Clinical and histopathological features of lipoblastoma

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Lipoblastoma is a rare benign tumor of infancy and childhood. It has similar radiographic imaging findings as malignant liposarcoma. Therefore, it is crucial to distinguish between the two through other diagnostic methods and clinical features.

Methods

Patients with lipoblastoma who were treated at our institution over a 25-year period were identified. A retrospective review of their medical charts was conducted to analyze their clinical characteristics and outcomes.

Results

There were 14 males and 6 females (ratio 2.3). Age at diagnosis ranged from 6 months to 44 years. Sixteen patients were Caucasian, one was Hispanic, one was African American, two were race undetermined. Imaging included ultrasound (N=6), MRI (N=14), X-ray (N=9), and CT (N=4). Location reported in lower extremity (N=8), upper extremity (N=5), trunk (N=2), head/neck (N=2), inguinal region (N=1). Size ranged

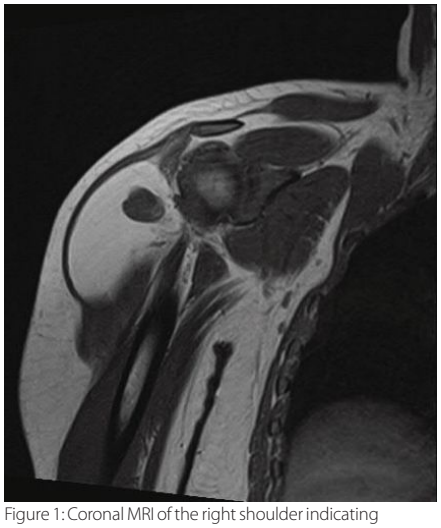

Figure 1: Coronal MRI of the right shoulder indicating intramuscular mass lesion within the deltoid. Mass demonstrates homogeneous macroscopic fat signal with a nodular component along the medial aspect, seen as hypointensity in T1.

TABLE 1

Summary of demographic findings (n=20)

PATIENT DEMOGRAPHICS	N (%)
SEX: Male	14 (70)
SEX: Female	6 (30)
AGE AT DIAGNOSIS (YEARS)	
<1	2 (10)
1-9	13 (65)
10-20	3 (15)
>20	2 (10)
Mean	8 years
Median	4.5 years
RACE: Caucasian	16 (80)
RACE: Hispanic	1 (5)
RACE: African-American	1 (5)
RACE: Unknown	2 (10)
IMAGING	
MRI	14 (70)
Ultrasound	6 (30)
X-Ray	9 (45)
CT	4 (20)
3 modalities	6 (30)
2 modalities	6 (30)
1 modality	3 (15)
No modality	5 (25)
Diagnosis on Imaging	0 (0)

TABLE 2

Clinical presentation (n=20)

CLINICAL PRESENTATION	N (%)
DIAMETER (CM)	
Range	1.6-18
Mean	6.1
Median	4.9
PRESENTATION	
Mass	19 (95)
Nodule	1 (5)
Focal	17 (85)
Diffuse	3 (15)
OTHER STRUCTURES INVOLVED	
Superficial	5 (25)
Deep	15 (75)
Nervous only	5 (25)
Muscular only	6 (30)
Osseous only	2 (10)
Osseous and muscular	2 (10)

TABLE 3

Pathologic and chromosomal analysis

PATHOLOGIC AND CHROMOSOMAL ANALYSIS	N (%)
PATHOLOGY	N=11
Lobulated	5 (45.4)
Well-circumscribed	3 (27.3)
Encapsulated	4 (36.4)
Yellow-white	4 (36.4)
HISTOLOGY	N=4
Mature adipocytes and fibrous septa	3 (75)
Focal myxoid changes	2 (50)
Spindle cells	2 (50)
IMMUNOHISTOCHEMISTRY	N=20
CD34+	2 (10)
Desmin+	1 (5)
Not reported	17 (85)
CHROMOSOMAL ANALYSIS	N=20
Chromosome 8 abnormalities	6 (30)
Translocation of 8q11-q13	4 (20)
Structural abnormality	1 (5)
Deletion of portion of 8q	1 (5)
Nonspecific structural abnormalities	2 (10)
Normal karyotype	4 (20)
Not reported	8 (40)

TABLE 4

Follow-up (n=20)

