



LIPOBLASTOMA

Dr. Daksha M. Shirodkar

Tutor/Demonstrator, Department of Pathology, Goa Medical College

Dr. Premila De Souza Rocha

Associate Professor, Department of Pathology, Goa Medical College

Dr. Gaurangi G. Velip

Senior Resident, Department of Pathology, Goa Medical College

Dr. Pratiksha Jaladi

Senior Resident, Department of Pathology, Goa Medical College

Dr. Aiswarya A K

Junior Resident, Senior Resident, Department of Pathology, Goa Medical College

Dr. Abarna. P

Junior Resident, Senior Resident, Department of Pathology, Goa Medical College

ABSTRACT Lipoblastoma is a benign adipose tissue tumor arising from immature embryonal fat cells. It is generally seen in infancy or early childhood with 90% of the cases occurring first 3 years of life. They typically seen as a single painless soft palpable mass. Histopathologic examination is gold standard for diagnosis, while complete surgical excision is the treatment of choice. We report herewith a case of lipoblastoma in a 18 month old girl child.

KEYWORDS : Lipoblastoma, benign adipose tumor, young children

INTRODUCTION

Lipoblastoma is a benign tumor which arises from embryonal white fat cells that continue to grow during the postnatal period (1,2). It usually presents paediatric population in infancy and early years of life with 90% of the cases seen in children less than 3 years of age with male predominance with male : female ratio ranging from 1.7 to 3:1.(3,4). Lipoblastoma are seen in different anatomical locations with subcutaneous tissue of the trunk and limbs being the most commonly affected areas. They usually present as solitary painless soft mass(3). Histopathologic examination helps in definitive diagnosis with complete surgical excision as treatment of choice.(2,5,6).

Case Report

One and half year old girl child presented to paediatric surgery opd with left forearm swelling present since last one and half month. On examination swelling was 8*5 cms with irregular margins, soft, consistency, non tender, non indurated. Overlying skin appeared normal.

On ultrasound, relatively well circumscribed heterogeneous predominantly hyperechoic lesion was noted in subcutaneous plane measuring 26*12mm in size. No significant vascularity was noted.

High resolution MRI of the left forearm was performed which revealed well demarcated fat intensity lesion along medial aspect of the left proximal forearm in the subcutaneous plane measuring 5.5*3.6*6.5cms in size with a well defined heterogeneously enhancing soft tissue component, indenting the underlying muscle of forearm. Imaging features were suggestive of neoplastic etiology (more likely to represent lipoblastoma rather than liposarcoma)

Usg guided trucut biopsy was performed and tissue was sent for histopathological evaluation.

Grossly, multiple whitish elongated bits aggregating to 1.2cm were sent.

Microscopically, diagnosis of lipoblastoma was made.

Later, excision of tumor was done & sent for histopathological examination.

Grossly, it was a yellowish soft lobulated mass measuring 6*5.5 cms.



Figure 1 : Yellowish Lobulated Specimen

On cut surface was homogenous yellowish tan with myxoid areas.

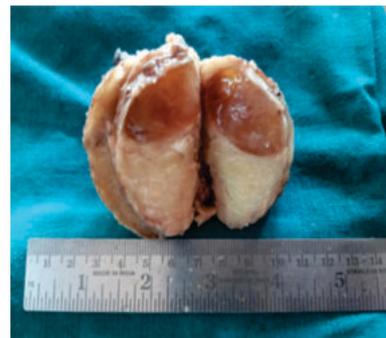


Figure 2: Cut Section Of The Lesion Showing Yellowish Tan Appearance With Myxoid Areas.

Histopathological examination revealed adipocytic neoplasm with a lobular architecture with intersecting fibrous septa & zonation. Myxoid areas with plexiform vascular network was seen. A range of fat cell maturation from primitive stellate to spindled mesenchymal cells, multivacuolated lipoblasts to mature fat cells were seen.

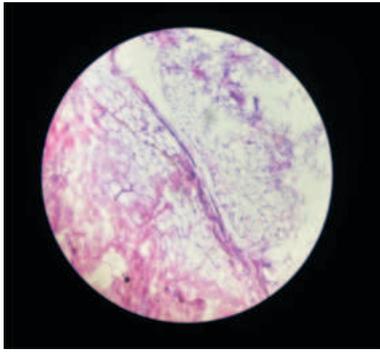


Figure 3: H&E(Scanner View) Shows Sheets Of Adipocytes With Fibrous Septae Showing Myxoid Background

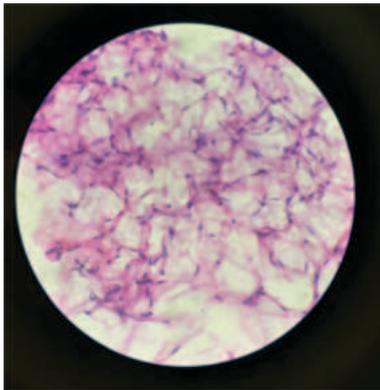


Figure 4:H&E(High Power) Showing Mature adipocytes, Few Univacuolated Lipoblasts with Chickenwire Vasculature.

