

SUBCUTANEOUS INFILTRATIVE LIPOMA IN A MALE SPITZ DOG

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A nine year old male spitz dog of 12kg body weight was presented to SAQTVH, Chittagong Veterinary and Animal Sciences University (CVASU) with the main complaint of a round localized mass palpated in the left flank region. With the clinical suspicion of a neoplastic mass, it was surgically removed by maintaining deep surgical anesthesia. Cytological evaluation of the nodular mass indicated a large number of neutrophil; haemato-biochemical assessment found significant changes in the ESR, increased total WBC count, serum creatinine level and moderately decreased level of serum glucose, total protein. Histopathological section of excised mass revealed characteristics feature of lipoma with large number of adipocytes containing single or multiple vacuole, congested blood vessel and presence of some round cells including anisocytosis and anisokaryosis, nuclear basophilia and increased nucleus/cytoplasm ratio.

Key words: Spitz, lipoma, invasiveness

Lipoma refers to the benign tumors (noncancerous) of fat tissue (Puotinen and Straus 2012) relatively common in older dog especially in subcutaneous region which can also occur in chest cavity, abdominal cavity, spinal canal, the vulva and vagina of a dog. Infiltrative lipoma is a relatively uncommon tumor which is considered benign and do not metastasize to distant organ, however, can invade immediately adjacent tissue such as muscle, joint capsule or even bone (Lundgren 2007). Histologically, these cells often look like one large vacuole, perhaps huge cells with a nucleus that could be round

or simply compressed over to the side of the cell which is difficult to observe (Guilford and Strombeck 1996). According to the location, it is a subcutaneous mass, inflammatory or neoplastic, very rare to have hyperplastic lesions which could be diagnosed cytologically. Neoplastic lesions are predominantly roundish or polyhedral, epithelial or spindle cells with large round nuclei (Sandbery 2004), usually with minimal inflammatory or non inflammatory components (Health *et al.* 2006). For a successful diagnosis, treatment and prognosis of an individual having cancer cell depends on the nature, size, anatomical location, histopathology of the tumor as well as hematological complication related to the disease.

Clinical case

A nine years old male spitz dog of 12kg body weight was presented to the SAQTVH, Chittagong Veterinary and Animal Sciences University (CVASU) with the main complaint of a round localized mass palpated on the left flank region (Figure 1A) from last 6 month of age with emaciated body condition. According to the owner complaint, the dog was alert, active and taking feed normally.

Physical examination and laboratory findings

The dog presented a general attitude, normal body conditions as heart rate, respiration rate, body temperature during physical and clinical examination. A large mass about 12cm in diameter was palpated on the left flank, with a painful reaction in abdominal palpation. As the clinical suspicion of a neoplastic mass, a fine needle aspiration of

the tumor for cytological examination was performed and blood sample was collected for examination of hematological and biochemical parameters. The cytological assessment of the nodular mass presented a large number of neutrophil with clear criteria of malignancy including anisocytosis and anisokaryosis (Figure 2A), nuclear basophilia and increased nucleus/cytoplasm ratio. Haemato-biochemical examination evaluated significant changes in the ESR (68mm in 1st hour), increased level of total WBC count 33.9 thousand/cumm, serum creatinine level 3.97mg/dl and moderately decreased level of serum glucose 26.2mg/dl, total protein 34g/l (Table-1, Table-2). With the presumptive diagnosis of neoplastic disease, the dog was submitted to the small animal surgery unit in SAQTVH for surgical removal of the tumor mass.

Surgical treatment and evaluation

A deep surgical anesthesia was performed by using combination of Xylazine Hydrochloride (Xylaxin[®], Indian Immunologicals Ltd., India) at a dose rate of 1mg/kg body weight (b.w.) and Ketamine Hydrochloride (G-Ketamine[®], Gonosasthya pharmaceuticals Ltd., Bangladesh) 10mg/kg b.w. intramuscularly followed by using Atropine Sulphate (0.02mg/kg b.w.) as a pre-anesthetic agent. After performing deep anesthesia a vertical incision was made in left flank region to explore the mass of adipose tissue which was attached to the obliquus externus and internus muscle and infiltrated in subcutaneous connective tissue. This tumor mass was composed of adipose tissue and filled with blood stained exudates. During the first 72 hours after the surgical procedure the dog was maintained by 0.5g of

