An Introduction to Equine Grass Sickness

Abstract

Equine Grass Sickness (EGS) is both a devastating and fascinating disease. The cause of the disease remains elusive despite many years of research. Other species of animals can suffer from a similar form of the disease. Both central and peripheral nervous systems are affected producing clinical signs that vary in severity. There are 3 disease severities: acute, sub-acute and chronic, the first two being fatal. A definitive diagnosis remains challenging due in part to not having a non-invasive diagnostic test. Confirmation of diagnosis at post-mortem is important to enable advice to be given to owners of horses kept at the same premises as the affected case. Reporting cases to both the Animal Health Trust Surveillance Scheme and Equine Grass Sickness fund is vital to establish accurate numbers of horses affected so that this information can be used for future vaccine trials.

Learning Outcomes

- A general background understanding of equine grass sickness (EGS) disease development and distribution.
- The ability to recognise clinical signs of acute, sub-acute and chronic EGS.
- Understanding of the difficulties with regard to clinical diagnosis.
- Understanding of confirmation of diagnosis at both gross post mortem and histological interpretation.

Course Notes

What is Equine Grass Sickness?

- Multi-system neuropathy, primarily affecting the entire gastrointestinal tract from throat to rectum (Milne 1997; Cottrell et al., 1999).
- Central and peripheral nervous systems affected (Hunter & Poxton, 2001; Hudson & Pirie, 2005).
- Clinically 3 forms occur: acute (AGS), sub-acute (SAGS) and chronic (CGS) which reflect severity of clinical signs.
- Most clinical signs can be attributed to dysfunction of the autonomic nervous system (Pirie 2006).
- There is a strong association between the development of the disease and access to grazing (Gilmour & Jolly 1974; Doxey et al., 1991a; Wood et al., 1998) hence the name Grass Sickness; rare isolated reports of cases occurring without access to fresh pasture (Forsyth 1941; Lannek et al., 1961).

May hear the disease referred to as Equine Dysautonomia

What happens in the Gastro Intestinal tract?

- Nerve cells are damaged or killed which slow or in some cases prevents movement of food through the gastrointestinal tract.
- In AGS and SAGS cases distension of the stomach and small intestines is common (Hudson & Pirie, 2005).
- In some SAGS cases the colon and caecum can become obstructed by dehydrated intestinal contents (Hudson & Pirie, 2005).
- In CGS cases there is little gastrointestinal tract contents with reduced peristaltic movement (Hudson & Pirie, 2005).
What causes Equine Grass Sickness?

- Unknown!!.....
- Historically proposed causes include:
  - alsike clover (Tocher 1923).
  - white clover (*Trifolium repens*) (McGorum & Anderson, 2002).
  - *Clostridium perfringens* (Ochoa & Valandia 1978; Gilmour *et al*., 1981; Waggett *et al*., 2009)
  - insect vectors (Lloyd 1934) and fungi (Doxey *et al*., 1990; Robb 1996).
  - *C. botulinum* bacterial toxins have been implicated (Hunter *et al*., 1999).
- Disease incubation period appears to be 7-10 days (Doxey *et al*., 1991b).

Questions:

What is Equine Grass Sickness?
2) What can happen to the horse’s gastrointestinal tract when they have EGS?
3) Do other animals get dysautonomia?
4) What causes Equine Grass Sickness?
5) How many horses per year are affected by Equine Grass Sickness?
6) What are the clinical signs of acute Grass Sickness?
7) What are the clinical signs of subacute Grass Sickness?
8) What are the clinical signs of chronic Grass Sickness?
9) Why is diagnosis of Equine Grass Sickness difficult?
10) What are the best samples to collect at post-mortem for confirmation of diagnosis?