

Sinusitis in the thoroughbred racehorse

The sinuses of a horse are extensive air-filled cavities in the head, extending from above eye level down to about the level of the long bony prominence on the outer face, i.e. facial crest. The sinuses are lined with a mucous membrane that produces a small amount of mucus that freely drains into the nasal passages. The roots of the upper cheek teeth (premolars and molars) extend into some of the sinuses, covered by a thin plate of bone, and the sinuses communicate with one another in a somewhat complicated manner.

There are six pairs of sinuses (one on either side of the head). These are the frontal, maxillary, dorsal conchal, middle conchal, ventral conchal and sphenopalatine sinuses. The maxillary sinus is the largest and is divided into front (rostral) and back (caudal) parts. With the exception of the external facial bones, most of the bone forming the sinuses and their internal compartments is very thin and easily damaged and distorted by disease.

A number of conditions can affect the sinuses, but we are going to concentrate on the most common one here – sinusitis.

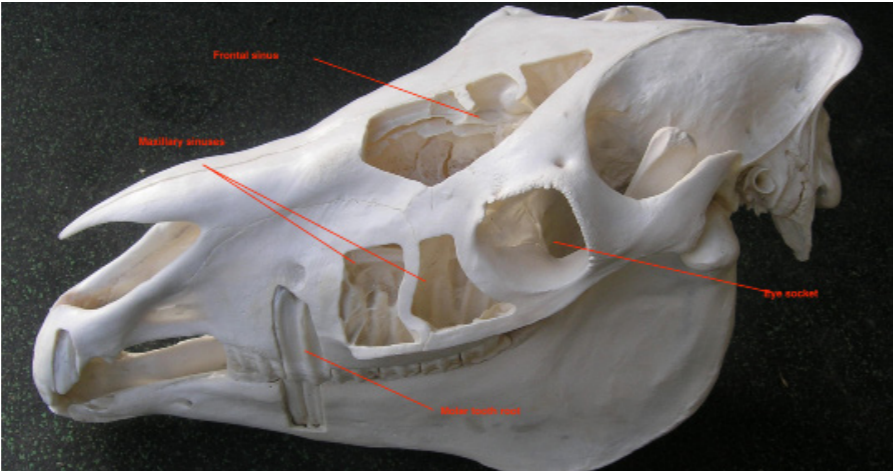
What is sinusitis?

Sinusitis is inflammation or infection of one or more of the sinuses. The condition may be ‘primary’, meaning that it originated in the sinus itself, or ‘secondary’, when another condition, such as a tooth root infection, affects the sinus. It is a commonly encountered condition in horses of all ages.

Primary sinusitis can occur in any age of horse but is common in young horses. It is usually caused by a bacterial infection of the upper respiratory tract involving one or more of the sinuses. In most cases, only one side is affected (unilateral). The infection causes a build-up of pus or muco-pus in the sinus, which typically drains down the nasal passage and out of the nostril on the affected side. If the infection is acute, traces of blood are sometimes mixed in with the discharge.

The most common group of bacteria involved in primary sinus infections are the Streptococci – the same family as the bacteria that cause strangles. Any trauma to the head that causes bleeding into a sinus can also predispose to sinusitis, as blood is an excellent medium for bacterial growth.

Secondary sinusitis occurs when there is a separate primary condition, such as



Skull dissected to demonstrate some of the sinuses

an infected molar tooth root, sinus cyst or bone fracture. In this situation the condition will often either not respond to treatment or will recur, if the primary problem is not resolved. In such cases the nasal discharge might be coloured yellow or tinged green (if there is a fungal component or feed material is entering the sinus via a diseased, overgrown or damaged tooth) or red-brown if there is bleeding associated with the primary or the secondary condition. If there is any dental involvement, the discharge will often have an unpleasant smell consistent with rotting food material.

How is sinusitis diagnosed?

The obvious clinical sign is a nasal discharge and this might be the only detail noted on initial examination. Other common signs include enlargement of the lymph nodes (glands) under the throat. In acute cases, the horse's temperature might be elevated but this is unusual as a temperature spike has often resolved. The discharge is almost always on the affected side only and may



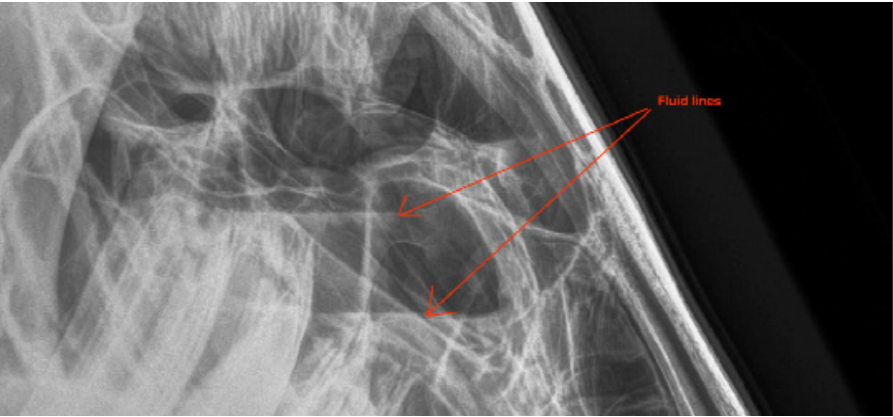
Horse with nasal discharge

or may not have an unpleasant smell. The horse might demonstrate pain response once the bone over the affected sinus is ‘tapped’ but this is inconsistent. If there is fluid accumulation in the sinus, there might be a slightly different sound on percussion – it sounds duller, a bit like tapping a barrel to see where the water level might be inside.

