

Care of the recumbent foal

Part 2

In the second part of a two-part series on care of the recumbent foal, Samantha Feighery RVN, Weipers Centre Equine Hospital, Glasgow, UK, focuses on the foal's eyes, respiratory system, nutritional requirements and fluid therapy

EYES

Neonatal foals have decreased corneal sensitivity, compared with adults, so it is important to bear this in mind when dealing with eye injuries, as foals may not display common clinical signs.

Recumbent foals are more susceptible to corneal trauma so, as part of the initial clinical examination, it is advisable to use fluorescein staining to detect any corneal ulceration. If the foal spends most of its time in lateral recumbency, artificial tears should be administered to both eyes every four to six hours. If tolerated, a donut (made from Soffban) may be placed to prevent trauma.

It is important to monitor for entropion as this can occur secondary to dehydration or eyelid trauma. This inversion of the skin may cause irritation of the cornea, conjunction with subsequent corneal ulceration, lacrimation or conjunctivitis. Entropions in foals may resolve as their systemic health improves, but it is recommended that patients have temporary tarsorrhaphy sutures placed to prevent corneal ulceration.

RESPIRATORY SUPPORT

Recumbent neonatal foals commonly require oxygen supplementation. Lateral recumbency in a foal causes poorer ventilation of the lower lung so it is important to maintain the foal in sternal recumbency. Oxygen is administered by soft intranasal tubing (eg. Harris flush tube/rubber Foley catheter), which may be sutured in place at the nares. Oxygen should never be administered for long periods without a humidifier. To do so would dry the mucosa of the respiratory tract, causing irritation.

Nasal insulation lines should be inspected daily to ensure that the tube is not misplaced/kinked and that the holes have not been occluded with mucus. The flow rate, oxygen tank and humidifiers are also checked on a regular basis.

NUTRITIONAL SUPPORT

Ileus is a common complication in sick recumbent foals (eg. foals suffering from perinatal asphyxia syndrome [PAS]/prematurity). A neonatal foal should receive 10% of its body weight in milk each day.

Enteral feeding

If the foal is recumbent, unable to stand with poor suckle and ileus, an in-dwelling nasogastric tube needs to be placed. The foal should be refluxed every two or four hours, as decided

by the veterinary surgeon, based on clinical signs and amount obtained. If minimal reflux is obtained and feeding via the nasogastric (NG) tube is not contraindicated, the foal may be fed through the tube by gravity flow via a dosing syringe without the plunger. It is important to keep the foal propped sternal during and after feeding, to ensure milk does not reflux back up the oesophagus. It is preferable to milk the mare and then feed this to the foal. Alternatives include high-quality mare's milk replacer or diluted goat's milk. The amount of milk fed at each feeding is dependent on the amount of reflux obtained, the foal's tolerance, maintenance energy requirement (MER) and age. Foals should only be refluxed and fed via the NG tube when in sternal recumbency. Feeding a small amount of milk through the NG tube encourages normal maturation of the gut function. The tube is capped between feedings in order to prevent air entering the stomach.

The amount of reflux is also recorded so as to monitor ongoing losses.

These patients need to be monitored for signs of colic, regurgitation and abdominal distension. The carer must check that the NG tube is in the correct position each time prior to feeding to help prevent aspiration pneumonia.

Parenteral nutrition

Foals unable to tolerate enteral nutrition can be supported through the parenteral route. Commercial total parenteral nutrition products are available, but can be expensive, particularly if the foal needs support over a long period. These products are administered on a constant rate infusion (CRI) and it is advisable to have a CRI pump to carefully control the amount being administered so as to avoid wide swings in blood glucose levels. Patient-dependent, blood glucose levels should be checked at least once a day to ensure they are within acceptable values. The foal's maintenance fluid therapy needs to be adjusted when the foal is receiving parenteral nutrition so as not to over-infuse the patient.

Hyperglycaemia and glucosuria are common problems with parenteral nutrition in foals. This can result from too rapid a rate of glucose administration and a degree of patient intolerance.

When administering parenteral nutrition, it is important to monitor for signs of infection, in particular around the site of intravenous (IV) catheter. Any signs of heat, swelling or pain at the catheter site warrant its immediate removal and

replacement at an alternative site. If the patient responds to therapy, the reintroduction of milk may be possible.

CATHETERS

Urinary catheters

Urinary catheters are placed only if necessary as they are a potential route of infection. These are usually placed in recumbent foals who are unable to move or if the patient is unable to urinate.

Prior to placement, the urethral fossa should be gently scrubbed with a dilute chlorhexidine solution and rinsed with sterile saline. The urinary catheter is inserted using a strict sterile technique and a closed-collection system is preferable. When emptying the collection bag, try to keep everything as sterile as possible; do not elevate the urine bag above the level of the patient as this causes a reflux of urine back into the bladder, which may lead to irritation and/or infection.

The urine output (colour, volume) is recorded on the patient's chart. Normal urination is calculated at 2ml/kg/hour. Causes of low urine production include poor renal function, dehydration or leakage of urine into the peritoneal cavity. Anuria or oliguria in a four-hour time period, despite fluid therapy and correct catheter care, needs to be brought to the attention of the vet immediately for further investigation.

Intravenous catheters

Hospitalised foals, more than likely, will be receiving IV fluid therapy, medications or parenteral nutrition, so an IV catheter will be placed.

The type of IV catheter is dependent on the anticipated length of treatment and what is going to be administered. Polyurethane over-the-wire catheters are recommended as they are the least thrombogenic. Disadvantages are that they are expensive and difficult to place.

IV catheters (IVC) should always be placed in an aseptic manner. If the IVC is properly cared for it can remain functional for several weeks. Complications of poor catheter care include local infections at the insertion site, a haematoma, thrombosis, sepsis and thrombophlebitis. The IVC needs to be flushed with heparinised saline every four to six hours; the port should be changed daily; and the site also assessed for signs of heat, swelling, drainage and infection, as well as how the vein feels (firm, distended). Incidences of infection are increased in cases that are receiving parenteral nutrition as this is a perfect medium for the growth of bacteria.

Fluid administer sets should be changed regularly, for example every 24 to 48 hours.

FLUID THERAPY

Sick foals are more susceptible to hypovolaemia and

electrolyte abnormalities. This may be as a result of decreased fluid volume, poor cardiac contractility or vascular changes. The volume and type of fluid therapy required depends on maintenance requirements, existing fluid deficits, current losses and renal function.

The normal fluid maintenance rate for foals is approximately 80-120ml/kg/day, bearing in mind the ongoing losses which may be occurring with that patient, eg. a foal with diarrhoea. The choice of fluids is based on electrolyte, glucose and acid base values, as well as the clinical condition and hydration status of the foal.

As a foal's kidneys are less effective in excreting sodium and water, it is recommended to use lower sodium concentrations, eg. half-strength saline (0.45% NaCl).

Foals that are suspected to have failure of passive transfer should be administered hyper-immune plasma and their IgG levels monitored to assess progress.

Foals receiving plasma transfusions should be monitored for signs of hypersensitivity and transfusion reactions. These include pyrexia, tachycardia, tachypnoea, muscle tremors, colic and signs of anaphylaxis.

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