Diagnostic Exercise

From The Davis-Thompson Foundation*

Case #: 134 Month: December Year: 2019

Answer Sheet

Title: Endometriosis in a Rhesus macaque

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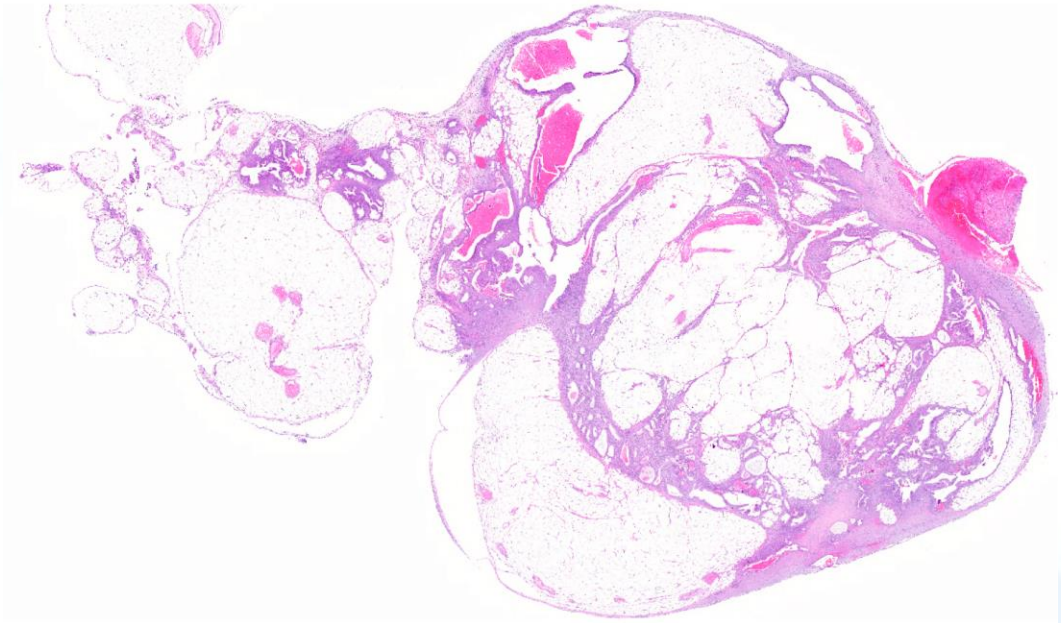
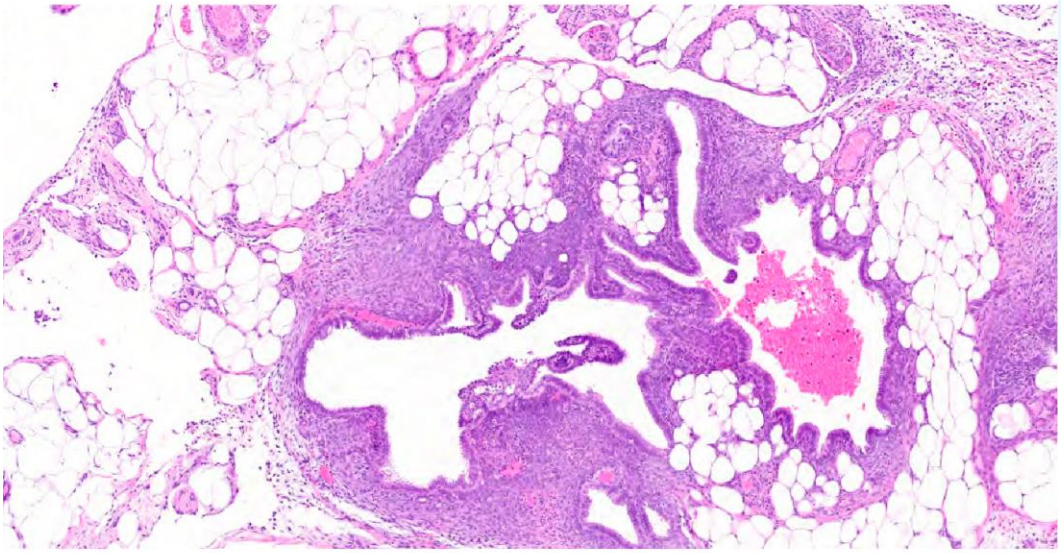
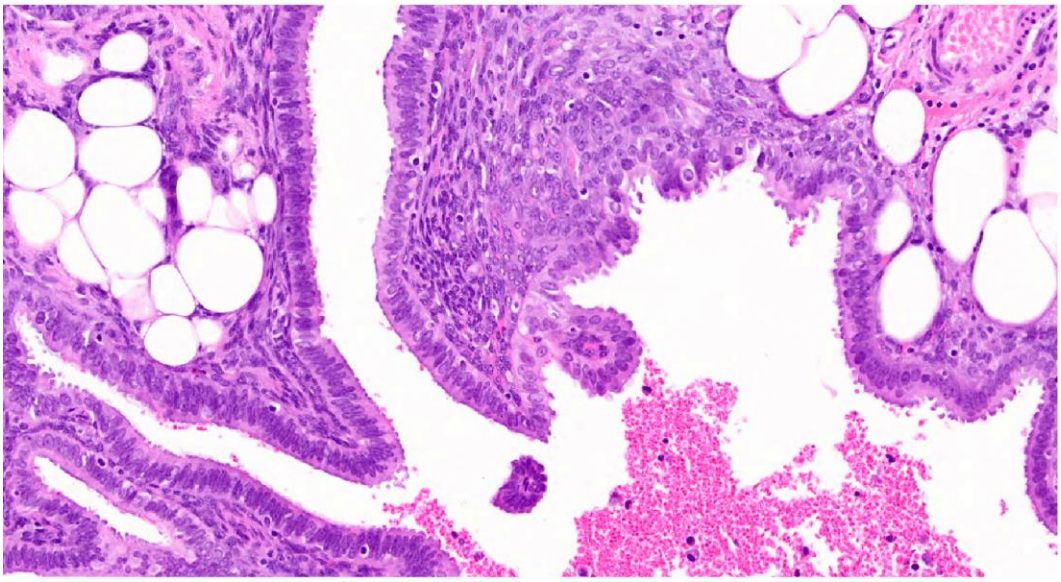
Morphologic diagnosis: Omentum: Omental endometriosis

