BENIGN CYSTIC OVARIAN TERATOMA IN A CROSS BRED CATTLE

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ABSTRACT

The present study reports a case of benign cystic ovarian teratoma in a cross bred cow. A round mass of size 5×5.5×6 cm was found in the right ovary. The mass was firmly encapsulated with cartilaginous tissue and its cross section revealed tufts of hair matted in thick, dried, yellow sebaceous material. The histopathological investigation of the massconfirmed it as benign cystic teratoma. The teratoma was lined by well-differentiated stratifiedsquamous keratinized epithelium with scattered areas ofhair follicles andsebaceous glands.

Key words: Cow, Cystic Ovaries, Histopathology, Teratoma

INTRODUCTION

Benign cystic teratomas (a more appropriate term than the commonly used dermoid cysts) are cystic tumors composed of well-differentiated derivations derived from more than one of the three primary germ layers; ectoderm, mesoderm or endoderm (Nezhat et al., 1999). Many theories have been proposed to explain the formation of teratomas of which the most widely accepted hypotheses are: 1) the teratoma originated from undifferentiated embryonic cells which maintain their capacity to develop into tissues that are different from those of the organ they are growing in; 2) teratoma is a parthenogenic tumor that develop from a single germ cell that had completed the first but not the second meiotic (Carluccio et al., 2017). Cystic teratomas are considered rare in domestic species (Schafer and Miller, 2007) but incidental reports are made in cow, mare, camel, bitch and buffalo (Ali et al., 2006; Vanhaesebrouck et al., 2010; Pande et al., 2016).

Diagnosis of ovarian tumors require to diagnose and differentiate the ovarian abnormalities and/or enlargements physical examination including rectal palpation, ultrasonographic examination and tests are required (McCue, 1998) and thus may go un noticed in many cases causing infertility by disrupting the normal ovarian function leading to culling.

CASE PRESENTATION AND OBSERVATION

Reproductive tract, including anterior vaginal, cervix, uterus, uterine horns and ovary from a cross-bred cow was brought for examination from a local slaughterhouse. On gross examination, the left ovary was apparently normal whereas the right ovary had a cyst. The cyst was almost round in shape, well encapsulated in a smooth glossy cartilaginous layer. The uterus and uterine horns had no gross lesions. The surrounding fat and adnexa were trimmed off and the measurement of ovary and the cyst (length, breadth and thickness) were taken using a divider compass and metric scale as described previously by Khan and Das, 2011. The length was taken as the distance from the anterior pole to the posterior pole, the greatest distance from the medial to the lateral surfaces was considered as width and height or thickness was measured as the greatest distance along an axis vertical to the longitudinal axis (base) at its centre or the distance from attached to the free border. The left ovary measured as 3×4.5×4cm whereas the right ovary smaller and firmer (2×2×1 cm) and contained a cyst of 5×5.5×6 cm size (Figure 1). The left ovary had multiple follicles measuring 3 to 6 mm and the right ovary was apparently smooth.

On incision of the cyst, matted hair along with pasty solid debris and dried yellow sebaceous material (Figure 2) wereobserved. The histological examination of the cyst studied by fixing in 10% buffered formalin and processed for paraffin embedding, after processing through graded alcohols and xylene. Tissue sections were cut and stained with hematoxylin and eosin, as per routine histopathological procedures and examined using light microscopy. Histologically, the cyst was lined by well-differentiated keratinizing stratified squamous epitheliumand filled with keratinized lamellar material. Scattered areas of hair follicles, fibrous connective tissue and sebaceous glands were noticed (Figure 3).

As no immature or malignant structures were noticed, the mass was confirmed to be a benign cystic teratoma. Presence of follicles in left ovary suggests maintenance of follicular wave dynamics whereas right ovary was found to apparently inactive due to the absence of follicles and/or corpus leuteum. Reports on cattle (Edwards, 2002) and buffalo (Pande et al., 2016) have suggested continuation of follicular wave in both neoplastic and opposite ovary but altered hormonal levels were reported leading to functional inactivity. Ovarianteratoma are found to cause infertility in buffalo by disrupting the normal ovarian function due to altered biochemical and hormonal constituents of follicular fluid (Pande et al., 2016), which

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may suggest the probable culling of the buffalo in the present case.