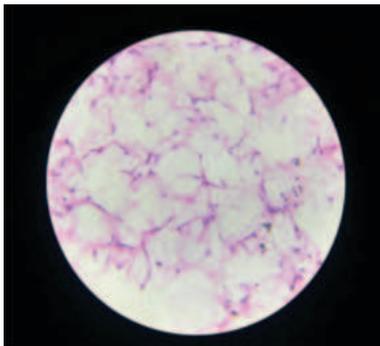


Figure 5: H&E(High Power) Showing Lipoblasts In Various Stages Ranging From Primitive Stellate Cells To Multivacuolated Or Small Signet Ring Cells

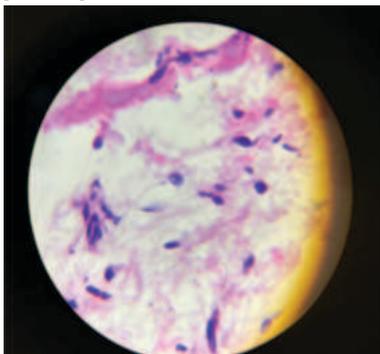


Figure 6:H&E (Oil immersion) Showing Vacuolated Lipoblast

DISCUSSION

Lipoblastoma and lipoblastomatosis are rare benign adipose tissue neoplasm which arises from immature embryonal adipocytes with the lipoblastomas being well circumscribed and encapsulated while lipoblastomatosis appear as deep-seated, poorly circumscribed, and infiltrative lesions seen primarily in infants and young children, less than 3 years of age.(7)

The term lipoblastoma was first coined by Jaffe in 1926 to portray a tumor of immature fat cells, and in 1958, Vellios et al. Documented the first case of "lipoblastomatosis" as a benign tumor of fetal fat tissue of the postnatal period.(8,9)

Adipose tumors account for less than 10% of all pediatric soft tissue tumors, of which approximately 5%–30% consists of lipoblastomatous type (8,10,11). Lipoblastomas are usually found in pediatric patients, with 90% of cases diagnosed before three years of age, and nearly all cases diagnosed within the first decade of life. Lipoblastomas have rarely been reported in adolescents and adults (12,13). In our case patient is 18 months old. The most common site of lipoblastomas is in the extremities, as was seen in our cases, but they can also occur in the trunk, head, neck, mediastinum, or retroperitoneum.(11)

These tumors demonstrate a predilection for the left side of the body, suggestive of a possible association with genes that determine body asymmetry.

Lipoblastomas are painless and may be slow or fast growing. Most remain <5 cm but sizes up to 25 cm have been described in the literature.(14,15)

Histologically, typical lobular architecture is seen with sheets of adipocytes separated by fibrovascular septa. Different stages of maturation are seen in adipocytes ranging from primitive spindle cells to vacuolated lipoblasts to mature adipocytes in varying proportions. Primitive mesenchymal cells and plexiform capillary network within myxoid areas are seen. The lobules demonstrate a zonal pattern of maturation with mature adipocytes in the center and myxoid areas at the periphery. A greater part of mature adipocytes (lipomatous pattern) indicate maturation. In less mature myxoid areas variable numbers of residual lipoblasts are observed.(16,17,18). Our findings were similar to those reported in various studies. Mitoses are unusual, abnormal mitoses are never seen.(16,17) On IHC, adipocytes are positive for CD34 and S100 protein, while primitive cells are positive for Desmin (18).

The differential diagnoses include pediatric lipoma, hibernoma, pediatric myxoid liposarcoma and well differentiated liposarcoma. In lipomas, lipoblasts or primitive mesenchymal cells are not observed while hibernomas consists of brown fat cells which have a central nucleus and abundant finely granular cytoplasm. Pediatric myxoid liposarcoma shows pool of stromal mucin with hypercellular areas, nuclear atypia and absence of lobulation is seen. Well differentiated liposarcoma show atypical stromal cells & lipoblasts.

Radiologic evaluation is done to determine the extent of the tumor, exertion of mass effect in symptomatic patients and evaluation of the fat component compared to the myxoid (19).

The definitive diagnosis is through histologic examination.

Treatment of choice is complete surgical resection. Prognosis is outstanding after complete excision even in cases of large tumors. Recurrence rates differ from 13 to 46% depending on extent of resection. Completeness of resection determines the clinical outcome with a high recurrence rate in incompletely resected tumors. Long-term follow-up upto 5 years is essential.