Microscopic findings: Omentum: Overlying the surface and dissecting into the adipose tissue are plaques, bands and cysts composed of irregular endometrial glands admixed with endometrial stroma that often divide the adipocytes into islands and nodules. The glands are predominantly lined by a single layer of columnar epithelial cells with apical blebbing and basilar ovoid nuclei. There is minimal pleomorphism and rare mitotic figures are observed. The glands occasionally have luminal cellular debris and hemorrhage. The stroma is composed of closely apposed spindle cells with large ovoid nuclei. There is minimal pleomorphism and rare mitotic figures are observed. Focally, the surface has a large adhered blood clot with karyorrhectic debris and neutrophils. The key histologic features are **1) cysts** and **2) surrounding endometrial stroma.**







Discussion: Endometriosis is the presence of hormone responsive endometrial tissue outside of the uterus, which affects up to 10% of women of reproductive age (Stouffer, 2017). In women, the most common affected region is the ovary, but ectopic endometrial tissue has been identified throughout the reproductive tract, on serosal surfaces within the abdominal and pelvic cavities, and rarely causing distant lesions in the brain, lung, and bone (Kumar et al. 2015). Symptoms of endometriosis include dysmenorrhea, menstrual irregularities, and infertility. Intracavitary bleeding is painful and often leads to fibrous adhesions between structures (Kumar et al. 2015).

The pathogenesis of endometriosis is unclear, but the tissue is believed to originate from existing endometrium or from progenitor cells. Due to the high predilection for reproductive tissue, direct implantation from retrograde flow of menstrual endometrium is plausible. However, this alone would not account for the presence of ectopic endometrial tissue at distant locations, nor endometriosis in amenorrheic women, nor the rare cases of men treated with exogenous estrogen. Alternative theories include metastasis of endometrial tissue, and progenitor cell origin from the abdominal/pelvic mesothelium or from bone marrow (Kumar et al. 2015). Endometriosis has been demonstrated in abdominal surgical scars in both non-human primates (Atkins 2017) and humans (Luisi 2006), suggesting seeding or migration of endometrial tissue as potential etiologies.

Given the relative high frequency of endometriosis in humans and the severe clinical symptoms (pain and infertility), uncovering the details of the etiology and pathogenesis of this disease is important. Non-human primates are studied as the best model for endometriosis due to similar reproductive physiology (Stouffer 2017). Moreover, the lesion presents with similar clinical signs (Atkins 2016) and occurs with relatively high frequency; up to 30% aged rhesus macaques can be affected (Connolly 2016). Unfortunately, this disease remains poorly understood with unsatisfactory treatment options (Moradi 2014).

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*The Diagnostic Exercises are an initiative of the **Latin Comparative Pathology Group (LCPG)**, the Latin American subdivision of The Davis-Thompson Foundation. These exercises are contributed by members and non-members from any country of residence. Consider submitting an exercise! A final document containing this material with answers and a brief discussion will be posted on the CL Davis website (http://www.cldavis.org/diagnostic_exercises.html).

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