

Laryngeal granuloma in a thoroughbred horse: a multidisciplinary study*

*Granuloma laríngeo en un caballo purasangre:
un estudio multidisciplinario*

*Granuloma de laringe em um cavalo puro-sangue:
um estudo multidisciplinar*

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Abstract

A two year-old racing thoroughbred mare presented with loud respiratory stertor, that was auscultated in the tracheal and laryngeal regions. Upon palpitation of the larynx, no changes were noted. The upper respiratory tract was examined via a fiberoptic endoscopy where the nasal passages were observed to be unchanged and the scope passed with normal resistance. The guttural pouches and their openings were normal. The right arytenoid cartilage appeared thickened throughout its length and failed to retract during inspiration. In the right, dorsal cricoarytenoid cartilage a gross mass was observed projecting from the right wall. The mass was surgically removed from the larynx and samples were collected for histopathologic and bacterial study. Histopathologic study of the cricoid cartilage revealed extensive proliferation of fibrous connective tissue, well vascularized granulation tissue with diffuse infiltration of lymphocytes, plasma cells and a few giant cells. Bacterial cultures provided isolation of *Pseudomonas aeruginosa*, whose antibiogram demonstrated sensitivities to ampicillin, ceftazidime, ciprofloxacin, cefepime, gentamicin, imipinem, meropenem, piperacillin, piperacillin/tazobactam and resistance to trimethoprim. In conclusion, a laryngeal granuloma was detected in a racing thoroughbred mare by a multidisciplinary, clinical study involving endoscopy, as well as histopathologic and microbiologic studies.

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Key words

Respiratory disease, equine, granuloma, larynx

Resumen

Una yegua de dos años de edad Pura Sangre de Carreras presentó estertor respiratorio fuerte que se ausculta en las regiones de la tráquea y la laringe. En la palpación de la laringe no se detectaron cambios. Las vías respiratorias superiores fueron examinadas con un endoscopio de fibra óptica en los pasajes nasales no se observaron cambios la resistencia fue normal. Las bolsas guturales y sus aberturas fueron normales, el cartílago aritenoso derecho apareció engrosado en toda su longitud y no se retrae durante la inspiración. En el cartílago cricoaritenoso dorsal derecho se observó una masa que sobresale de la pared derecha. La masa fue removida mediante cirugía de la laringe y las muestras fueron colectadas para un estudio histopatológico y bacteriano. El estudio histopatológico del cartílago cricoide evidenció una gran proliferación de tejido conectivo fibroso, tejido de granulación bien vascularizado con infiltrado difuso de linfocitos, células plasmáticas y células gigantes. El cultivo bacteriano permitió el aislamiento de *Pseudomonas aeruginosa*, el antibiograma mostró una sensibilidad de la ampicilina, ceftazidima, ciprofloxacina, cefepima, gentamicina, imipenem, meropenem, piperacilina, piperacilina / tazobactam y la resistencia a el trimetoprim. En conclusión, se detecto un granuloma laríngeo en un Pura Sangre de Carrera mediante un estudio multidisciplinario clínico, endoscopio, histopatológico y microbiológico.

Palabras clave

Enfermedad respiratoria, equino, granuloma, laringe.

Resumo

Uma égua de corrida puro-sangue de dois anos apresentou estertor respiratório forte que foi auscultado nas regiões da traquéia e da laringe. Na palpação da laringe não foram detectadas alterações. As vias respiratórias foram examinadas com um endoscópio de fibra ótica onde nas fossas nasais não foram observados trocas e a resistência era normal. As bolsas guturais e as suas aberturas foram normais. A cartilagem aritenóide direita apareceu espessada em todo seu comprimento e não se retrai durante a inspiração. Na cartilagem cricoaritenóide dorsal direita mostrou uma massa que se projeta da parede direita. A massa foi removida através de cirurgia da laringe e as amostras foram coletadas para um estudo histopatológico e bacteriano. O estudo histopatológico da cartilagem cricoide evidenciou uma proliferação grande de tecido conector fibroso, tecido de granulação bem vascularizado com infiltrado difuso de linfócitos, células plasmáticas e células gigantes. A cultura bacteriana permitiu o isolamento de *Pseudomonas aeruginosa* e o antibiograma mostrou sensibilidade de ampicilina, ceftazidima, ciprofloxacina, cefepima, gentamicina, imipenem, meropeném, piperacilina/tazobactama, e resistência a trimetoprim. Em conclusão, um granuloma de laringe foi detectado em uma égua de corrida puro-sangue através de um estudo clínico multidisciplinar, envolvendo endoscopia, avaliação histopatológica e microbiológica.

