexible endoscope of 300 cm length and 10.3 mm diameter. The horse was sedated with Xylazine 1.1 mg/kg bw IV in the jugular vein.

The upper airway endoscopy revealed the following findings. The larynx was symmetrical and the epiglottis seemed to be normal. Endoscopy of the guttural pouches revealed a large number of parasitic eggs. We took a sample for parasitological examination using a Aligator biopsy forceps. We performed guttural pouch irrigation with 2% clotrimazole emulsion using a urinary catheter of 8 FG and 2.6 mm diameter. Before entering the guttural pouch, nasal passages were flushed with warm

saline solution 0.9% NaCl. Subsequently the clotrimazole emulsion was instilled into the other guttural pouch and the catheter was removed.

RESULTS AND DISCUSSIONS

The results of the probe we took from the guttural pouches and gave for a parasitological examination came positive for *Rhinoestrus* spp. (fig. 1).



Figure 1. Evidence of larvae under endoscopic image

Therefore, we performed guttural pouch irrigations every 2 days with a 2% clotrimazole emulsion over a time period of 6 days. Under this medication, the horse's appetite improved and body condition stabilized. The severity of the dysphagia, nasal discharge, coughing, and snorting remained variable.

After 6 days and 3 intranasally endoscopic administrations of 2% clotrimazol the clinical signs were resolved and there weren't any eggs present at the endoscopic check-up of the horse's nostrals. (fig. 2).



Figure 2. Endoscopic check-up after administration of 2% clotrimazole emulsion

This case report presents an uncomplicated diagnosis of a rather minimal guttural pouch mycosis with a large impact on the quality of life of a 4-year-old horse.

Guttural pouch myiasis is a rare, globally widespread, fungal disease with no predispositions to age, gender, breed, or regional origin. However, it does appear more often in stabled than in pastured horses, especially during the warm months of the year. Bad general condition, immunodeficiency, inflammation, or defects of the mucosal barrier can be initiating factors.

Complications of acute respiratory distress and aspiration pneumonia were conceivable. An indication for a thoracic radiograph was given, but due to money restrictions we refrained from this. The evaluation of a thoracic radiograph would have emphasized the clinical findings, but would not have influenced the therapy and prognosis effectively. The treatment of guttural pouch myiasis can be attempted by using topical and/or systemic antifungal medication. Various antimycotics, such as nystatin ketoconazole, miconazole, natamycin, enilconazole, clotrimazole in different pharmaceutical forms (powder, solutions), and thiabendazole, or irritant reducing solutions, such as povidone-iodine or 6% neomycin mixed with 1% gentian violet, can be used (Ragle 2003) (fig. 3).



Figure 3. Endoscopic administration of 2% clotrimazole emulsion

Unfortunately, a standard approach to the treatment of guttural pouch myiasis does not exist (Greet 1987). In this case, we choose a topical therapy with a 2% clotrimazole emulsion, which led to an excellent recovery of the mucosa lying with no signs of inflammation. The instillation of this emulsion had two advantages. Firstly Canesten® Gyn^d is specifically made for mucosa-associated fungal infections and secondly due to its consistency it sticks to the wall of the guttural pouch leading to a more effective, long-lasting therapy. A very likely explanation is that clotrimazole is a broad-spectrum, topical, nonsystemic, antifungal drug.

CONCLUSIONS

The clinical symptom of dyspnoea, sneezing, coughing and nasal discharge always requires a close investigation of the upper respiratory tract and both guttural pouches. Management is difficult and a standard approach to treatment of guttural pouch infestation with larvae causing myiasis does not exist. The use of flexible endoscope can be used for a better diagnosis and treatment, increasing the outcome due to local administration of the substance of choice. The use of a three-day depot clotrimazole emulsion requires further evaluation.

Using equine insect repellent and fly sheets on your horse during the summer may help to reduce the level of bot infestation - but it will be impossible to stop all flies.

Regular removal and disposal of droppings from the horse's pasture will help to prevent some of the larvae burrowing down into the soil and hatching into bot flies.

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