DIGNOSIS OF CUTANEOUS AND SUB CUTANEOUS PATHOLOGICAL LESIONS IN DOGS THROUGH ULTRASOUND GUIDED BIOPSY

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ABSTRACT

A total of 127 dogs were scanned ultrasonographically at Teaching Veterinary Clinical Complex, Jabalpur out of which 24 dogs underwent ultrasound guided tissue core biopsy (TCB) or fine needle aspiration cytology (FNAC) to diagnose the cutaneous and sub cutaneous lesions. Only five dogs were found positive to have pathological lesions after performing cytological and histopathological examination of collected samples. Out of these five cases, one was having haematoma while inguinal lymph node of second dog revealed chronic reactive lymphoid hyperplasia. Enlarged popliteal lymph node in third dog revealed lymphoma. Fourth dog was found to be afflicted with myositis while fibroma was confirmed in fifth dog. Affected animals were treated successfully with surgical and medicinal intervention. It was concluded that ultrasound guided TCB and FNAC were effective tools in diagnosing cutaneous and subcutaneous lesions without having any negative consequences.

KEY WORDS: Core biopsy, dogs, fine needle aspiration, ultrasound.

INTRODUCTION

Excisional biopsies of cutaneous and sub cutaneous lesions are associated with increased trauma and haemorrhage which can be avoided to a greater extent with ultrasound guided biopsy. Also, the image guidance facilitates precisional collection of most suitable sample from the interior of the lesion (Aitken and Patnaik, 2000). Ultrasound guided fine needle aspiration involves the use of a small gauge (18-20) needle, placed in the area of interest from where cells are subsequently aspirated or forced into the needle. Larger core needles (18-14 gauge) are employed for TCB. These biopsies can also be accomplished with manual tru-cut needles, semi automated or automated gun devices. Larger tissue samples are retrieved with a core biopsy when compared to fine needle aspiration cytology (FNAC) and a histopathological diagnosis may be achieved (Fossum et al., 2013).

MATERIALS AND METHODS

Out of 9095 cases registered at Teaching Veterinary Clinical Complex (TVCC), Jabalpur, from October 2013 to April 2014, 77.56 per cent cases were related to canine species. Among them, 127 (1.80 %) dogs underwent ultrasound examination. A total of twenty four dogs which ultrasonographically revealed textutral alterations underwent ultrasound guided TCB and FNAC for confirmatory diagnosis. Out of which only five were found positive for pathological cutaneous and subcutaneous lesions.

For TCB, automatic spring loaded tissue core biopsy gun with needle size 18 G was utilized using free technique. FNAC was performed with a normal 20 G needle attached to a 10 ml syringe. A thorough physical, clinical and haemato-biochemical examination was performed before taking biopsy. A diagnostic ultrasound was carried out for each lesion to collect the information regarding textural alteration, size, depth of lesion from skin surface, presence of underlying vessels and superficial structures. Animals were sedated using atropine sulphate @ 0.04 mg/kg b.wt. i.m. and xylazine hydrochloride @ 1mg/kg b.wt. i.m. Local infiltration of 2 per cent lignocaine hydrochloride was done for FNAC without any sedation. Biopsy site was marked with a permanent marker over

skin surface. Clotting time was determined in each case of TCB to avoid clotting complications. TCBs were collected from three different sites viz. (a) Enlarged inguinal lymph node; (b) A hard sub cutaneous mass adjacent to sternum and (c) A growth from left fore limb. FNACs samples were obtained from enlarged popliteal lymph node and from a palpable swelling adjacent to inguinal mammary gland.

RESULTS AND DICUSSION

Ultrasonographically swelling adjacent to inguinal mammary gland was diagnosed as haematoma which appeared as an anechoic mass initially but later on converted into an echogenic mass in the facial covering of inguinal muscles. It was confirmed by FNAC which revealed no cells other than erythrocytes. Similar to the present findings, Williams *et al.* (1993) also diagnosed a haematoma ultrasonographically by its alternate echoic and anechoic rings radiating outwards from a blood vessel in the thigh of a dog and termed it as compartment syndrome. Ultrasound guided fine needle aspiration of haematoma was also performed by Sofer *et al.* (1998) from canine splenic capsule. The possible explanation for change in the echotexture of haematoma from an anechoic mass to an echogenic structure may be attributed to organization of contents of haematoma along with formation of fibrin threads in it.

