

Teratoma adultum in a bitch: a case report

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ABSTRACT: This case report concerns a two year old female mongrel weighing about 25 kg which was admitted to an animal shelter. A grapefruit-sized mass was found in the animal's left ovary during a routinely performed ovariohysterectomy. On sectioning, the mass revealed cysts containing tufts of hair in creamy white sebaceous fluid. A histological examination revealed a mixture of tissues. The tumor was diagnosed as a mature teratoma (teratoma adultum).

Keywords: canine; germ; ovary, tumor

Teratomas are neoplasms which arise from totipotent germ cells. They are composed of tissues derived from two or, more frequently, three germ layers. Teratomas, therefore, have no homogeneous histological structure. They are characterised by a mixture of tissue elements, or even partly developed organs. Such structures do not usually comprise elements of the tissue from which they have arisen. As a subgroup of ovarian neoplasms, teratomas are only very rarely observed in domestic animals (Moulton, 1990; Nagashima et al., 2000; Morris and Dobson, 2003; Yamaguchi et al., 2004). In this report a case of ovarian teratoma discovered accidentally in a mongrel bitch, after ovariohysterectomy, is described.

Case report

A two year old mongrel female weighing about 25 kg was brought to the animal shelter. As the owner of the dog did not report to the shelter, an ovariohysterectomy was performed following a routine quarantine period. The animal's veterinary history was not known, though she was in good condition and showed no signs of illness. During preoperative procedures, an offset area was observed in the abdomen, in the left subcostal region. A physical examination revealed that the mass was an altered left ovary.

The 12 × 10 × 8.5 cm tumour was encapsulated and its cut surface consisted of cystic cavities containing tufts of hair in thick, creamy-white, sebaceous fluid (Figure 1). The right ovary, uterus and remaining organs were macroscopically normal.

Slices of material from the tumour were fixed in 10% formalin and processed through graded alcohols and xylene. The processed tissue was embedded in paraffin wax and three micrometer histological sections were cut. The resulting slides were stained in hematoxylin and eosin, according to routine histopathological procedures and examined by light microscopy. Other sections were used for immu-



Figure 1. After ovariohysterectomy: this large mass was found on the left ovary

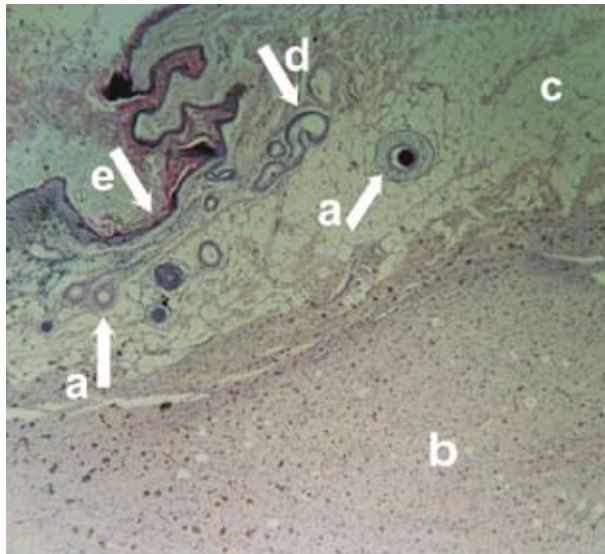


Figure 2. A variety of tissues from different germ layers were observed microscopically: a = hair follicles, b = cartilage, c = adipose tissue, d = apocrine sweat gland, e = stratified squamous epithelium; HE stain $\times 100$

