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Unilateral typical type serous borderline ovarian tumor in a Pointer dog

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Received 30.07.2015 *Accepted 30.01.2016*

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Summary

This report describes a case of a typical serous borderline tumor of the ovary in a 6-year-old Pointer dog. Although ovarian tumors are rare in dogs, epithelial tumors are the most frequently diagnosed ovarian tumors. A borderline tumor, which is an epithelial tumor of the ovary, was initially identified in a badger. This case is the first published case of a typical serous borderline tumor of the ovary in a dog.

Keywords: borderline ovarian tumor, ovariohysterectomy, Pointer dog

Ovarian tumors are uncommon in dogs and constitute 0.5% to 1.2% of all canine tumors (3). The incidence is influenced by the number of bitches neutered at an early age. According to The World Health Organization (WHO) classification, canine primary ovarian tumors are classified as surface epithelial tumors, sex cord-stromal tumors, germ cell tumors, and mesenchymal tumors (2).

Epithelial tumors are the most frequently reported ovarian neoplasms in dogs (3). Canine epithelial tumors make up about 40-50% of all ovarian growths and characteristically originate from structures under the ovarian epithelial surface, a single layer of flat to cuboidal mesothelial cells that cover the ovary. This is characteristic only in the bitch (3, 16).

In humans, primary ovarian tumors have been classified as coelomic surface epithelial tumors, germ cell tumors, and mesenchymal tumors (the stroma and the sex cord), according to the WHO. Tumors of surface epithelial origin constitute about two thirds of all ovarian neoplasms (6). Borderline tumors make up approximately 10-20% of all epithelial ovarian tumors (1). Borderline tumors can be of the serous or mucinous character. Serous borderline tumors with low malignancy are generally asymptomatic. These tumors are large multilocular cystic tumors, and the cyst wall contains papillary structures. Recent studies have subdivided serous borderline tumors into 2 categories: typical and micropapillary. Ninety percent of serous borderline tumors are noninvasive typical tumors (4). The aim of this case report was to evaluate clinical, radiographical, and surgical findings on a typical borderline tumor of the ovary in a dog. This could be the first report to describe a borderline ovarian tumor in a dog.

Case desription

A 6-year-old non-neutered nulliparous female Pointer dog, weighing 23.4 kg, was brought to the clinic with complaints of anorexia, vomiting, constipation, and weakness for two weeks. The dog showed abdominal distension and pain on clinical examination. Direct latero-lateral abdominal radiographs revealed a large, radiopaque mass in the abdomen (Fig. 1). The presence of a unilocular-solid mass

