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Rapid Diagnosis of Fibrosarcoma in a Dog by using Fine Needle Aspiration Cytology (FNAC)

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ABSTRACT: A 13 years old, male, mongrel dog was presented with a history of swelling on the left frontal aspect of the head and above the orbital region of the eye. Since 12 days the mass was increasing day by day and lead to pressing of eye ball. On clinical examination, the mass was felt hard and pain less. Biopsy was done using 22 gauze fine needle and made smears for cytological examination. The smears were stained with routine Giemsa stain. On microscopy, the fine needle aspiration cytology (FNAC) stained smears were revealed pleomorphic fibrocytes with prominent nucleoli. Based on above findings the swollen mass was diagnosed as fibrosarcoma. Most of the fibrosarcoma cases are come to the clinic in last stage of cancerous growth. Prognosis of the fibrosarcoma cases were poor even after starting treatment protocols. The response to treatment will be poor in old aged dogs and local recurrence is common. FNAC method can detect early stages of fibrosarcoma. It requires dog owner attention to bring the dog to clinic, if they suspect abnormal growth in dogs. FNAC method also differentiate the tumor mass from abscess and hematoma. So that effected dog from fibrosarcoma can be recover with good prognosis.

Keywords: Fibrosarcoma, Fine needle aspiration cytology (FNAC), Fibrocytes, Giemsa stain, Biopsy.

INTRODUCTION

Cytological examination of specimen smears is a rapid, non-invasive and most economical diagnostic tool for obtaining a preliminary and often definitive diagnosis of animal disease conditions (Pavel *et al.,* 2016; Ghisleni *et al.,* 2006). A Fine Needle Aspiration and Cytological (FNAC) examination is the preferred method for superficial and deep tissue masses in animals for rapid diagnosis of swelling masses both in humans and animals (Sood *et al.,* 2008), due to high accuracy of FNAC tool have been reported in comparison with histological examination methods (Subapriya *et al*., 2018). Most of the cancerous tissues can be diagnosed by cytological examination of specimen smears. Among the tumors, the fibrosarcomas are common in middle and old aged dogs (Goldschmidt and Hendrick, 2002). The fibrosarcomas is characterized as invasive nodular tumor of mesodermal origin with elongated normochromatic nuclei. The fibrosarcoma is a malignant tumor that develop due to uncontrolled growth of fibroblasts and these fibroblasts are the most common cells of connective tissue in the body. Fibroblasts are found in the connective tissues, including bone, skin, and their adjacent tissues. The fibrosarcomas can arise from the skin, the fat under the skin, and the tissues adjacent to these. These fibrosarcomas are mostly found in the trunk and extremities, skull and jaw. This present case was so interesting by the external examination of swelling mass and taken for further investigation. Hence, the aim of present study was to examine the palpable solid subcutaneous swelling mass (Fibrosarcoma) on skull in a 13 years aged dog in which a diagnosis was made via FNAC.

MATERIALS AND METHODS

History: A 13 years old mongrel dog was brought to Eswar pet clinic in Tirupati city of Andhra Pradesh with a history of swelling mass on the left frontal aspect of the head and above the orbital region of the eye

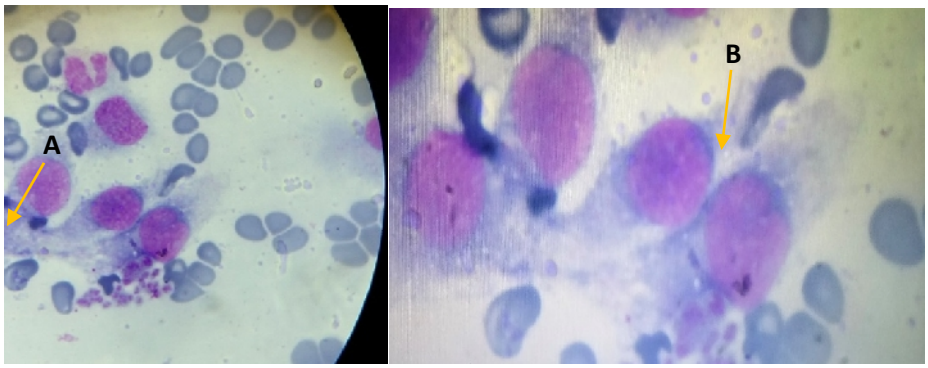
Specimen: Aspirates was obtained by using standard technique (FNAC) with 22 gauze needles. The smears were prepared and air dried and stained with routine Giemsa stain as prescribed by Garbyal *et al.,* (2006). The cellularity was assessed in low power magnification, subtype of the tumor and malignancy were determined according to standard diagnostic criteria.

RESULTS AND DISCUSSION

On clinical examination of the dog, 5cm measured swollen mass on left side of head above the orbital region and was not felt any pain during palpation of growth (Fig. 1). The temperature was 102.4˚F and the condition of animal was good at the time of sample collection.

Fig. 1. Image showing swollen mass on left side of the head above orbital region.

The injection site fibrosarcomas are common in vaccinated dogs (Saba, 2017) but the animal was not vaccinated against any diseases. Ciekot *et al.*, (1994); Wallace *et al.*, (1992) reported that fibrosarcomas common in male dogs. Similarly in the present case also 13 years male mongrel dog was shown tumor mass like growth. For a more conclusive diagnosis, a biopsy from the tumor mass was taken for analysis (Khanna *et al.*, 2009). The Cytological examination revealed many pleomorphic, spindle shaped to plumpy fibrocytes (Fig. 2A) with multiple nucleoli and confirmed as malignant tumor. Similar findings was observed by Martano *et al.*, (2018). Under microscopic examination with high magnification, binucleated cells, plumpy prominent nucleoli with basophilic cytoplasm in nucleus, multiple nucleoli (Fig. 2B) and coarse chromatin (Santarius *et al.*, 2010) were observed. Similarly Martin (2003); (Tamlin *et al.*, 2020) reported that lesions with low malignancy are characterized as an area of mild nuclear and cellular pleomorphism and low hyperchromasia and the lesions with high malignancy are characterized as areas with large number of pleomorphic cells and nuclei, as well as hyper chromation of nuclei in large quantities. Marzec *et al.*, (2021) studied on Endosialin expression in fibrosarcomas and fibromas and found that 82.5 percent of expression of fibrosarcomas in compared with fibromas, it indicates fibrosarcomas are common. Based on the cytological examination, the swollen mass diagnosed as fibrosarcoma and similar findings was observed in old aged dogs by Goldschmidt and Hendrick (2002).



(A) **(B)**

Fig. 2. (A) Fibroblasts seen in tumor mass on cytological examination (FNAC) (B) Nucleoli observed in tumor cells.

CONCLUSION

The Fine-needle aspiration cytology (FNAC) is commonly used as a diagnostic procedure to evaluate superficial and deep masses in animals. Most of the fibrosarcoma cases are from middle and old aged dogs come to clinic in last stage of cancerous growth. Prognosis of the fibrosarcoma cases were poor even after starting treatment protocols and local recurrence is common. FNAC method can detect and differentiate early stages of fibrosarcoma from abscess and hematoma. The study concluded that FNAC is most reliable and rapid diagnostic tool for detection of cancerous masses in animals.

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Conflict of Interest. Nil.

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