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Special Article

Retrospective evaluation of the use of acetylcysteine enemas in the treatment of meconium retention in foals: 44 cases (1987–2002)

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Introduction

Meconium is mucilaginous material in the intestine of the term fetus containing a mixture of cellular debris, secretions of the intestinal glands, bile and amniotic fluid. Meconium usually begins to be evacuated from the newborn foal within 3 h after birth, and is considered **retained** if the foal makes frequent attempts but fails to produce meconium by age 12 h. This condition is the most common cause of rectal obstruction in foals (White and Lessard 1986). **Male foals** appear to be more commonly affected than fillies due to the smaller pelvic inlet in the colt (Martens 1982). **Other factors** predisposing to meconium retention include maternal malnutrition, delayed colostral intake with loss of its laxative effect, conditions that compromise the foal, such as asphyxiation, dystocia, prematurity, low birth weight, intestinal disease or hypomotility of the colon, and dehydration (Semrad and Shaftoe 1992). **Early signs** of failure to pass meconium may include restlessness, tail swishing, frequent posturing to defaecate, tail elevation and disinterest in sucking (Madigan 1994). Advanced cases may be presented with abdominal distention and other clinical signs of colic. Most impactions are located in the small colon at the pelvic inlet, but can also be located in the dorsal or transverse colon.

Diagnosis is based on clinical signs and detection of a firm mass upon digital rectal, lack of passage of milk stool and abdominal palpation or radiography of faecal masses in the colon (Edwards 1997). The preferred **method of treatment** consists of administration of multiple enemas, such as commercial phosphate enemas, soapy-water enemas, mineral oil, liquid paraffin and other home remedies. Additional proposed medical therapy includes pain control, administration of i.v. fluids and nasogastric administration of mineral oil and hydroxid solutions (Hanson 1999). Meconium retention that is refractory to medical therapy requires surgical intervention. Based on the risk of developing post surgical complications, several treatment options have been developed in recent years that have reduced the number of foals requiring surgery. One of these options is the use of **acetylcysteine retention enemas**, which have been used successfully in human infants with meconium plug syndrome (Meeker and Kincannon 1964). Acetylcysteine use in foals has been described (Madigan and Goetzman 1990), but the evaluation of the outcome of treatment in a large group of foals has not been reported. **The objectives of this study were to describe the clinical manifestations of meconium impaction in 44 foals and assess the therapeutic outcome of acetylcysteine retention enemas.**

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Materials and methods

Criteria for selection of cases

The medical records of foals examined at the Veterinary Medical Teaching Hospital (VMTH), School of Veterinary Medicine, University of California, Davis, USA, since the introduction of the acetylcysteine retention enema procedure in 1987 until 2002 were reviewed. A total of 44 foals with persistent meconium retention were selected for inclusion in this study, based on failure to pass meconium, clinical signs, digital examination, abdominal palpation or abdominal radiographs. Data extracted from medical records included age at presentation, breed, sex, clinical signs, treatment and outcome. Clinical data were analysed using descriptive statistics.

Acetylcysteine retention enema

Acetylcysteine was used either as a commercial solution (Acetylcysteine 20% Solution)[1] or in powdered form (N-acetyl-l-cysteine 100 g powder)[2]. Forty ml of the commercial 20% acetylcysteine solution were mixed with 160 ml water to