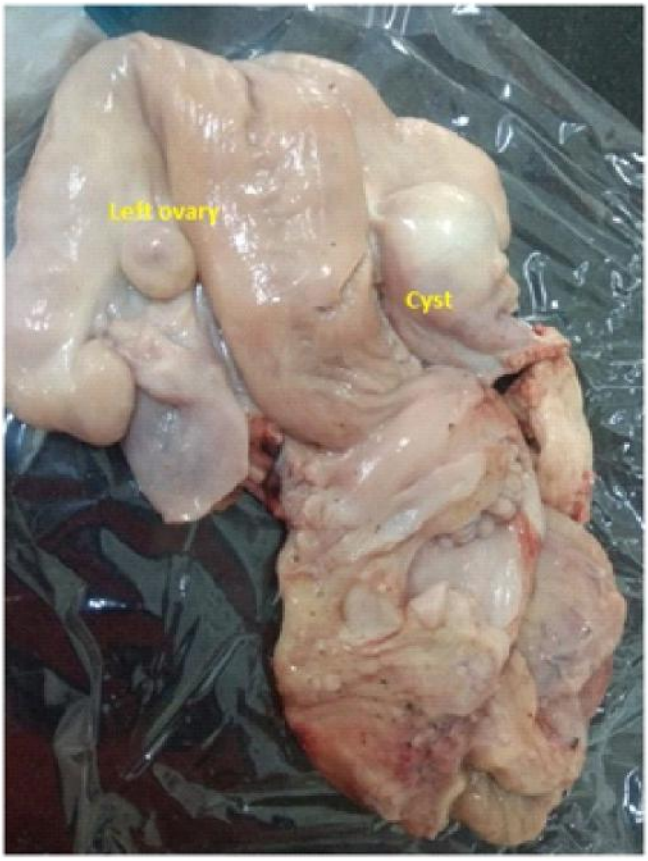


Figure 1. Genital track with left ovary and cyst in the right ovary

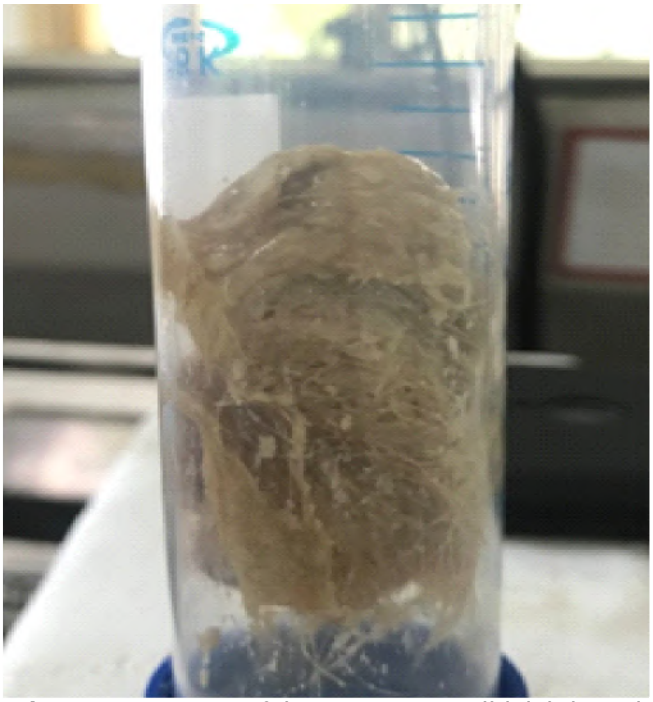
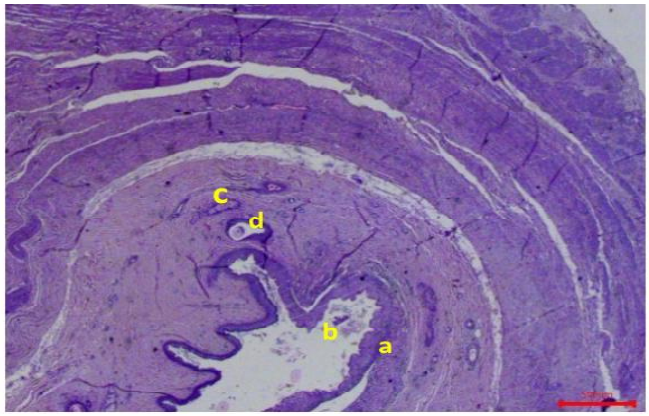
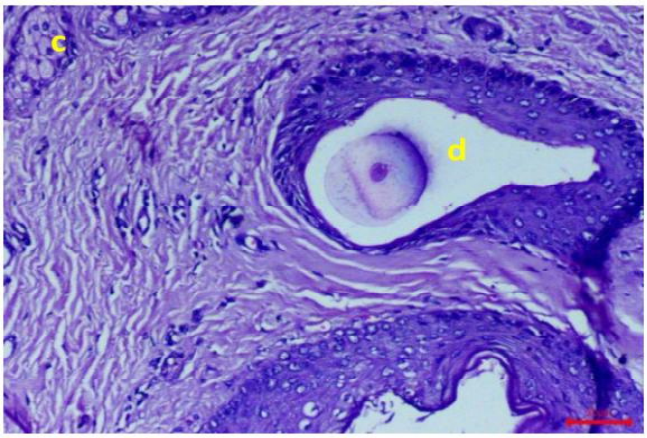


Figure 2. Contents of the cyst- pasty solid debris and dried yellow sebaceous material with stands of hair

The present study reports a case of benign cystic teratoma, that were previously referred to as dermoid cyst. Inspite of its low frequency (or rarity) the benign cystic teratoma should also be considered as an ovarian pathology that contributes for infertility in bovines and included in the differential diagnosis for mass or swelling on the ovaries observed during rectal examination





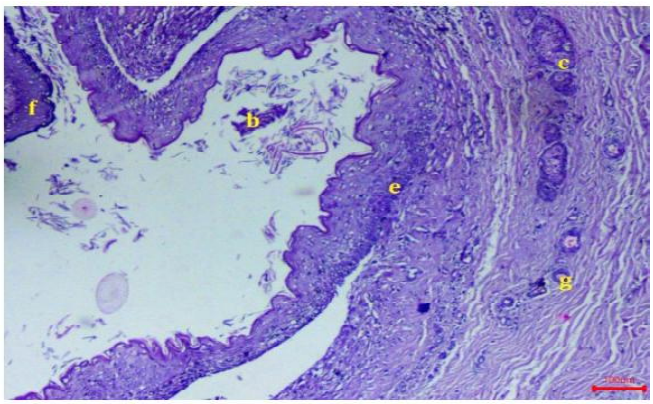


Figure 3. Histopathological section of the teratoma illustrating the presence of cell types originating from different embryonic germ layers. a-Stratified squamous epithelium, b-Keratin strands, c-Sebaceous gland, d-Hair follicle, e-Epidermal hyperplasia, f-Hyperkeratosis, g-Arteries/blood vessels.

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