

Short Report

Different mammary tumors, ovarian cysts, uterocervical stump inflammation in hysterectomized bitch

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Hysterectomy is a rare method of castration in bitches, due to an increased risk of side effects. Ovariohysterectomy is the most recommended method of surgical castration of a bitch. However, leaving the ovaries decreases the risk of obesity and urinary incontinence. This report describes a 9 year old German Shepherd female (hysterectomized 3 years before) which was referred to the clinic due to purulent vaginal discharge and changes of 3,4 and 5th right mammary glands (RMG 3,4,5). During ultrasound examination two ovaries with cysts and inflammation of uterocervical stump were observed. The surgery was carried out, both remaining fibrotic ovaries with cyst together with part of inflamed uterocervical stump were removed. Right semi-mastectomy was also performed (RMG 3,4,5 and inguinal lymph node were removed). The histopathological examination of mammary glands revealed the presence of adenocarcinoma papilliferum. Two months later, after

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left semi-mastectomy of 2,3,4 and 5th mammary gland (LMG 2,3,4,5) histopathological examination revealed a complex carcinoma in mammary glands and in inguinal lymph node. Two years after the surgery disseminated neoplasia with metastases to the lungs was diagnosed. Described side effects outweigh potential benefits of the hysterectomy. To authors knowledge this is the first report of severe consequences of deliberately leaving ovaries in a bitch.

KEY WORDS: bitch / hysterectomy / ovarian cysts / mammary tumors

Surgical removal of reproductive organs in bitch is a surgery most frequently performed in veterinary medicine. There are three methods of surgical castration: ovariohysterectomy (OVH)- which is removal of both ovaries and uterus, ovariectomy (OE)-removal of ovaries and hysterectomy-removal of uterus. Hysterectomy is rarely performed, only in some cases in order to eliminate possible side effects of ovaries removal. It is believed that normally functioning remaining ovaries may prevent from urinary incontinence and obesity. Nevertheless, multiple complications may occur after the surgery due to ovarian steroid hormones influence. The most common consequences are: ovarian cysts and ovarian neoplasias [Rota 2013, Sontas 2011]. Mammary gland tumors can occur also as, progesterone (P4) and estrogens (E2) are very important risk factors of its formation [Perez Alenza 2010]. Many studies proved that early spaying of bitch significantly decreases the risk of those tumors. All abnormalities described above may also occur in case of ovarian remnant syndrome (ORS) [Sfartz 2015, Perez Martin 2014, Ball 2010, Sangster 2005]. ORS is a complication of ovariohysterectomy, in which part of ovary remains or in which some ovarian tissue is implanted elsewhere in the abdomen [Terazono 2012]. The presented clinical case of deliberately performed hysterectomy in a 6-year old bitch shows three of above mentioned side effects.

Material and methods

Case presentation

A 9 year old German Shepherd bitch, weighting 34 kg, has been referred to the Small Animal Clinic of Veterinary Medicine Faculty of Warsaw University of Life Sciences. The bitch was hysterectomized at the age of six years. Full clinical examination was performed and changes of the 3,4 and 5th right mammary glands (RMG 3,4,5) and purulent vaginal discharge was noticed. No other clinical signs were reported. In ultrasound examination of abdominal cavity using scanner (Honda 4000, Japan) with a 5/7.5 MHZ probe, two ovaries with cysts and inflammation of uterocervical stump were observed. Radiological images of thorax, performed in two screenings (lateral, dorso-ventral) didn't show any pathological lesions. Biochemical and morphological blood examination was done. No abnormalities were found, except for an elevated P4 (16,4 ng/ml) and E2 (65,1 pg/ml) concentrations.

Two months later owners observed some nodules in left side mammary glands. During clinical examination changes were confirmed in the 3,4 and 5th mammary

gland (LMG 3,4,5). Presurgical X-Ray examination of thorax was done, showing no signs of metastases to lungs. Biochemical and morphological blood parameters were among the normal values. Blood concentrations of steroid hormones were also normal: P4 – 0,6 ng/ml and E2 – 25,3 pg/ml.

