

Hyperlipaemia in ponies and donkeys

Hyperlipaemia is a condition in which the blood (and tissue) lipid concentration increases to a level that can disrupt organ function leading to organ failure and death. Hyperlipaemia can be a primary or secondary disease that is seen mostly in obese miniature horses, ponies and donkeys, but can also occur in large breed horses. Risk factors for hyperlipaemia include obesity, stressors (e.g. transport, parasitism, laminitis, changes in management), equine metabolic syndrome (EMS), equine Cushing's (PPID) and diabetes mellitus.

Primary hyperlipaemia occurs in pony mares and jennies during late pregnancy and early lactation, and in obese animals on restricted feed. Secondary hyperlipidaemia occurs in animals that become anorexic due to underlying disease. Reduced feed intake causes mobilisation of fatty acids from adipose tissue and elevations in circulating triglycerides. Serum triglyceride concentration between 1.0 and 5.6 mmol/L is not associated with lactescent (milky) serum and corrects once a positive energy balance is achieved. The serum becomes lactescent when serum triglyceride concentrations exceed 5.6 mmol/L. It is at this level that hepatic lipidosis and clinical signs develop, increasing in severity as the serum triglyceride concentration rises. Animals that are insulin resistant (EMS, PPID, DM, stressed) or have a breed pre-disposition to insulin resistance (ponies, donkeys) have enhanced lipolysis and formation of triglycerides during periods of negative energy balance and are at greatest risk.

Clinical Signs

Anorexia and lethargy are early clinical signs of hyperlipaemia. With increasing serum triglycerides and chronicity, signs may progress to muscle fasciculations, ventral oedema, colic, diarrhoea and CNS dysfunction. In late stages recumbency with seizures may occur.

Mortality rates are high unless treatment is aggressive, so early recognition and prompt treatment are paramount.

Laboratory Findings

Serum triglycerides are elevated and as the disease progresses hepatic enzymes and bilirubin increase. Azotaemia may also develop. Other findings (e.g. elevated insulin, ACTH) associated with underlying disease may also be noted.

	Serum TG (mmol/L)	Gross Lipaemia
Normal horses and non-pregnant ponies	< 1.0	No
Ponies late pregnancy	Up to 2.83	No
Healthy donkeys Usually similar to horses but up to 2.94 mmol/L has been reported	Up to 2.94	No
Hyperlipidaemia	1.0-5.6	No
Hyperlipaemia*	>5.6	Yes

* concentrations up to 75 mmol/L have been reported