Palavras chave

Doença respiratória, equinos, granuloma, laringe

Introduction

Laryngeal chondropathy is a suppurative condition of the cartilage matrix that principally affects the arytenoid cartilages; it is believed to result from microbial infection, often as a sequel of inhalation of irritants¹. It is characterized by necrosis and ulceration of the laryngeal mucosa, over or just caudal to the vocal cords, and abscessation within the arytenoid cartilage. Initially, there is often acute laryngeal inflammation. Later, there is progressive enlargement of the cartilages that commonly results in a fixed upper airway obstruction with stertorous breathing and reduced exercise tolerance¹. A granuloma associated with the larynx is almost always the sequel to previous surgery or to an accident but may be associated with chondritis⁶. Laryngeal chondropathy occurs in horses, sheep, and cattle, most often young males. There is a distinct breed predisposition in Thoroughbred horses in race training^{1,5}. The condition has been reported in the UK associated with an exotic disease rhinosporidiosis⁶. The objective was an approach of this multidisciplinary study clinical, endoscopy, histopathology and microbiology of a granuloma laryngeal in a mare Thoroughbreds.

Clinical case

History

A two year old Thoroughbreds mare developed respiratory stertor and history of exercise intolerance.

Clinical evaluation

A loud stertor was auscultated over the tracheal and laryngeal regions. The horse presented palpation of the larynx but alterations in size or contour could not be detected.

Endoscopy

The upper respiratory tract was examined with a fiber-optic endoscopy. The nasal passages were observed to be patent and the scope passed with

normal resistance. The guttural pouches and their openings were normal; the right arytenoid cartilage appeared thickened throughout its length and failed to retract during inspiration. On passing the scope through the vocal folds, a mass was seen projecting from the right wall of the gross (Figure 1).



Figure 1. Laryngeal biopsy of horse with granuloma.

Surgical procedure

Surgical anesthesia was induced with 2 mg of acepromazine, 0.03 mg/kg, 2.2 mg/kg of ketamine, 1.1 mg/kg of xilacine and 5% guaifenesin. A tracheostomy was performed in the mid cervical region to maintain adequate ventilation and prevent aspiration from the surgery site. A ventral midline approach to the larynx, similar to that described for laryngeal ventriculectomy was used. The technique was modified slightly by incising the cricoid cartilage ventrally and extending the incision an additional 2 cm to gain adequate exposure to the area where the mass was located. The incised cricoid was reapposed with one stainless steel suture and the laryngotomy incision was closed. A tracheostomy was allowed to heal by second intention. The mass was found on the right laryngeal wall; it was slightly hyperemic, firm, lobulated and 2.5 cm in diameter. The mass was removed completed.

Histopathology study

The mass was removed by surgery to the larynx and samples were collected and study by histopathology^{2,3}.

On histopathology of the cricoid cartilage hyperkeratosis, erosion and ulcers in the mucosa, there was extensive proliferation of fibrous connective tissue, well vascularized granulation tissue with diffuse infiltration of lymphocytes, plasma cells and a few giant cells (Figures 2 and 3). Special staining Tricomic of Gomory positive (+) there was extensive proliferation of fibrous connective tissue (Figure 4) and special staining Von kossa positive (+) showed mineralization (Figure 5).

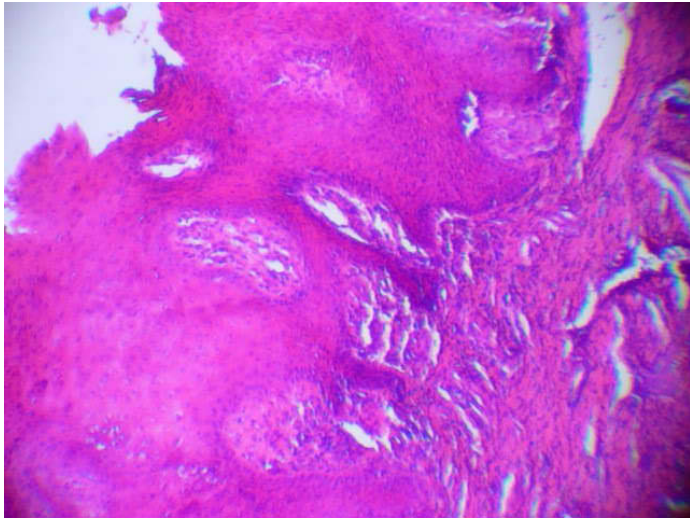


Figure 2. Histology section of laryngeal biopsy of horse with erosion and ulcers superficially (arrow), hyperkeratosis, there was extensive proliferation of fibrous connective tissue (H&E 10X).