At some point in the examination it is important to consider the possibility that the horse might be suffering from strangles, a highly infectious and contagious bacterial disease. If there is any suspicion of strangles, the horse should be isolated immediately, pending the results of laboratory tests. This is particularly the case if there is a history of strangles on the premises or the horse is a new arrival. In severe or long-standing cases, whether primary or secondary, there may be swelling or distortion of the face.

A swab should be taken from the nasal discharge to submit for bacterial culture to determine the bacteria involved and which antibiotics might be most suitable to treat the case. Collecting a swab is particularly important if a strangles infection is possible.

An endoscopic examination can often allow identification of the source of the discharge, i.e. it might be possible to see pus draining from one of the sinus openings into the nasal passages, thus confirming the diagnosis. Taking radiographic images of the head can also be extremely useful in determining the extent of the problem and possible underlying primary conditions. However, often treatment is started empirically, without endoscopy or other examinations. Nevertheless, it is good

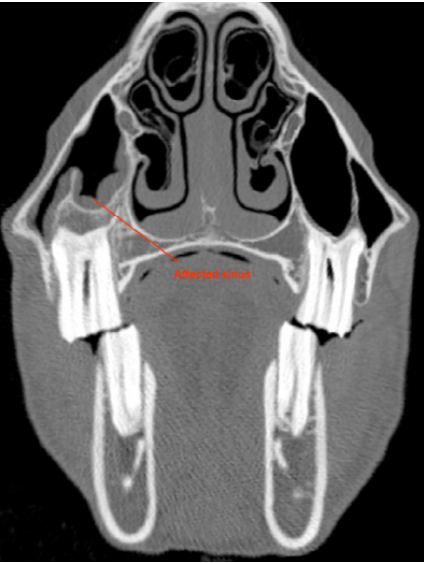


X-ray demonstrating fluid lines in sinuses

practice to perform such additional examinations if the initial response to symptomatic treatment is poor.

In cases which don't respond to treatment and have become chronic (long standing) or recur or where the sinusitis is suspected of being secondary to another problem, further diagnostics may include any or all of the following:

1. More laboratory testing, particularly culture and sensitivity of discharge samples. It is important to use the appropriate antibiotic and the correct dosage for any bacterial infection.
2. Radiography of the head, including the sinuses and cheek teeth. This is a very useful procedure for most cases of sinusitis, although it is important that the correct views (angles) are taken. Radiographic images can often confirm the presence of abnormal fluid in the affected sinus. They can also help assess the roots of the cheek teeth, for example for changes consistent with infection or abnormal
3. CT imaging. This technique allows three-dimensional imaging of the head and provides extensive detail of the anatomy and abnormalities involving the sinuses, cheek teeth, turbinates (parchment thin bony scrolls that form a major part of the structure of the nasal passages) and those parts of the head and sinuses that cannot otherwise be visualised. This can be done in the standing sedated horse.
4. Dental examination via the mouth. Many dental problems (but not all) can be diagnosed by looking inside the horse's mouth. A gag (speculum) is needed to hold the mouth open and specialised mirrors or even oral endoscopes can be used to inspect the whole mouth.
5. Endoscopic visualisation of the inside



CT scan showing tooth root infection



CT scan showing sinus cyst

of the sinuses (sinusoscopy) via a hole drilled through the bone in the face is useful for diagnosis and treatment.

Treatment

Primary sinusitis will usually respond to appropriate treatment with antibiotics. This should be combined with management changes including feeding from the floor or ground to encourage drainage from the sinuses. Bedding should be clean and dust free to reduce any irritation and light exercise can be continued, again to encourage drainage and air flow through the nasal passages. Provided the horse is not ill, turning it out of doors can be very helpful as grazing also encourages nasal drainage.

If the condition recurs or does not resolve, further diagnostic tests should be undertaken to guide treatment. In some cases, it is necessary to provide longer term flushing and drainage through the affected sinus by inserting a catheter via a small hole in the face. This is then held in place by suturing it in place, or inflation of the catheter cuff within the sinus. Fluid can then be pumped into the sinus which carries out bacteria and inflammatory debris when it drains via the nostrils, thus helping to clear infection.

Treatment for secondary sinusitis depends upon removing or resolving the underlying cause. For example, there might be a broken molar tooth that has allowed the tooth root to become infected and the infection has broken through the delicate bone plate over the root and entered the sinus. In such cases, the tooth must be removed and the resultant defect in the mouth packed, usually with dental impression wax, until it heals. Appropriate antibiotics will also be required.

If there has been trauma that has caused fracture to any of the facial bones and the fragments have become infected, surgical debridement (‘cleaning’) might be necessary. In other cases where the sinusitis has become chronic or is secondary to a sinus cyst or other sinus anomaly, it might be necessary to surgically explore and ‘clean out’ the affected sinus. Historically this was performed under general anaesthesia using a procedure known as a ‘facial flap’, where a window of bone was removed over the affected sinus. Increasingly, however, many of these procedures are performed using sinusoscopy in the standing sedated horse, meaning there is less damage to the head and a more rapid recovery.