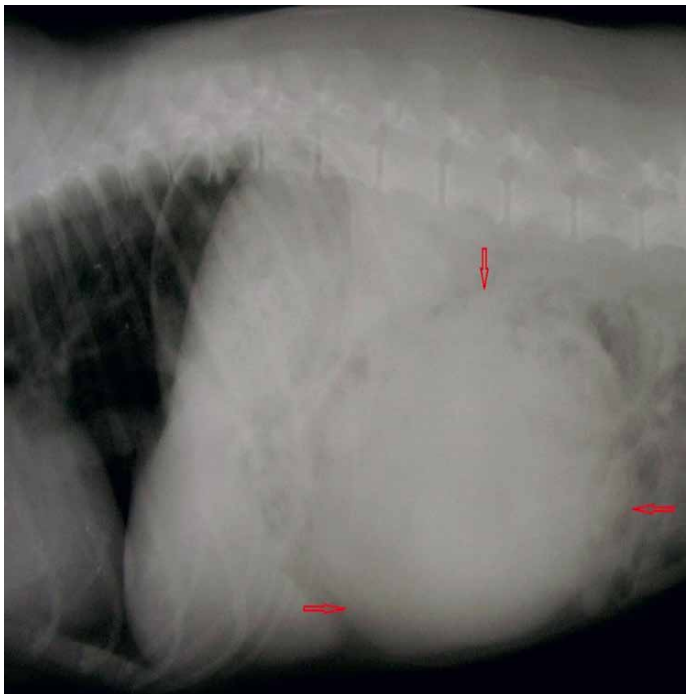

Fig. 1. Radiography of the abdomen reveals a large mass

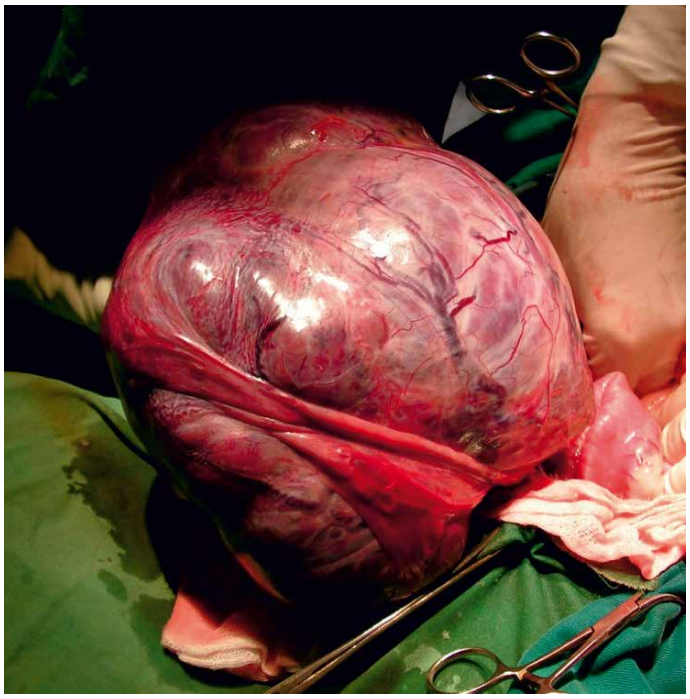

Fig. 2. Intraoperative view of the borderline ovarian tumor, which was rounded, vascularized, and 31.8 cm × 22.4 cm × 19.7 cm

was observed in the abdominal cavity on ultrasonography. However, it could not be measured due to its large size. The abdominal cavity could not be examined properly in the caudal region because of the mass enlargement. Therefore, the origin of the mass could not be determined.

Intravenous fluid therapy was provided with a balanced electrolyte solution at a rate of 15 mL/kg/h for 48 hours to improve the patient's clinical condition before surgery. Surgery was performed under general anesthesia. During surgery, fluid therapy was provided intravenously with 20 mL/kg/h Ringer's lactate solution. Morphine HCl was administered intraoperatively (0.3 mg/kg/s.c.) as an analgesic. A large, solid, circular mass was identified intraoperatively. The abdominal organs could not be seen because of the size of mass. After removing the mass from the abdominal cavity, it was determined that the mass originated from the right ovary (Fig. 2). The left ovary, uterus, and other abdominal organs were macroscopically normal. The uterus and both ovaries along with the mass were carefully removed by ovariohysterectomy. In the post-operative period, a balanced electrolyte solution was administered at a rate of 20 mL/kg/h for 3 days. Antibiotic therapy was provided with 20 mg/kg/s.c. amoxicillin-clavulanic acid for 7 days. Morphine was subsequently administered at a dose of 0.2 mg/kg/s.c. postoperatively. Macroscopically, the right ovary was 31.8 cm × 22.4 cm × 19.7 cm. Vascularization of the ovary was significantly increased. Histopathology revealed a multicystic mass with solid papillary projections, without encapsulation. The papillae, which were lined with stratified cuboidal to columnar epithelial cells, displayed branching and a complex structure. No destructive stromal invasion of the ovary was evident. The epithelial cells had a high nucleus:cytoplasm ratio; the nuclei were hyperchromatic and contained prominent nucleoli. These findings indicated the existence of a typical serous borderline tumor (Fig. 3a-b).

On postoperative day 10, the dog recovered without complications. The dog remained healthy throughout a close follow-up period.

Discussion

Epithelial ovarian tumors are classified according to the differentiation of cell types in the tumor.