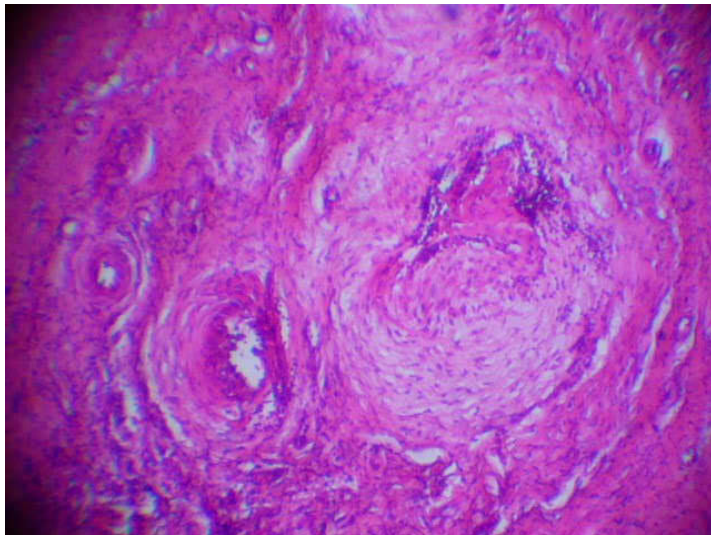


Figure 3. Histology section of laryngeal biopsy of horse with granuloma (arrow), proliferation of fibrous connective tissue, well vascularized granulation tissue with diffuse infiltration of lymphocytes, plasma cells and a few giant cells (H&E 10X).

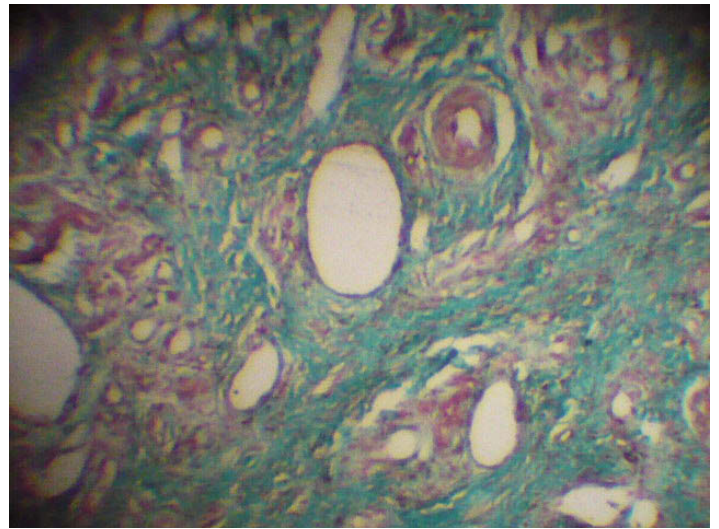


Figure 4. Histology section of laryngeal biopsy of horse special staining Tricomico of Gomory + there was extensive proliferation of fibrous connective tissue (arrows) (TCG 10X).

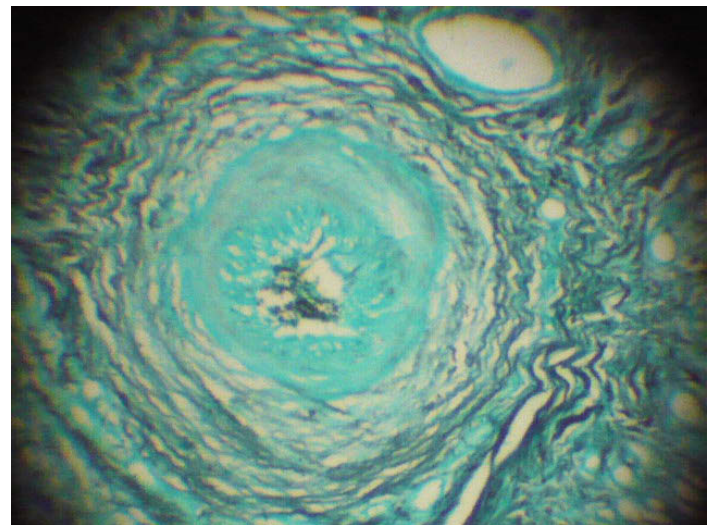


Figure 5. Histology section of laryngeal biopsy of horse special staining Von kossa + showed mineralization (arrow) (VK 10X).

