

## Management strategies for the high risk pregnancy

Dr Stefania Bucca  
Qatar Racing and Equestrian Club  
POBox7559  
Doha, Qatar

Most gestational complications in the mare tend to present during the last trimester of pregnancy. These conditions seem to have an initially slow and elusive course and then suddenly precipitate into a life-threatening emergency; clear examples include: placentitis (covered elsewhere), uterine torsion, hydrops of fetal membranes and ventral hernias.

### **Uterine Torsion**

The condition usually presents as a mild intermittent colic during mid to late gestation and most mares will continue to pass feces, despite abdominal discomfort. Involvement of the GI tract can generally be ruled out and the mare usually responds well to administration of non-steroidal-antiinflammatory/analgesic drugs. When blood supply is severely compromised or a concurrent involvement of the GI tract is present, colic signs are more severe and prolonged. A uterine torsion of  $\leq 180^\circ$  may go asymptomatic and resolve spontaneously, but rectal palpation will identify excessive tension over the broad ligament involved. Torsions  $>180^\circ$  are unlikely to spontaneously correct and increase the risk of compromised utero-placental blood flow and subsequently fetal oxygenation.

Rectal palpation is diagnostic for uterine torsion: one broad ligament is stretched horizontally across the top of the uterus, crossing ventrally and laterally across the midline. The broad ligament on the side of the torsion is usually more caudally placed and runs as a vertical band that disappears under the uterus; ie: in a left uterine torsion, the right broad ligament is stretched horizontally across the uterus. Uterine rupture with subsequent septic peritonitis is the leading cause of maternal fatality.

#### *Management of Uterine Torsion*

Three different modalities of correction, include rolling the mare under general anesthesia, standing flank laparotomy or ventral midline celiotomy.

### **Hydrops of fetal membranes**

Hydrops of fetal membranes refers to the overproduction of fluid into either the amniotic or the allantoic compartments (hydramnion or hydrallantois). Both conditions are uncommon, but universally recognized because of their dramatic appearance and consequences. Their etiology remains obscure, although hydramnion has been occasionally associated with fetal cranio-facial deformities, suggesting a potential role of fetal deglutition in the regulation of amniotic fluid volumes. Congenital abnormalities of the fetus, placentitis and twin pregnancies have been associated with hydroallantois and a genetic component cannot be ruled out. Clinical signs associated with hydrops of fetal membranes typically develop in primiparous or multiparous mares in their last trimester of gestation, after an otherwise uneventful pregnancy. Hydroallantois affected mares present with rapid abdominal enlargement that progresses over a period of a few days up to two weeks. Mares with hydramnion develop less dramatic abdominal distension over a more prolonged time course of weeks to months. Abdominal enlargement is accompanied by clinical signs that occur as a consequence of uterine distension: anorexia, decreased fecal output, depression, reluctance to move or lie down, dyspnea, abdominal discomfort and marked ventral edema, as a result of lymphatic obstruction. In advanced cases ventral abdominal hernia or prepubic tendon rupture will frequently develop. Spontaneous abortion may occur. Complications associated with delivery are very common and include uterine inertia, delayed uterine

involution, puerperal fluid pooling, laminitis and shock. Shock is believed to occur as a result of pooling of fluid in splanchnic vessels, when the abdominal pressure is released.

Diagnosis is made by rectal palpation of the uterus, which will be grossly fluid-filled, with little space for the examining arm and generally no fetus to be felt. The condition is confirmed by transrectal and transabdominal ultrasonography, showing massive amounts of fetal fluids and a growth retarded fetus, which, due to its small size and the expanded uterine environment, will frequently change presentation even passed nine months gestation.

The prognosis for hydrops of the fetal membranes is guarded to poor with respect to a favourable pregnancy outcome or even a full-term gestation. Prognosis for survival of the mare is good if measures are taken to prevent or treat shock and other complications. The prognosis for future use of the patient as a brood-mare is favorable and affected mares can be rebred to produce normal foals.

