2014 Northeast Veterinary Pathology Conference
Cape Cod, Massachusetts – April 26 & 27, 2014
Case Submission

NEVPC CASE # 11

IDENTIFICATION ON SOURCE MATERIAL: 90-2688
(Actual case # is N90-1886)

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ANIMAL SIGNALMENT: Male, 2-day-old, Thoroughbred foal

HISTORY: The foal was born weak, unable to stand, and did not nurse prior to being admitted to the Large Animal Clinic of the Western College of Veterinary Medicine. A physical exam revealed a very depressed, hypothermic foal with signs of CNS dysfunction and other evidence of septic shock. The foal also had inguinal and umbilical hernias. The animal suffered cardiac arrest while being evaluated and treated, and was subsequently submitted for necropsy. Moderate numbers (2+) of an alpha-hemolytic *Streptococcus* species were isolated from blood collected prior to the foal being treated.

GROSS FINDINGS AND DIAGNOSES: The rostral mandible extended about 0.8 cm beyond the rostral maxilla **(maxillary brachygnathia)**. The forelimbs could not be fully extended **(flexural deformity)**. There was a 6 to 8 cm long defect in the linea alba at the umbilicus with reducible herniation of abdominal viscera **(umbilical hernia)**. The left testis and a portion of the small intestine had displaced through the left inguinal ring and were present within the subcutis of the ventral pelvis creating a 14 by 6 cm swelling **(inguinal hernia)**. There were approximately 6 to 8 cm long by 4 to 6 cm wide fluctuant swellings over both carpi associated with hemorrhage within the sheath and muscle bellies, and tearing of the tendon, of both common digital extensor muscles **(ruptured CDET)**. Grossly and radiographically, the carpal and tarsal bones were incompletely ossified; the epiphyses of the proximal third metatarsal bones were incompletely ossified; and the physes of the proximal third metatarsal bones were 'open' **(epiphyseal dysgenesis)**. The lobes of the thyroid gland were swollen, firm and dark. Within the abdomal cavity was approximately 100 mL of slightly turbid, yellow fluid **(peritonitis)**. There were **petechial and ecchymotic hemorrhages** in the mucosa of the stomach and in the serosa and mucosa of the ventral colon.

2014 NEVPC Case Submission (Part II)

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HISTOPATHOLOGIC FINDINGS: The thyroid gland was densely cellular with variably sized, but typically very small, round and irregular follicles that were devoid of colloid. The follicular epithelium was composed of low and tall columnar cells. The wall of the ventral colon was thickened by hemorrhage and edema. The submucosa contained multiple thrombosed blood vessels and other blood vessels were surrounded by fibrillar eosinophilic material interpreted to be fibrin.

A consistent mixture of bacteria – including *Pseudomonas* sp., *Staphylococcus intermedius*, and either an alpha-hemolytic *Streptococcus* sp. or a gamma-hemolytic *Streptococcus* sp. – were isolated from the brain, and peritoneal fluid. No bacteria were isolated from the kidney, liver or spleen.

DIAGNOSIS: Sepsis and underlying congenital hypothyroidism

DISCUSSION: What we now know to be congenital hypothyroidism in foals was commonly recognized in western Canada in the 1980s and 1990s. During and since this time, reports have been published that describe congenitally hypothyroid foals being born in eastern Canada, the northwest and north-central USA, and Finland; and there are unpublished reports of congenitally hypothyroid foals born in Australia and Chile.

Congenially hypothyroid foals are typically born after a normal length or prolonged gestation, but have evidence of inappropriate intrauterine growth or maturation and are referred to as dysmature (or immature or postmature, but not premature). They also, very consistently, have a constellation of musculoskeletal lesions that include; (i) maxillary brachygnathia (often described as mandibular prognathia); (ii) flexural deformities (most often affecting the front limbs and described as forelimb contracture); (iii) rupture of the common digital extensor tendons (and occasionally other tendons of the limbs); and incompletely or inappropriately ossified bones that is most easily diagnosed in the carpal and tarsal bones.

REFERENCES:

Koikkalainen, K., Knuuttila, A., Karikoski, N., Syrjä, P. and Hewetson, M. (2014) Congenital hypothyroidism and dysmaturity (CHD) syndrome in foals: First reported cases in Europe. *Equine Veterinary Education,* 26, 181-189.

Allen, A.L. (2014). Congenital hypothyroidism in horses: Looking back and looking ahead. *Equine Veterinary Education*, 26, 190-193; published on-line March 10, 2014.