Case Report

Adenomatous Hyperplasia of the Rete Ovarii in a Beagle

Jingtao Jiang1, Yoshiki Tate1, Yoshihiko Kobayashi1, and Atsuko Ichikawa1

1Kobuchisawa Laboratories, Fuji Biomedix Inc., LTD, 10221 Kobuchisawa-cho, Yamanashi 408–0044, Japan

Abstract: Adenomatous hyperplasia of the rete ovarii was found in a 9-month-old beagle. At necropsy, no abnormalities were observed in the ovaries. Microscopically, there was a proliferation of gland-like tubules in the hilus of the left ovary. The tubules were lined by a single layer of columnar and cuboidal epithelial cells. In places the tubules appeared to radiate from small ductal structures. The lesion was poorly demarcated and blended with the existing tubular architecture of the rete ovarii, and extended diffusely into the adjacent stroma. Immunohistochemistry showed positive reactions for cytokeratin 18 and vimentin, suggesting that the lesion was derived from the rete epithelia with proliferative activity.

Key words: adenomatous hyperplasia, rete ovarii, beagle

The rete ovarii is the homologue of the rete testis. It develops from cells of mesonephric origin, which migrate into the developing gonad of the embryo. It presents in the mouse, rat, guinea pig, rabbit, cat, dog, deer, cow and human. The mature form of the rete ovarii is generally found as a structure existing in groups of anastomosing tubules lined by cuboidal or columnar epithelial cells. These tubules are usually located in the hilus of the ovary, but may extend through the medulla or be isolated in the mesovarium adjacent to the hilus. Rete epithelium is immunoreactive for cytokeratins, desmoplakins and vimentin, and has numerous desmosome-tonofilament complexes as seen by electron microscopical examination. O’Shea observed mucinous secretion of non-sulfated, acid mucopoly-saccharide in the rete tubules of dogs. Byskov found PAS-positive secretion in the rete ovarii of young cats, mink, and ferrets. The rete ovarii may give rise to a number of lesions which are characterized by an entirely or predominantly hilar location. Rete cysts and rete adenomas are pathological findings in humans and animals but adenomatous hyperplasia of the rete ovarii is rare and has been reported only in the human and canine. In this report, we describe a case of adenomatous hyperplasia of the rete ovarii in a beagle dog, and its morphological characteristics.

Histopathologically, there was a proliferation of gland-like tubular structures in the hilus of the left ovary (Fig. 1). The tubular structures were lined by a single layer of cuboidal or columnar epithelial cells (Fig. 2). In some areas the tubules appeared to originate from small ductal structures. The lesion had poorly defined margins which blended with the existing tubular architecture of the rete ovarii and extended diffusely into the adjacent stroma. Mitotic figures and nuclear atypia were not observed. The slight eosinophic substance in the lumina of a few tubules was positive for the PAS reaction. Immunohistochemically, the epithelia of tubules showed diffuse positive reactions for cytokeratin 18 (Fig. 3) and vimentin.

The rete ovarii is an unusual site for any lesion. Rete cysts are occasional pathological findings, which are usually lined by nonciliated cuboidal or ciliated columnar epithelium. Rete adenomas are also rare pathological findings, and present as grossly detectable, expansile lesions that compress the surrounding parenchyma and contain both stromal and epithelial proliferative components. Rete adenomas consist of a proliferation of tubules and papillae lined by a single layer of cuboidal or columnar epithelial cells. The tubules may dilate, sometimes significantly, giving rise to a cystadenoma. In contrast, adenomatous hyperplasia shows a less demarcated margin that blends with that of the adjacent rete ovarii, and less uniformity in the
epithelial tubules forming the lesion. Also, it doesn’t show expansive lesions that compress the surrounding parenchyma. According to WHO histological classification of tumors of domestic animals, adenomatous hyperplasia of rete ovarii is classified as a tumor-like lesion. It is a rare lesion, seen mostly in bitches, in which epithelial strands form gland-like structures in the centre of the ovary or below the capsule. Its significance as a possible preneoplastic lesion and its possible functional potential are unknown. In this case, the multiple gland-like tubular structures in the left ovary hilus had less well-defined margins and lack of uniformity in the epithelial tubules. The lesion also lacked the papillary structures and expansive lesions often seen in adenomas of the rete ovarii. Immunohistochemically, the epithelial cells of tubules were diffusely positive for cytokeratin and vimentin, suggesting that the proliferative epithelial cells were derived from the rete ovarii. As this lesion showed characteristics of adenomatous hyperplasia and was derived from the rete ovarii, it was diagnosed as adenomatous hyperplasia of the rete ovarii.

Adenomatous hyperplasia has also been described in the rete testis, and is thought to develop from stimulus by local factors originating in the seminiferous tubules or the rete epithelium itself.

References