Anesthesia and operations

Anesthesia for castration was intravenously induced (i.v.) with ketamine 5mg/kg (Bioketan®, Vetoquinol) and medetomidine 25µg/kg (Cepetor®, Scanvet) and maintained with isoflurane (Forane®, Baxter)/ oxygen inhalation. Both remaining ovaries with cysts were removed. Next to the right ovary a part of uterine horn about 4 cm long and 3 cm of diameter with muco-purulent content and part of uterocervical stump about 5 cm long and 20 mm of diameter, was also removed. Afterwards, right semi-mastectomy was performed (RMG 3,4,5) and inguinal lymph node was removed. Meloxicam (Metacam®, Boehringer Ingelheim) at a dose of 0.3 mg/kg s.c as a perioperative analgesia and Amoxicilin (Betamox L.A.®, ScanVet) were applied. Mammary tumors, ovaries and uterocervical stump samples were placed in 10% formalin and sent for histopathological evaluation.

The anesthesia for the second operation, two months later, was applied following the model described above. Left semi-mastectomy was done (LMG 2,3,4,5) and inguinal lymph node was removed. The samples of mammary tumors and lymph node were settled in 10% formalin and sent for histopathological evaluation.

Results and discussion

The histopathological examination of samples from right mammary glands revealed the presence of adenocarcinoma papilliferum, I grade of malignancy, with necrosis and squamous metaplasia. Epithelial cells were found in removed inguinal lymph node. A proliferation of endometrial glands together with small cysts was observed in uterocervical stump. In ovaries follicular cysts and foci of calcification were noticed.

The histopathological evaluation of left mammary glands showed presence of complex carcinoma- 3rd grade of malignancy with much necrosis; carcinoma arising mixed tumor- 1st grade of malignancy with lymphocytic infiltration and lipoma. In inguinal lymph node there were a focus of infiltrating ductal carcinoma, 2nd grade of malignancy with microcalcifications inside; intraductal papillare carcinoma, 1st grade of malignancy with lymphocytic infiltration.

Two years after the surgery disseminated neoplasia with metastases to the lungs was diagnosed.

In human medicine hysterectomy in women is quiet often performed. It is assumed that approximately 35% of women will undergo this surgery [Jordan 2013]. Absolute indications to carry out this procedure are: cervical cancer in stages IA and IB (mild stages) and adenocarcinoma of uterine endometrium. Recent studies have shown that

there is an increased risk of ovarian tumors in hysterectomized women [Chiu 2015, Jordan 2013].

As mentioned before, in veterinary medicine this intervention is rarely done due to high probability of multiple side effects, which outweigh the potential benefits. Remaining ovaries maintain their hormonal activity and can cause neoplasia or cysts formation, which can lead to irregular sexual cycles. Besides, P4 and E2 can have an influence on mammary gland tumors formation. Incorrectly removed uterus can provoke inflammation of the stump [Musal 2005]. Nevertheless, removing ovaries can contribute to loss of secondary sexual characteristic, a bitch can begin to resemble a male, also her behaviour can slightly change. Not to mention, obesity is frequently a consequence of castration. It is certain that female hormones contribute to the distribution of fat tissue and its metabolism. That is why, it is believed leaving the ovaries may prevent from obesity. Though, direct correlation between ovariohysterectomy and gaining weight hasn't been proved yet. Neither, correlation between urinary incontinence and spaying is known, despite several theories of mechanism by which the urethra fails to maintain appropriate closure pressure after castration [de Bleser 2011, Reichler 2003].

It seems that ovariohysterectomy is the most recommended method of surgical castration of a bitch. There are few indications to carry out this surgery. The most common are prevention of pregnancy or diseases of reproductive system. Side effects of this procedure are quite rare and usually easy to treat. Though, in mild proliferative changes in uterus, cornuectomy, which is removing one ovary and one uterine horn, may be an option for the owner who wants to breed his dog [Seyrek-Intas 2004]. Veterinary surgeons should understand that consequences of hysterectomy are severe and can constitute a danger to health and life of a bitch. Removing remaining altered ovaries and altered mammary glands doesn't prevent from further growth of tumor.

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