Tables 1: Haematological parameters

Parameters	Results (before surgical removal of the tumor)	After 15days of surgical remove	Normal range
Hb (gm%)	5.4	8.0	12-17
ESR (mm in 1 st hour)	68	17.0	6-10
Total RBC count (million/cumm)	3.30	7.05	5-9
Total count of WBC (thousands/cumm)	33.9	10.85	9-15
PCV (%)	24.6	38	37-55
MCV (fl)	75	-	60-79
MCH (pg)	23.1	-	19.5-24.5
Lymphocyte (%)	28	19	20-25
Neutrophils (%)	66	76	60-75
Eosinophils (%)	4	-	2-55
Monocytes (%)	2	-	0-4
Basophils (%)	0	-	0-1

Tables 2: Serum Biochemical Profile

Parameters	Results (before surgical removal of the tumor)	Reference interval	15days after surgery
S. Calcium (mg/dl)	7.1	8.9-11.7	10.7
S. Glucose (mg/dl)	26.2	65-118	78
S. Creatinine (mg/dl)	3.97	0.5-1.5	1.9
S. Total Protein (g/l)	34	54-71	50
S. GPT (U/L)	32.21	21-102	27
Triglyceride (mg/dl)	61.20	20-112	45

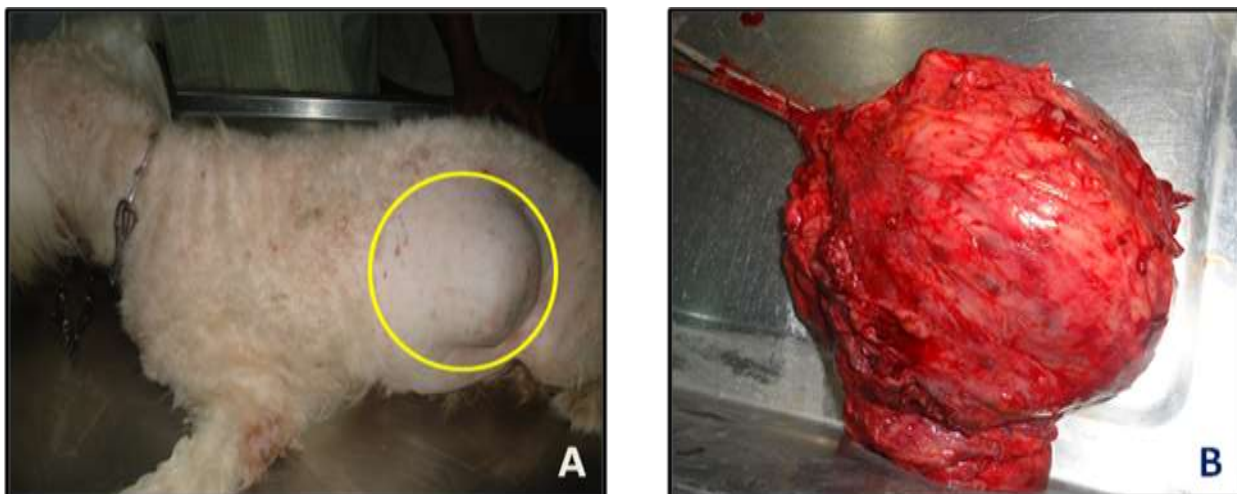


Figure 1: **A.** Round localized mass observed in the left flank; **B.** Tumor mass after separation from abdominal muscle and associated connective tissue