FOLLOW-UP	N (%)
Recurrence	1 (5)
No recurrence	15 (75)
Unknown	2 (10)
FOLLOW-UP IMAGING	7 (35)
MRI	5 (25)
CT	1 (5)
X-Ray	1 (5)
Range	2 weeks - 24 years
Mean	31.6 months
POST-OPERATIVE COMPLICATIONS	
Suture granuloma	2 (10)
Gluteal Atrophy	1 (5)
None	17 (85)

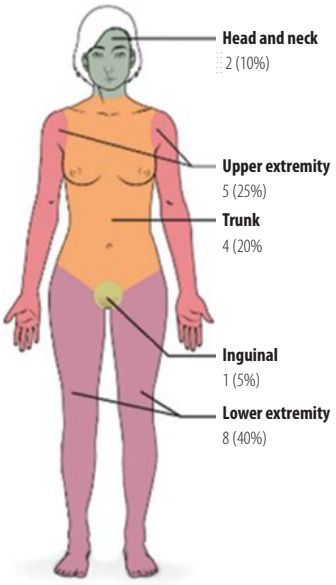

Figure 2: Anatomical site distribution - 13 cases in the extremities (65%), 4 in the trunk (20%), 2 in the head and neck region (10%) and 1 in the inguinal region (5%).

from 1.6 to 18 cm (mean of 6.1). Seventeen were focal and 3 diffuse. Lesions involved deeper structures in 15 patients and superficial structures in five. All patients underwent complete resection. Available pathology reports noted 5 lobulated, 3 well-circumscribed, 2 encapsulated, 1 thinly-encapsulated masses featuring mature adipocytes, fibrous septa (n=2), focal myxoid changes (n=2) and spindle cells (n=2). Twelve patients underwent chromosomal analysis, observing six chromosome 8 abnormalities and two nonspecific structural abnormalities. One recurrence reported. Seven patients had follow-up imaging and 18 patients had follow-up visits between 2 weeks to 24 years.

Conclusion

Lipoblastoma is an uncommon childhood neoplasm of embryonic white fat that can also present in adolescence and adulthood. Age should be avoided as diagnostic benchmark. It has a male and Caucasian predilection. Imaging, especially MRI, is helpful but ineffective in determining definite diagnosis. This is established via histopathologic and cytogenic reports. Recurrence is higher with diffuse form. Total resection has favorable prognosis with negligible functional impact, minimal complications and smooth follow-up. **MM**

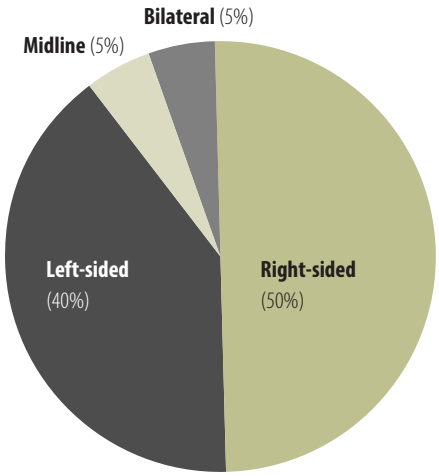

Figure 3: Affected side distribution- lesions presented as right-sided (n=10), left-sided (n=8), midline (n=1), and bilateral (n=1)

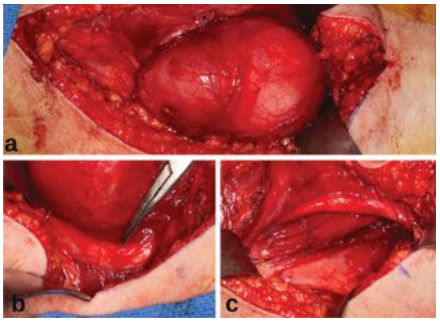

Figure 4: Intraoperative appearance of lipoblastoma mass (a), infiltrating deeper muscular structure i.e. long head of biceps femoris (b, c)

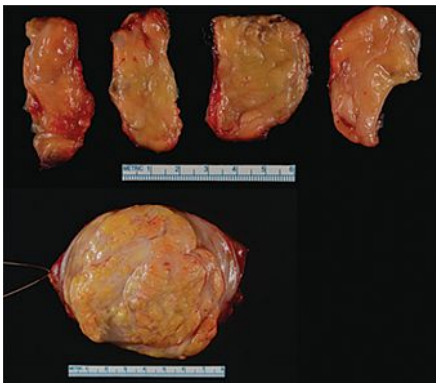

Figure 5: Gross appearance of lipoblastoma. Tumor is well-circumscribed mass with a yellow-white, myxoid appearance. Fibrous septations demarcate lobules of mature adipose tissue.

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