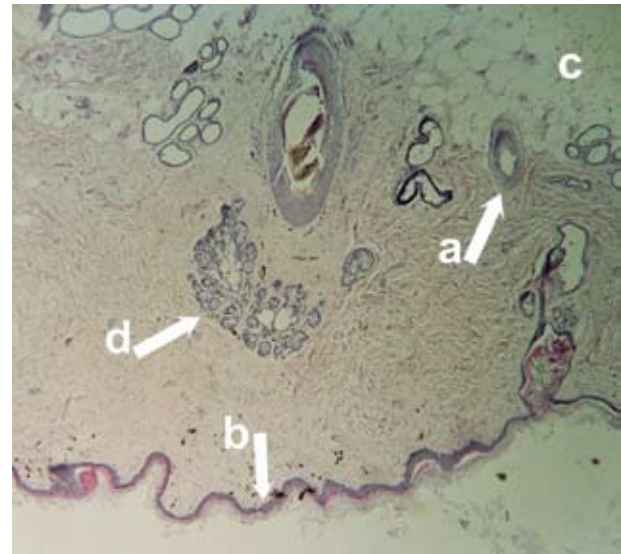


Figure 3. The elements of dermis in the ovarian mass: a = hair follicles, b = stratified squamous epithelium, c = adipose tissue, d = apocrine sweat gland; HE stain $\times 40$

nohistochemical analyses with anti-human cytokeratin (CAM 5.2) monoclonal antibody (Becton Dickinson) and with anti-human cytokeratin AE1/AE3 monoclonal, anti-vimentin monoclonal and anti-S-100 polyclonal antibodies (DakoCytomation) using the DAKO EnVision Complex method.

Microscopically, a variety of tissues, deriving from two germ layers, were observed (Figures 2 and 3). The tumour was lined with well-differentiated skin. The capsule contained hair follicles as well as sebaceous and apocrine glands. Other tissues were also represented, including cartilage, adipose tissue and nervous tissue (glial cells), as well as lymphoid and glandular structures. No structures representative of respiratory or intestinal organs (tissues arising from the endodermal germ layer) were observed. Immunohistochemically the epithelial tissues were positive for cytokeratin, the mesenchymal tissues were positive for anti-vimentin and the melanocytes and neuroglia were positive for anti-S-100 antibody. The examined tissues were well differentiated and, as they arose from two germ layers, suggested a diagnosis of teratoma adultum.

DISCUSSION

Canine ovarian neoplasms are very rare, accounting for around 1% of all neoplasms in dogs (Jergens

et al., 1987; Lucas et al., 2002; Morris and Dobson, 2003; Yamaguchi et al., 2004). The most frequently diagnosed ovarian neoplasms, not only in dogs but also in other animal species including humans, is the granulosa cell tumour which according to a World Health Organisation classification, belongs to the group of sex cord gonadostromal tumours (Morris and Dobson, 2003). Teratomas, however, are the rarest of canine ovarian neoplasms and belong to a group of tumours arising from more than one germ cell layer. Usually occurring in young dogs, the majority of these tumours are reported in young dogs up to 6 years of age (Jergens et al., 1987; Lucas et al., 2002; Morris and Dobson, 2003; Yamaguchi et al., 2004). This case report describes one such tumour in a two year old mongrel bitch.

Detection of ovarian tumours in bitches is often accidental (Morris and Dobson, 2003). In this reported case, for example, the tumour was discovered during a routine ovariohysterectomy operation. Prior to surgery, the animal had shown no signs of illness, though dogs with ovarian teratomas may sometimes show accompanying symptoms such as increased thirst, diarrhoea, ascites and abdominal distention or pain in the lumbar area (Jergens et al., 1987; Morris and Dobson, 2003; Yamaguchi et al., 2004).

Teratomas in canine ovaries usually present as well differentiated benign tumours (Moulton, 1990;

Nagashima et al., 2000; Morris and Dobson, 2003; Yamaguchi et al., 2004). The histopathological diagnosis in the presented case indicated that the tumour described here was also benign in nature as it showed no immature or malignant components. The malignant form of canine ovarian teratoma is rarely reported, though the scarcity of these reports may be misleading (Morris and Dobson, 2003). According to the study of Patnaik and Greenlee (1987) the malignant form was noted in 6 out of seven cases of teratoma. Metastasis to the abdominal viscera, lymph nodes, bone and lungs occurs in around 33–50% of malignant teratomas (Jergens et al., 1987; Nagashima et al., 2000; Lucas et al., 2002).

Up to this time, ovariohysterectomy is the preferred treatment for ovarian teratomas (Jergens et al., 1987).

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