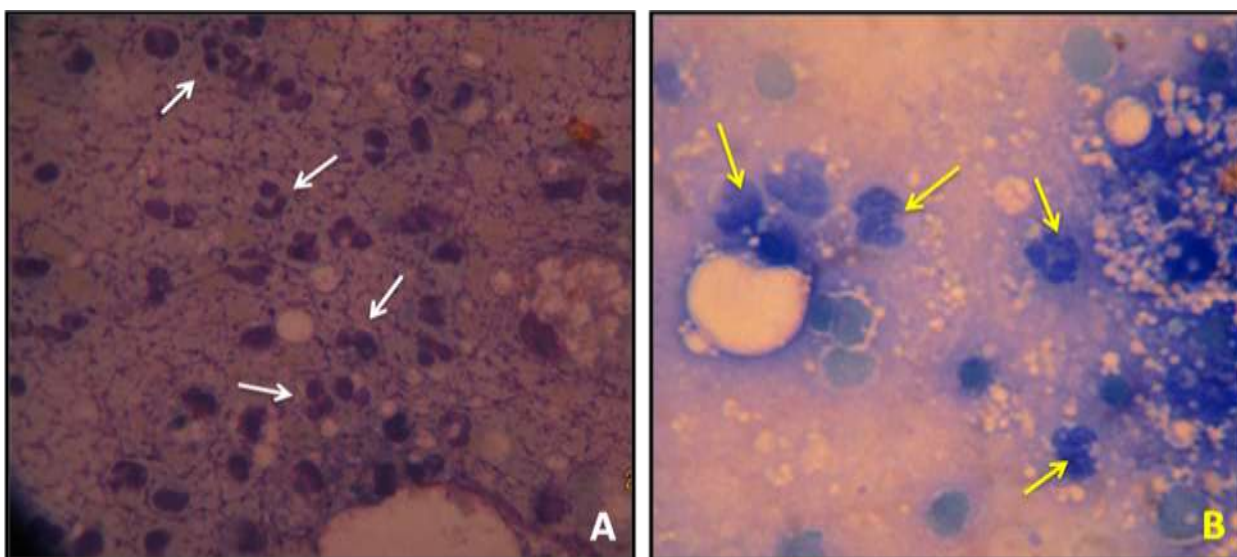


Figure 2: **A.** Fine needle aspiration of tumor mass, showing increased number of neutrophil with anisokaryosis (arrow); **B.** Impression smear from the separated tumor mass, showing large number of neutrophil.

ceftriaxone sodium (40mg/kg) BID and 40mg of ketoprofen (3mg/kg) intramuscularly for five days.

Gross and histological findings

Grossly, the adipose tissue mass was firm and dark brown in color (Figure 1B), it was bulky with an elevated surface and invaded in the abdominal muscle. Representative fragments of the tumor was fixed in 10% buffered formalin and submitted for histopathological study. Impression smears from the separated tumor mass showed large number of neutrophil (Figure 2B). Anisocytosis, anisokaryosis with increased mitotic activity of the round cell indicate the malignancy of the tumor mass. In some areas fat cells show oval nuclei with more

acidophilic cytoplasm (Figure 3, 4). Based on this histological finding, and morphological features it was classified as subcutaneous infiltrative lipoma.

Post operative evaluation

After 15days of following surgery, again blood was taken and on haemato-biochemical evaluation the level of parameters i.e. Hb, ESR, PCV, total WBC count, Serum creatinine level etc all were come closure to its normal range (Table 1, Table 2).

DISCUSSION

Lipomas are benign neoplasms that consist of localized nodules of fat and originate from adipocytes of the subcutaneous tissue.

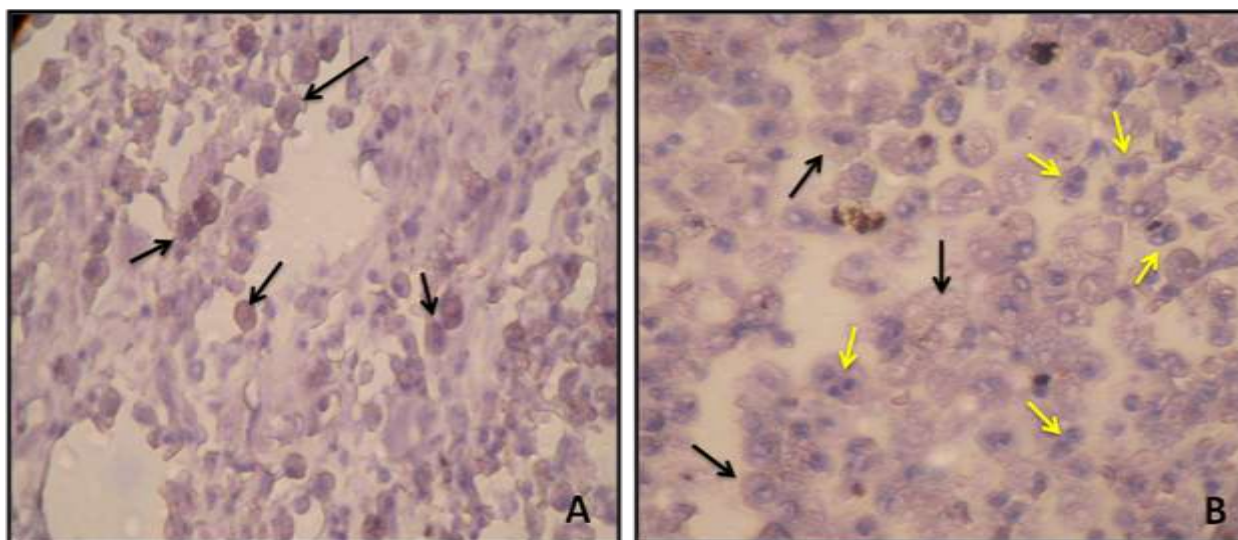


Figure 3: Histopathology of the tumor (H and E stain),. A. Oval cells with more acidophilic cytoplasm (arrow); **B.** Round cells with increased nuclear cytoplasmic ratio (black arrow) and increased mitotic figure (yellow arrow).