#### *Management of Hydropsical Conditions*

Maintaining a hydropsical condition is risky due to the danger of further trauma to the mare's uterine and abdominal walls. Therefore induction of abortion or delivery is usually recommended, particularly when the mare shows distress and foaling is not imminent. Reports of successful management of the condition are rare, especially if the mare is not near to term and will require frequent fetal and maternal monitoring, abdominal and limb support bandaging, a laxative diet, NSAIDs and progestagens administration. Controlled drainage of fetal fluids has been attempted in hospitalized patients, by chronic catheterization of fetal fluid compartments, but the technique is fraught with complications. Controlled drainage of fluid through the cervix should precede induction of parturition, as sudden expulsion of large volumes of fetal fluids, sometimes in excess of 100-200L, results in hypotensive shock in the mare.

#### **Ventral Ruptures/Hernias**

Breakdowns of the ventral abdominal wall during pregnancy are most common in older mares of any breed, but it has been suggested that draft mares maybe predisposed to ruptures. Extraordinary uterine weight due to twins or hydrops, direct trauma or severe ventral edema may result in rupture of the prepubic tendon, rupture of the abdominal wall or abdominal hernia. Mares with ruptured ventral abdominal structures present with abdominal discomfort and reluctance to rise or walk in late gestation. The condition may rapidly progress to severe distress, internal haemorrhage, shock and death. A large ventral edematous plaque is invariably observed extending cranially from the udder and often involving the udder itself. Due to the complete lack of ventral support, mares with ruptured prepubic tendon present with an elevated tail head and ischial tuberosity, resulting in lordosis and a "saw-horse" stance and the mammary glands may displace forward. Mammary secretions may be bloody.

Diagnosis of prepubic tendon rupture, and ventral body wall hernia may be difficult to confirm by rectal palpation, as the presence of the fetus makes deep palpation of the ventral abdomen very difficult. In addition, evaluation of the defect by transabdominal palpation is hampered by the extensive edema surrounding the area. Ultrasonography is helpful in identifying disruption of the body wall, hematoma formation, herniation of intestine, but the extent of the damage may not be clearly defined until after parturition, when most of the edema is resolved. Prognosis for survival of the mare is guarded, as some cases may evolve rapidly fatal.

#### *Management of Ventral Ruptures/Hernias*

Conservative management strategies that avoid induction of parturition or elective cesarean section and allow for natural parturition have recently been proposed as the treatment of choice, particularly in acute cases. Delivery must be attended since considerable assistance is usually required due to uterine inertia and the lack of an effective abdominal press by the mare.

Successful management of abdominal wall ruptures/hernias may be very challenging and symptomatic treatment will include pain control, diet manipulation, restriction of exercise and abdominal wall support. If the mare suffers of a concurrent predisposing condition such as hydrops, every effort should be made to prevent further abdominal wall deterioration.

### **Peri-Partum Hemorrhage**

Peri-partum hemorrhage is a serious and often life-threatening condition, thought to be one of the most common causes of death in term and puerperal mares. External and internal reproductive bleeding may occur. External hemorrhage occurs when post-partum bleeding is confined within the uterine lumen, after rupture or laceration of one of the mural vessels; this condition rarely becomes life-threatening, unless the mare experiences other forms of post-partum hemorrhage or a deranged clotting profile. Rupture of the external iliac artery, utero-ovarian artery and uterine artery, regardless of the site of rupture, may lead to direct hemorrhage into the peritoneal cavity, with rapid and profound blood loss, which can result in hypovolemic shock and death. Alternatively, the hemorrhage may be confined to the broad ligament or the serosal layer of the uterus, with hematoma formation. This latter condition carries a more favourable prognosis and hematoma formation in these regions may be an incidental finding during reproductive post-partum evaluation. Large haematomas may cause extensive compression necrosis of pelvic structures, abscess formation and result in chronic peritonitis when abscess fistulization occurs inwardly.

The most common clinical signs are those associated with acute abdominal pain and generalised discomfort, cold sweating, curling of the upper lip, pale mucous membranes and signs of cardio-vascular shock, with tachycardia and tachypnea and prolonged capillary refill time. Some mares will not show any prodromal signs other than peracute death. In suspected cases the mare should be kept quiet and confined to her stall. Analgesia and adequate protection to the newborn should be provided when signs of acute pain are evident. Sedatives, hemostatic agents, volume replacement, resuscitation and surgery are the common therapeutic interventions aiming at preventing further blood loss and maintain adequate perfusion to all vital organs.