Culture and antibiogram

Samples of the mass laryngeal were collected by bacteriology study in MacConkey agar and additional the isolated were study by antibiogram. Culture reveled isolated of *Pseudomonas aeruginosa* antibiogram showed sensibilites a Ampicilina, Cetafzidine, Ciprofloxacina, Cefepine, Gentamicina, Imipinem, Meropenem, Piperaciclina, Piperacilina/Tazobactan and resistance a Trimethoprin.

Discussion

These results suggest a granuloma laryngeal. Laryngitis, an inflammation of the mucosa or cartilages of the larynx, may result from upper respiratory tract infection or by direct irritation from inhalation of dust, smoke, or irritating gas; foreign bodies; or the trauma of intubations, excess vocalization, or in livestock, by injury from roping or restraint devices ^{1,4}. A tentative diagnosis is based on the clinical signs, auscultation of the laryngeal region, and exacerbation of stridor by palpation of the larynx. Definitive diagnosis requires laryngoscopy. The history and signs usually permit rapid identification of the primary disease and the associated laryngeal involvement. Bilateral laryngeal paralysis, laryngeal abscess, pharyngeal trauma and cellulitis, and retropharyngeal abscesses or masses can cause similar signs ^{1,5,6}.

A possible phycomycetes granuloma in the larynx of a horse ⁴. Laryngitis may accompany infectious tracheobronchitis and infectious strangles herpesvirus 1 infection, viral arteritis, and infectious bronchitis in horses ^{1,5,6}. Two horses affected with bilateral, arytenoid mucosal ulceration developed a granuloma at each site of ulceration ⁸. One horse developed a granuloma at a site of ulceration and, subsequently, arytenoid chondropathy ⁸. The mucosa of the arytenoid cartilage, particularly at the ostral margin of the vocal process, should be examined carefully during endoscopic examination of the upper portion of the respiratory tract of Thoroughbred yearlings presented for sale ⁸. Because a small percentage of mucosal ulcers may progress to granuloma or, less commonly, chondropathy, identification of mucosal ulcers of the arytenoid cartilage seen during post sale, endoscopic examination warrants notification to the purchaser and sales company ⁸. Removal of the granuloma in uncomplicated cases is usually effective, particularly when the granuloma is a sequel to ventriculectomy and is attached to the vocal cord ^{4,6}.

Conclusion

In conclusion we reported a granuloma laryngeal in a mare Thoroughbreds with respiratory distress and exercise intolerance through a multidisciplinary study clinical, endoscopy, histopathology and microbiology with surgical resolution.

References

1. Adams SB, Frauenfelder H. Laryngeal abscessation in a horse. *J Am Vet Med Assoc.* 1:177, 1980.
2. Aluja A., Constantino C. *Technical of Necropsy in domestic animals.* 2nd ed. Mexico: Manual Moderno, 2002.
3. Banks W. *Veterinary Applied Histology.* 2nd ed. México. Manual Moderno, 1996.
4. Barakzai S. *Handbook of Equine Respiratory Endoscopy.* Saunders Elsevier, 2007.
5. Freirz, P., Fischer R. A possible Phycomycetes granuloma in the larynx of a horse. *Can vet jour.*,17:17, 1976.
6. Higgings A, Wright I. *The Equine Manual.* W. B. Saunders Ltd. UK, 1995.
7. Jubb KVF., Kennedy PC., Palmer N. *Domestic animal pathology.* Charter 1, Vol. II, 3,ed. Uruguay: Hemisferio Sur, S.R.L, 1984.
8. Kelly G, Lumsden JM, Dunkerly G, Williams T, Hutchins DR. Idiopathic mucosal lesions of the arytenoid cartilages of 21 Thoroughbred yearlings: 1997-2001. *Equine Vet J.* 2003 May;35(3):276-81.