SIVE
Società Italiana Veterinari per Equini
SOCIETÀ FEDERATA ANMVI

Federation of European Equine Veterinary Associations

Veterinary European Equine Meeting of the Year 2008

XIV SIVE CONGRESS

Venice (Italy)
Palazzo del Casinò
January 25th-27th, 2008

Organized by

certificata ISO 9001:2000

9° CONGRESSO NAZIONALE MULTISALA SIVE

PISA, 1-2 FEBBRAIO 2003

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Epistassi: diagnosi e trattamento

Epistaxis: diagnosis and treatment

Domenica, 2 Febbraio 2003, 11.30
Sunday, February 2nd 2003, 11.30

AUDITORIUM

CHIRURGIA E ORTOPEDIA

Chairperson: Fernando Canonici

Riassunto

In tutti i cavalli che vengono portati alla visita con un'anamnesi di epistassi profusa e spontanea ad insorgenza improvvisa si deve sospettare la presenza di una micosi delle tasche gutturali; la condizione va trattata come un'emergenza. La micosi delle tasche gutturali è un'infezione fungina della volta delle tasche stesse che provoca grave epistassi dovuta al fatto che i miceti provocano l'erosione dell'arteria carotide interna nella maggior parte dei casi (circa il 70%) e di quella esterna (< 10%) e delle arterie mascellari (> 20%) nei restanti. Di solito, si osservano diversi episodi emorragici che precedono quello fatale. È stato descritto il successo della prevenzione dell'emorragia mediante legatura dell'arteria carotide interna, ma la tecnica con catetere a palloncino consente l'immediata occlusione intravascolare dell'arteria e previene il flusso retrogrado dal circolo arterioso cerebrale. Un sistema di applicazione con palloncino staccabile risulta superiore al normale catetere a palloncino. Per occludere l'arteria carotide esterna, si inserisce un catetere da trombectomia nell'arteria palatina maggiore, 3 cm caudalmente al terzo dente incisivo (cantone) e si introduce un catetere a palloncino attraverso l'arteria facciale trasversale. Il palloncino viene quindi gonfiato con soluzione fisiologica. Le estremità ridondanti del catetere vengono incorporate in una stockinette ed i cateteri vengono rimossi dopo 7-10 giorni. L'embolizzazione spirale transarteriosa è la procedura più efficace e rapida per la prevenzione delle emorragie da micosi delle tasche gutturali, perché si serve dell'arteriografia per consentire la collocazione precisa delle molle spirali occludenti e per identificare ogni vascolarizzazione aberrante o siti emorragici inusuali.

Se un cavallo inarca ed estende eccessivamente la testa, si può provocare la rottura dei muscoli retti ventrali del capo, con conseguente lacerazione degli stessi dalle loro inserzioni a livello del basisfenoide. La manifestazione più apparente di questa lesione è un'abbondante emorragia nasale, solitamente da entrambe le narici, ed in alcuni casi si osservano segni neurologici, che peggiorano la prognosi. La rottura dei muscoli retti ventrali del capo va distinta dalla micosi delle tasche gutturali attraverso l'anamnesi (che nel primo caso riferisce un trauma) e l'endoscopia. Il trattamento consiste nel riposo in scuderia.

L'ematoma etmoidale può causare un'epistassi lieve, persistente, spontanea, intermittente e monolaterale nei cavalli con più di 4 anni di età. Attraverso l'esame endoscopico è possibile osservare la lesione estendersi nelle vie nasali; è anche possibile la dimostrazione radiografica. Il trattamento consiste nella rimozione chirurgica dell'intera lesione attraverso un lembo osseo frontonasale, nell'ablazione con un laser Nd:YAG o nell'iniezione intralesionale di formalina al 10%. Tutti questi interventi possono essere effettuati nell'animale in stazione.