Photo 1

Photo 2

Ultrasonograms showing granular appearance of enlarged popliteal (Photo 1) and inguinal lymph node (Photo 2)

Ultrasonographic examination of enlarged popliteal and inguinal lymph nodes revealed reduced echogenicity with granular appearance within the parenchyma (Photo 1 and Photo 2). Chronic reactive lymphoid hyperplasia was diagnosed from enlarged popliteal lymph node based on findings of FNAC (Photo 3) while reports of TCB confirmed lymphoma in inguinal lymph node (Photo 4). These findings were in conformity with reports of Rubaltelli *et al.* (1990), Saunders *et al*. (1992) and Paugh (1994) in dogs. Granular appearance of lymph node obtained in the present study may be attributed to inflammation and infiltration of large number of cells while lymph node enlargement may be due to excessive proliferation of lymphocytes and deposition of exudates.

Growth in left fore limb appeared as a mixed echogenicity mass with hyperechoic capsule. Tissues of growth were oriented in different directions. Biopsy samples were obtained from the growth and it was confirmed as fibroma. The ultrasound interpretation of this case in present study is in congruence with the findings of Choi *et al*. (2008) who diagnosed limb fibroma in two dogs based on haematology, serum biochemistry, radiography, ultrasonography and fine needle aspiration cytology and opined fibroma appearance as marginated hyperechoic mass with vascularization in ultrasonography.

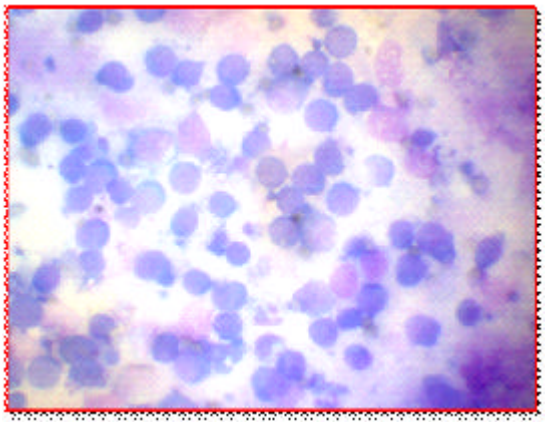

Photo 3: Chronic reactive lymphoid hyperplasia with plasma cells in FNAC of popliteal lymph node (Leishman stain X1000)

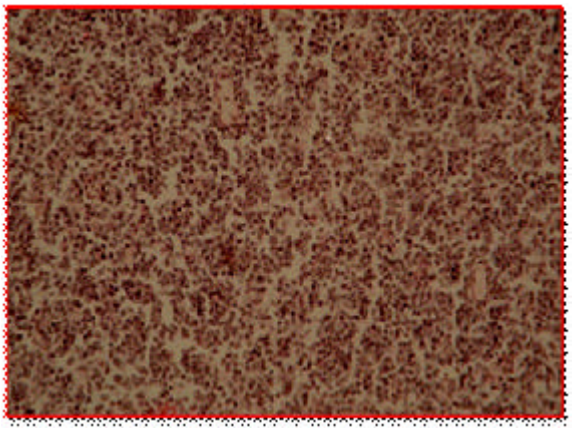

Photo 4: Section of TCB of inguinal lymph node with lymphoma (H & E X200)

Photo 5: Ultrasonogram showing degeneration of muscle fibers with anechoic fluid pockets

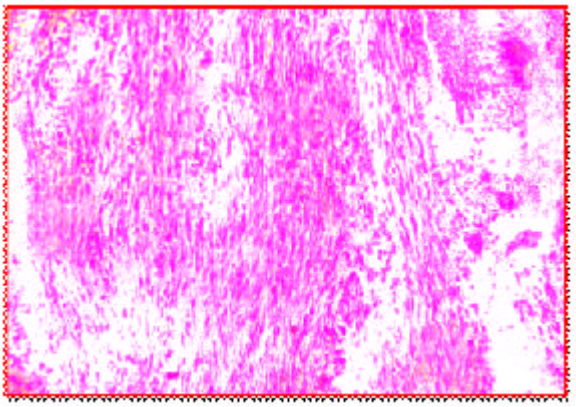

Photo 6: Section of TCB with myositis (H & E X200)

Myositis was diagnosed in growth adjacent to sternum which ultrasonographically revealed disorientation of muscle fibers with hypoechoic muscle bellies and anechoic fluid pockets (Photo 5 and Photo 6). Green (1996) used ultrasonography to diagnose muscle bruise and haematoma while Kealy *et al.* (2011) diagnosed muscular sinus and fistula using ultrasound in dogs. Disorientation of muscle fibers might be due to damage of muscular bundles and pressure exerted by exudates which might have been responsible for formation of anechoic fluid pockets in between muscle bellies.

Each animal was treated symptomatically and showed improvement. Dog with haematoma was surgically treated while limb with fibroma in other dog was amputated to save the life of the patient. In any case, no clotting complication was observed.

From the present study it is evident that ultrasound guided biopsy is a diagnostic modality without complications and this facilitates accurate and early diagnosis based on which effective treatment can be planned.

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