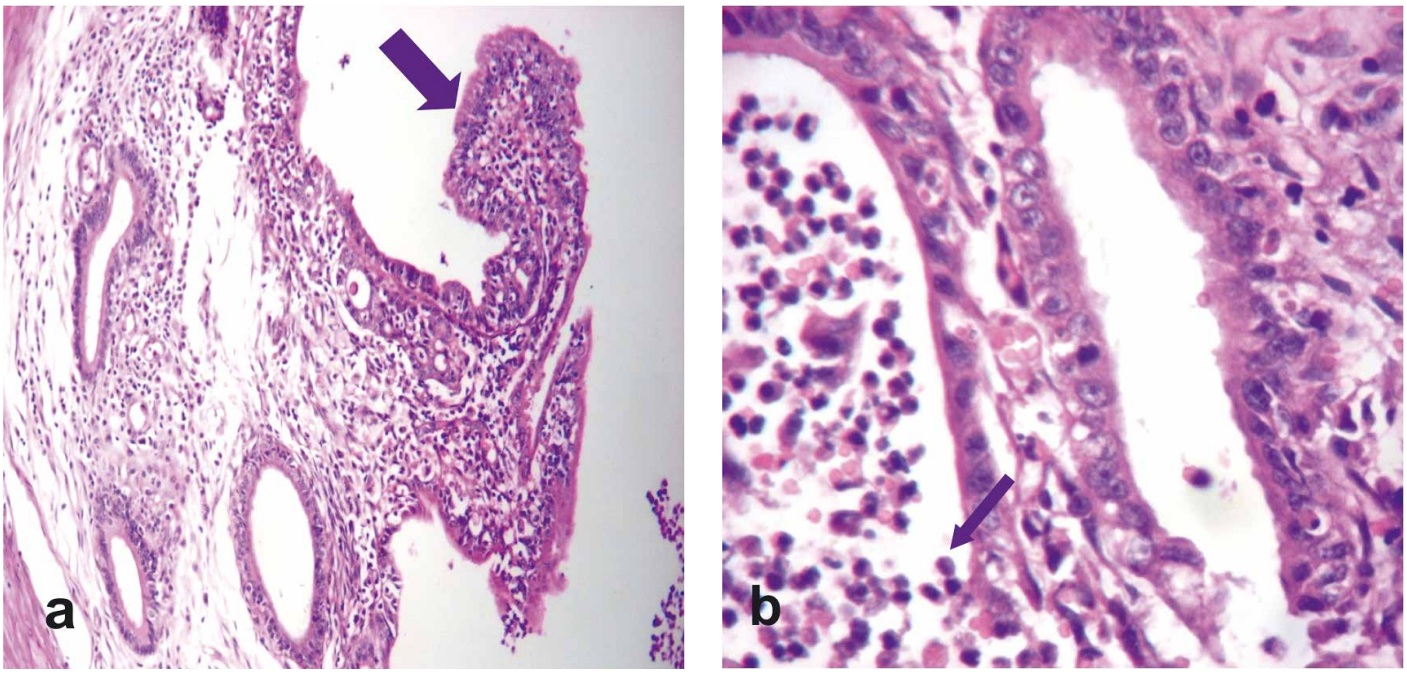

Fig. 3. Histopathology (hematoxylin and eosin staining) of the borderline ovarian tumor: a) At low magnification, the tumor displayed papillary branches (thick arrow). b) Higher magnification indicated that the papillae were lined by epithelial cells exhibiting severe pleomorphism, with moderate to severe atypia and high nucleus:cytoplasm ratio. These cells had large, round nuclei and prominent nucleoli (thin arrow)

Serous adenocarcinomas, serous borderline tumors, and a group of serous benign tumors are among the most common of these tumors. Clinical features associated with epithelial-cell tumors of the ovary include abdominal distension and pain along with the presence of a palpable caudo-abdominal mass (13). Bitches with serous adenocarcinoma may have hormonal imbalances that result in gynecological conditions such as pyometra and vaginal bleeding, anestrus, nymphomania, masculinization, hyperadrenocorticism, and alopecia (16). However, the clinical signs of other tumors are generally less obvious than those of adenocarcinomas and are discovered incidentally during pelvic operations or ultrasonography (10); in this case report, the origin of the tumor was determined via laparotomy. Prior to surgery, our patient exhibited anorexia, vomiting, constipation, and abdominal enlargement and pain, similar to other reports (5, 10). Although borderline ovarian tumors are non-metastatic low grade, the functioning of other organs can be impaired by tumor pressure (7). Since the origin of the abdominal masses could not be determined and the bitch did not show gynecological findings, blood hormone levels were not investigated in this study.

The peak incidence of epithelial tumors is between 4 and 15 years (12), with a predisposition among Pointers for epithelial tumors (15). This case of a 6-year-old Pointer was therefore consistent with previous reports.

Most borderline serous tumors are diagnosed at an early stage. In such cases, it is necessary to distinguish this type of tumor from clearly invasive serous carcinomas of the ovary. It is clinically important to distinguish between non-invasive implantation metastases typical of borderline tumors of the ovary and invasive metastatic spread that arises as either a primary feature of the carcinoma or as a reflection of a progressive disease of borderline tumors and their transition into carcinomas (8, 14). As a sign of invasion, the spread of implantation metastases into the adipose or muscle tissue underlying the peritoneal lining is considered diagnostic. Implantation metastases with cellular atypia or micropapillary endophytic growth patterns are considered potentially invasive and are classified as low-grade serous carcinoma.

Many morphological and biological features of neoplasms are shared between humans and animals. Therefore, animal tumors may often be evaluated in accordance with the WHO classification of tumors used in human oncology. In animals, a borderline ovarian tumor was initially identified in a badger (7). The tumor was disseminated in the peritoneal cavity; part of the metastatic deposits had non-invasive features without cellular atypia and fulfilled the criteria for diagnosis of a disseminated borderline tumor (7). To our knowledge, the present case report constitutes the second report of a borderline ovarian tumor in an animal. Here, the tumor was not disseminated in the peritoneal cavity and other tissues and was defined as a non-disseminated borderline tumor.

Surgical treatment of ovarian tumors usually requires ovariohysterectomy (11). Chemotherapeutic agents are also used to treat metastatic ovarian carcinoma (9). Since chemotherapy is not required for non-metastatic borderline ovary tumors, postoperative chemotherapy was not administered in this case.

In conclusion, ovarian tumors should be considered for Pointer female dogs brought to the clinic with complaints such as anorexia, vomiting, constipation, abdominal enlargement and pain, and diagnosed abdominal mass. Ovarian neoplasms should be distinctive and histology should be carried out before selecting a treatment protocol.

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