Summary

Any horse presented with a history of sudden onset, profuse and spontaneous epistaxis, should be suspected of having guttural pouch mycosis and treated as an emergency. Guttural pouch mycosis is a fungal infection on the roof of the guttural pouch that causes severe epistaxis from fungal erosion of the internal carotid artery in most cases (approximately 70%), and the external carotid (<10%) and maxillary arteries (>20%) in the remainder. Several bouts of hemorrhage usually precede a fatal episode. Successful prevention of hemorrhage has been reported with ligation of the internal carotid artery but the balloon catheter technique allows immediate intravascular occlusion of the artery and prevents retrograde flow from the cerebral arterial circle. A detachable balloon delivery system is superior to the balloon-catheter. To occlude the external carotid artery, a thrombectomy catheter is inserted into the major palatine artery, 3 cm caudal to the corner incisor tooth, and a balloon-catheter is inserted through the transverse facial artery. The balloon is inflated with saline. The redundant ends of catheters are incorporated into a stockinet hood and the catheters are removed after 7 to 10 days. Transarterial coil embolization is the most effective and most rapid procedure for prevention of hemorrhage from guttural pouch mycosis, because it uses arteriography to allow precise placement of the occluding coils and to identify any aberrant vasculature or unusual bleeding sites.

The ventral straight muscles of the head can be ruptured by a horse following over backwards and hyperextending its head, which causes tearing of these muscles from their attachments to the basisphenoid bone. The most apparent sign of this injury is copious nasal hemorrhage, usually from both nostrils, and some horses have neurologic signs, which worsen the prognosis. Rupture of ventral straight muscles of the head is distinguished from guttural pouch mycosis by a history of trauma with the former, and by endoscopy. Treatment is stall rest.

Ethmoid hematoma can cause mild, persistent, spontaneous intermittent and unilateral epistaxis in horses > 4 years. The lesion can be seen extending into the nasal passages on endoscopic examination and can be demonstrated on radiographs. Treatment involves surgical removal of the entire lesion through a frontonasal bone flap, ablation with an Nd:YAG laser, or intralesional injection of 10% formalin. All can be done as standing procedures.

Any horse presented with a history of sudden onset, profuse and spontaneous epistaxis, should be suspected of having guttural pouch mycosis and treated as an emergency. Guttural pouch mycosis is a focal to moderately diffuse fungal infection on the roof of the guttural pouch that causes a diphtheritic membrane of variable size, composed of necrotic tissue, cell debris, a variety of bacteria, and fungal mycelia. The most common clinical sign is moderate to severe epistaxis, which is caused by fungal erosion of the internal carotid artery in most cases (approximately 70%), and the external carotid (<10%) and maxillary arteries (>20%) in the remainder. Several bouts of hemorrhage usually precede a fatal episode and mucous and dark blood continue to drain from the nostril on the affected side for days after acute hemorrhage ceases. The second most common clinical sign is dysphagia caused by damage to the pharyngeal branches of the vagus and glossopharyngeal nerves, and this and other nerve problems may or may not be evident in horses with hemorrhage.

BALLOON-CATHETER OCCLUSION OF THE INTERNAL CAROTID ARTERY

Successful prevention of hemorrhage has been reported with ligation of the internal carotid artery and can be attributed to thrombosis distal to the ligature at some time after surgery. Fatal or severe hemorrhage after this procedure can be attributed to occlusion of the wrong vessel or to retrograde flow from the cerebral arterial circle (circle of Willis). Blood pressure in the internal carotid artery is not reduced by ligation and remains constant for at least 3 days afterwards. The balloon catheter technique allows immediate intravascular occlusion of the artery and prevents retrograde flow from the cerebral arterial circle. The internal carotid artery is ligated close to its origin, and a 6 French venous thrombectomy catheter (Fogarty-Edwards Laboratories, distributed by American V. Mueller, Chicago, IL) is inserted through an arteriotomy distal to the ligature for a distance of approximately 13 cm. This places the balloon tip of the catheter in the sigmoid flexure of the internal carotid artery, distal to the site of infection. Fluoroscopy is not required for guidance but intraoperative endoscopy can be helpful. The balloon is inflated with sterile saline and secured by a ligature at the arteriotomy, and the redundant portion is buried in the incision. Infection in the surgical site can be treated by removing the catheter and establishing drainage. Failure in one case was caused by inadvertent catheterization and occlusion of an aberrant branch from the internal carotid artery, which left the affected segment of artery open to retrograde blood flow. To prevent this mishap, approximately 6 cm of the internal carotid artery should be exposed to locate and ligate any aberrant branch.

