

Hedgehog Medicine : New Perspectives on Verminous Pneumonia and Gastric Bloat.

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Abstract:

(1) Verminous Pneumonia.

Verminous pneumonia is a common clinical problem in the European hedgehog (*Erinaceus europaeus*). This is especially so in the autumn when virtually 100% of juvenile hedgehogs may be found to be infected with one, or both, of the two worms responsible for verminous pneumonia (Robinson and Routh 1999). The two nematode species responsible are *Capillaria aerophila* and *Crenosoma striatum*. The pneumonia produced by such nematode infections of the lung is probably the most frequently fatal disease in hedgehogs (Keymer and others 1991, Reeve 1994).

Diagnosis of lungworm infection in hedgehogs has traditionally been performed using faecal examination techniques. The eggs or larvae may be extracted from faeces by flotation in saturated salt solution. Unfortunately, faecal analysis is inaccurate and can fail to detect both *Capillaria* and *Crenosoma* infestations (Majeed and others 1989; Cousquer, 2003). Majeed and others (1989) found that faecal analysis alone failed to detect up to a third of histologically confirmed *Capillaria* infestations and was even less reliable in detecting *Crenosoma* infestations. Furthermore, It is also difficult to differentiate between lung *Capillaria* eggs and those of gut *Capillaria* (Robinson and Routh 1999).

Tracheal sputum examination is a more accurate and reliable method of diagnosing verminous pneumonia in hedgehogs (Cousquer, 2003). Collection of a tracheal sputum sample is easily performed and requires less than 5 minutes anaesthesia (Cousquer, 2003). Repeat samplings allow the response to treatment to be assessed. This technique will be described and its uses and advantages discussed.

Ideally the pre-release assessment of hedgehogs should include a differential blood count (PCV and TP minimum) (Lewis et al, 2002; Cousquer, 2003) together with tracheal sputum collection and examination.

(2) Gastric Bloat.

Two cases of severe gastric bloat have been seen by the author. Both hedgehogs were euthanased on presentation and found to have grossly distended gastro-intestinal tracts at autopsy. Such cases do not appear to have been described before and are distinct from other conditions such as orbicularis muscle prolapse and subcutaneous emphysema. Swabs, taken from the small intestine of the first case, produced a heavy growth of *Clostridium perfringens*. Details of the second case are reported here.

Case History

An adult hedgehog, of unknown sex, presented with respiratory distress in April 2002. The hedgehog weighed 648g on admission and appeared unwilling / unable to curl up. The hedgehog was observed mouth breathing noisily. Therapy was initiated with Dexadreson and marbofloxacin.

The hedgehog was euthanased the following morning: Its abdomen was grossly distended and the hedgehog had become increasingly dyspnoeic and distressed.

Severe distension of the entire gastrointestinal tract, from the cardia to the colon, was noted at post-mortem. There were no significant gut contents. Tissue samples were collected and submitted for histopathology, together with swabs from the left ventricle and duodenum.

The ventricular swab yielded a pure heavy growth of coagulase negative *Staphylococcus*. The small intestinal swab yielded a heavy mixed growth consistent with post-mortem invasion.

Histopathology revealed moderate congestion of the myocardial veins. There were no significant lung, pancreatic or renal lesions. The liver, however, showed mild to moderate acute multifocal centrilobular necrosis and degeneration. The degeneration and necrosis around the central veins were consistent with impaired venous drainage and a history of abdominal bloating. The presence of numerous inclusion bodies within hepatocytes were not viral and were thought to be an age related degenerative change. Small numbers of eosinophils were found scattered within the lamina propria of the pylorus and duodenum.

Discussion:

Dyspnoea in the hedgehog is usually associated with pathology of the respiratory tract. In the case of bloat, dyspnoea arises following pronounced distension of the stomach and lower gastro-intestinal tract. This distension is gaseous in nature and is responsible for a severe reduction in tidal volume. The reduction in tidal volume, together with impaired venous return, is responsible for the clinical signs seen.

The condition is to be distinguished from orbicularis muscle prolapse and subcutaneous emphysema. The accumulation of air in the subcutaneous space over the dorsum has been described. It usually follows trauma to the anterior mediastinum or thoracic cage, but could also occur as a sequel to gas production within a deep wound (Bexton and Robinson, 2003). Orbicularis muscle prolapse, also known as “popping off” or “pop off”, occurs when the orbicularis muscle slips over the pelvis and goes into spasm and often follows a severe struggle (Bexton and Robinson, 2003).

The acute nature of these two cases of bloat would tend to rule out any underlying chronic infections, such as yersiniosis or avian TB, which have been reported as causes of bloat in other species. No evidence of volvulus was identified in

either case. Clostridial overgrowth is recognised in a number of species, including cattle and primates (Thornton, 2003), as a cause of bloat. Whilst clostridial organisms were identified as a likely cause in the first of these two cases, the precise nature of the underlying pathology requires further elucidation.

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