CONCLUSION

Lipoblastoma rare benign adipose tissue neoplasm which arises from immature embryonal adipocytes seen in infants & young children. It has good prognosis is after complete excision having high recurrence rate in incompletely resected tumors hence, long term follow up is required.

REFERENCES

1. Abdul-Ghafar J, Ahmad Z, Tariq MU, Kayani N, Uddin N. Lipoblastoma: A clinicopathologic review of 23 cases from a major tertiary care center plus detailed review of literature. BMC Res Notes. 2018;11(42) doi: 10.1186/s13104-018-3153-8.
2. McVay MR, Keller JE, Wagner CW, Jackson RJ, Smith SD. Surgical management of lipoblastoma. J Pediatr Surg. 2006;41:1067–1071. doi: 10.1016/j.jpedsurg.2006.02.025.
3. Shen LY, Amin SM, Chamlin SL, Mancini AJ. Varied presentations of pediatric lipoblastoma: Case series and review of the literature. Pediatr Dermatol. 2017;34:180–186.
4. Arnenise T, Gentile O, Orofino A, Leggio S, Lanzillo MP, Zullino F, Paradies G. Lipoblastoma in infant: Our experience. J Pediatr Surg Case Rep. 2015;3:63–64.
5. Mollaiyan M, Shahgholi E, Ghods M, Oskouei AK. Intrathoracic lipoblastoma in a 8 month old infant. J Pediatr Surg Case Rep. 2020;56

6. Mahmoud ME, Al-Onazi M, Al-Otaibi A, Asiri S. Huge retro-peritoneal lipoblastoma in 3 year old child. *J Pediatr Surg Case Rep.* 2019;40:50–52.
7. Y. Kerkeni, S. Hidouri, J. Chahed, M. Belghith, L. Sahnoun, A. Ksia, et al. Lipoblastoma in childhood: about 10 cases *Afr J Paediatr Surg*, 11 (1) (2014), p. 32.
8. E.B. Chung, F.M. Enzinger. Benign lipoblastomatosis. An analysis of 35 cases *Cancer*, 32(2) (1973 Aug), p. 482-492.
9. F. Vellios, J. Baez, H.B. Shumacker. Lipoblastomatosis: a tumor of fetal fat different from hibernoma; report of a case, with observations on the embryogenesis of human adipose tissue
10. A. Chalageri, A. Gupta, M. Vijayanand, G. Srinivas. Lipoblastoma: a rare benign, pediatric soft tissue tumor. *Med J Dr Patil Univ*, 6(3) (2013), p. 305
11. G. Papaioannou. Imaging of the unusual pediatric "blastomas." *Cancer Imag*, 9 (1) (2009), pp. 1-11
12. A.F. Kamal, I.G.E. Wiratnaya, E.U. Hutagalung, M. Prasetyo, E. Kodrat, W. Widodo, et al. Lipoblastoma and lipoblastomatosis of the lower leg. *Case Rep Orthop*, 2014 (2014), pp. 1-6
13. C.M. Coffin, R. Alaggio. Adipose and myxoid tumors of childhood and adolescence. *Pediatr Dev Pathol*, 15(1 suppl) (2012 Jan), pp. 239-254.
14. M. Safavi, N. Akhlaghi, B. Ashjaei. Large intrathoracic lipoblastoma. *Asian Cardiovasc Thorac Ann*, 29(8) (2021), pp. 858-861
15. S. Sakamoto, N. Hashizume, S. Fukahori, et al. A large retroperitoneal lipoblastoma: a case report and literature review. *Medicine (Baltim)*, 97(40) (2018), Article e12711,
16. Coffin CM, Mandahl N. Lipoblastoma. In: Fletcher CD, Bridge JA, Hogendorn PC, Mertens F, editors. *World Health Organization classification of tumours of soft tissue and bone*. Lyon: IARC Press; 2013. p. 24–5.
17. Collins MH, Chatten J. Lipoblastoma/lipoblastomatosis: a clinicopathologic study of 25 tumors. *Am J Surg Pathol.* 1997;21(10):1131–7.
18. Coffin CM, Lowichik A, Putnam A. Lipoblastoma (LPB): a clinicopathologic and immunohistochemical analysis of 59 cases. *Am J Surg Pathol.* 2009;33(11):1705–12.
19. R.I. Spătaru, C. Cîrstoveanu, D.A. Iozsa, A. Enculescu, L.F. Tomescu, Șerban D. Lipoblastoma, Diagnosis and surgical considerations. *Exp Ther Med*, 22(2) (2021), p. 903