OCCLUSION OF THE INTERNAL CAROTID ARTERY WITH DETACHABLE BALLOON CATHETER SYSTEMS

The internal carotid artery is approached and prepared as described above and the balloon delivery system (Yocan Medical Systems, Ms. Yoca C. Terbrugge, 4 Spirea Ct., Thornhill, Ontario 13t2w1, Canada) is introduced for approximately 13-cm or until resistance is met. The balloon is then inflated with 0.5 ml of sterile saline or contrast solution. Contrast solution allows determination of appropriate positioning and inflation of the balloon by a lateral, intraoperative radiograph. The balloon is detached by gentle traction on the carrier microcatheter and all proximal ligatures are secured. Complete occlusion of the internal carotid artery is assessed by lack of blood flow through the arterial puncture site.

BALLOON-CATHETER OCCLUSION OF THE EXTERNAL CAROTID ARTERY AND ITS BRANCHES

The most likely source of retrograde flow to the external carotid artery and its branches is the major palatine artery, which is a large continuation of the maxillary artery. To prevent normograde flow, the external carotid artery is ligated after the linguofacial trunk and, to reduce retrograde flow, a 6-F Fogarty venous thrombectomy catheter is inserted into the major palatine artery,

3 cm caudal to the corner incisor tooth. This catheter is inserted retrograde for approximately 40 to 42 cm in a 450-kg horse, or the shortest distance from the arteriotomy to the articular tubercle of the temporal bone. The balloon is then partly inflated and the catheter is gently retracted until some resistance is encountered, at which point the balloon is at the caudal alar foramen. It is then fully inflated with sterile saline. As an alternative to ligation, the external carotid artery can be occluded distal to the origin of the linguofacial trunk by a balloon catheter inserted through the transverse facial artery (approximately 12 cm from the arteriotomy site in a 450-kg horse). The balloon is inflated with saline. The redundant ends of catheters are incorporated into a stockinet hood and the catheters are removed after 7 to 10 days.

This procedure is effective and does not cause blindness, even when combined with occlusion of the internal carotid artery. This difference from ligation of the major palatine artery can be attributed to prevention of the "steal phenomenon" that occurs with ligation. However, the owner should be warned of the risk of blindness.

TRANSARTERIAL COIL EMBOLIZATION

Transarterial Coil Embolization is the most effective and most rapid procedure for prevention of hemorrhage from guttural pouch mycosis (Fig. 1), because it uses arteriography to allow precise placement of the occluding coils (Embolization Coils, Cook Inc, Bloomington, IN) in the affected arteries and to identify any aberrant vasculature or unusual bleeding sites. Also, the surgical approach for all arteries in the guttural pouch is the common carotid artery exposed through a single incision at the junction of the proximal and middle thirds of the neck. The disadvantages are the need for fluoroscopy, specialized equipment and expertise with its use, positioning of the horse's head for fluoroscopy, and radiation-shielding apparel and equipment. Although these disadvantages would limit this technique to a small

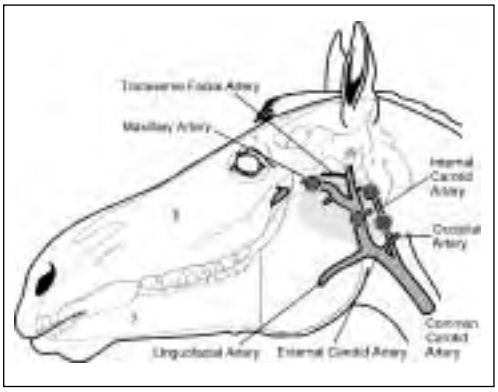

FIGURE 1 - Diagram of coil placement in the internal, external, and maxillary arteries and a radiograph of coils (arrows) in the external and maxillary arteries.

number of well equipped hospitals, coils have been implanted in the internal carotid artery using a cut-down procedure similar to that for the balloon catheters. Placement can be determined as for balloon catheters, and confirmed by lack of back flow through the arteriotomy and assessment of coil placement by radiography.