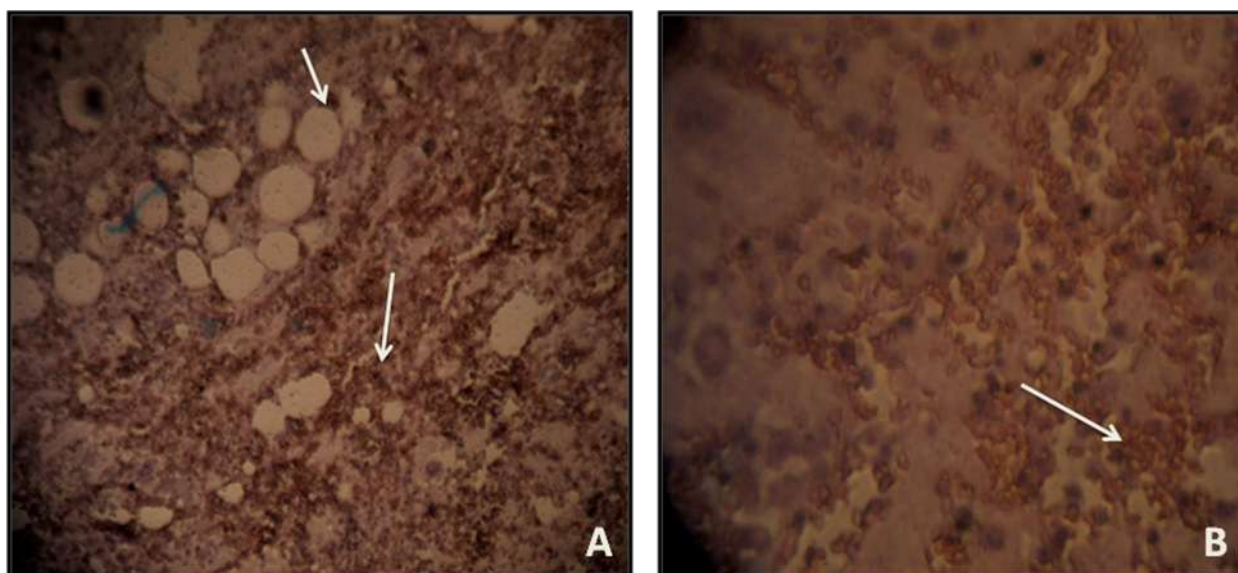


Figure 4: Histopathology of tumor mass (H and E stain), showing congested blood vessel (A) and intact erythrocytes (B).

Infiltrative lipomas are locally invasive cause pain upon palpation (Thomas and Fox 1998) due to the compression of neighboring tissues (Kim *et al.*, 2005; Goldschmidt and Shofer 1992) which is an agreement with the finding. In humans, pain occurs when the infiltrative lipoma compresses or involves adjacent neurovascular and/or muscular structures (Austin *et al.*, 1980). Histologically, infiltrative lipomas and lipomas both consist of well-differentiated adipocytes (Thomson *et al.*, 1999). Generally it has been characterized as well-differentiated, pleomorphic and myxoid types (Orvieto *et al.*, 2001). Anisocytosis,

anisokaryosis with increased mitotic activity of the round cells are common pictures of malignancy indicating tumor mass (Goldschmidt *et al.*, 2000). In case of lipoma, laboratory parameters are usually unspecific. Hematological parameters in affected dogs evaluated as increased WBC count, significant changes on ESR which was due to inflammatory or toxemic process (Stephens *et al.*, 1984). Biochemically, it was normal but high level of creatinine and decreased total protein were found. On most of the described cases of lipoma are considered spontaneous, but few reports suggested potential inciting agents

associated with foreign bodies reported by McCarthy *et al.* (1996). It was observed that no macroscopic evidence of metastasis which is the conformity for infiltrative lipoma stated by Degner (2012) and Lundgren (2007). But there is a chance of recurrence which is a great problem for this case. It could be recurred in about 30 to 50% of the cases where Bergman *et al.* (1994) reported a recurrence rate of 36% with a median time to recurrence with 239days. On this case, recurrence was not occurring and after 15days of followed surgery no complication was arisen.

A unique classification proposal for infiltrative lipoma in animals has yet to be established, likely reflecting the relatively lower frequency of this tumor in domestic species.

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