RUPTURE OF THE VENTRAL STRAIGHT MUSCLES OF THE HEAD

The ventral straight muscles of the head can be ruptured by a horse following over backwards and hyperextending its head, which causes tearing of these muscles from their attachments to the basisphenoid bone. The most apparent sign of this injury is copious nasal hemorrhage, usually from both nostrils, and some horses have neurologic signs, which worsen the prognosis. Rupture of ventral straight muscles of the head is distinguished from guttural pouch mycosis by a history of trauma with the former, and by endoscopy. In horses with rupture of the ventral straight muscles, the roof of the pharynx is collapsed and both guttural pouches are affected, usually more so on one side than the other. Also, the major arteries and the more caudal aspect of the guttural pouch are not involved and there is no evidence of a diphtheritic membrane.

A more complete view of the source of hemorrhage and swollen muscle bellies can be seen by retroversion of the endoscope. On radiographs, partial obliteration of the guttural pouch by increased soft tissue density, soft tissue impingement on the roof of the pharynx, gas in soft tissues of the head and neck, and even avulsions of the basisphenoid bone are evident. The size and extent of the hematoma and gas in soft tissues can be determined by ultrasound examination. Treatment is stall rest (4 to 6 weeks), feeding from raised containers, nonsteroidal antiinflammatory drugs, and antibiotics.

ETHMOID HEMATOMA

Ethmoid hematoma is a progressive and locally destructive mass of unknown cause in the paranasal sinuses that resembles a tumor in appearance and development, but is not neoplastic. Large hematomas usually arise from the ethmoid labyrinth, but smaller ones can arise from the floor of the sinuses. The hematoma usually extends into the nasal passage. An expanding hematoma can cause pressure necrosis of surrounding bone but rarely causes facial distortion. It is most commonly seen in horses older than 6 years. Mild, persistent, spontaneous intermittent and unilateral epistaxis is the most common clinical sign. The lesion can be seen extending into the nasal passages on endoscopic examination and can be demonstrated on radiographs. Hemorrhage is mild and does not cause anemia.

Treatment involves surgical removal of the entire lesion through a frontonasal bone flap (Fig. 2). Ablation treatment with an Nd:YAG laser appears to be promising and intralesional injection of 10% formalin is successful. Both these methods are performed through the biopsy channel of the endoscope, which will accommodate the laser fiber for the former and polyethylene tubing with a needle at the end for the latter. Both can be done as standing procedures and are less invasive than surgery. Approximately 50 ml of formalin is injected each time and treatment is repeated at 4-week intervals in most cases. The formalin treatment has the advantage that it is inexpensive.

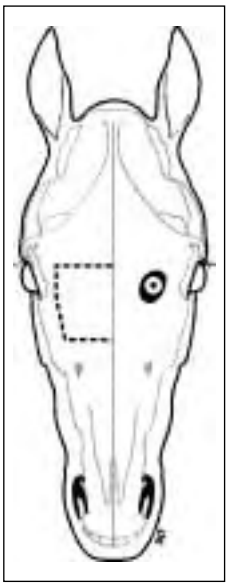

FIGURE 2 - Approaches to the sinuses through a frontonasal bone flap (broken line on right side of head). Landmarks for the frontonasal flap are: the caudal edge is midway between the supraorbital foramen and medial canthus of the eye; the lateral margin is 2 to 2.5 cm medial to the medial canthus of the eye, is 9 to 10 cm long and does not cross the line from the medial canthus to the nasoincisive notch; and the rostral margin is at right angles to the midline. The frontomaxillary opening is shown on the right side.

MISCELLANEOUS

Other causes of epistaxis are exercise-induced vessel rupture of a pulmonary vessel, hemorrhage from a pulmonary abscess, fractured facial bones, any form of nasal or sinus trauma (stomach tube), neoplasia, or sinonasal fungal infection. Traumatically induced nasal or sinus hemorrhage can be reduced by head elevation and IV injection of 10% formalin slowly as a bolus of 16 ml in 50 ml of saline for a 450-kg horse.

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