Benign fibrous histiocytoma of the brachium in a 14-year-old boy

Luben Stokov [1], Spas Krastev[2], Albert Chifligarov [2], Boycho Landzhov[3], Georgi P. Georgiev[4](✉), Luben L. Stokov[5]
[1]Clinic of Orthopedics and Traumatology, UMHAT "St. Anna", Sofia, Bulgaria
[2]Clinic of Orthopedics and Traumatology, UMHAT "St. Georgi", Medical University of Plovdiv, Plovdiv, Bulgaria
[3]Department of Anatomy, Histology and Embryology, Medical University of Sofia, Sofia, Bulgaria
[4]Department of Orthopedics and Traumatology, University Hospital "Queen Giovanna - ISUL", Medical University of Sofia, Sofa, Bulgaria
[5]Clinic of Orthopedics and Traumatology, MHAT "St. Sofia", Sofia, Bulgaria
georgievgp@yahoo.com

Abstract—Fibrous histiocytoma is a benign tumor involving soft tissues that can present as a fibrous mass involving various areas of the human body. Herein, we present a case of benign fibrous histiocytoma in the left brachium in a 14-year-old boy treated with surgical excision.

Keywords— benign fibrous histiocytoma, child, operative treatment.

1 Introduction

Histiocytoma is a tumor consisting of histiocytes. Histiocytes are cells that are part of the mononuclear phagocytic system. There are two main types of histiocytoma: benign fibrous histiocytoma (BFH) and malignant fibrous histiocytoma. BFH is terminologically described as BFH of the skin (superficial or deep), the usual type, and currently also as a dermatofibroma. BFH can be observed in different parts of the body. According to Fletcher et al.[1], BFH affects more commonly males and mainly those at a young age (between 2 and 3 decades), and in 58% of cases, the limbs are involved; localization in the area of the head and neck is reported in 22% of cases, and in the torso and pelvis, 11% and 9%, respectively[2].

BFH was first described by the American pathologists Kauffman and Stout[3] in 1961, and in 1990, the British pathologist Fletcher[2] published a series of 21 cases of BFH. The etiology of BFH remains unclear[1].

The diagnosis is mainly based on the location of the tumor, the clinical presentation, the imaging studies and the histological findings[1].

Clinically, BFH usually presents as a painless and slowly growing tumor[1]. In imaging studies (X-ray, ultrasound, CT, MRI), BFH presents as a hypoechoic, homogeneous and well-demarcated tumor mass with a size of 0.5 to 4 cm. In differential diagnosis,

the following are taken into consideration: undifferentiated pleomorphic sarcoma, cutaneous leiomyosarcoma, dermatofibrosarcoma, tenosynovial giant cell tumor, solitary fibrous tumor, nodular fasciitis[4,5].

The method of choice in the treatment is the wide local excision of the tumor. If excision is performed incompletely and within marginal limits, BFH recurs. According to Gleason and Fletcher[6], local recurrences were reported in 22% of patients.

2. Case report.

A 14-year-old boy was brought to our department with complaints of a painless tumor mass with a dense consistency, approximately 1.4/4 cm in size, located deeply on the medial surface of the left brachium. From anamnestic data, there was no trauma in the region, and the tumor enlarged gradually in size. During flexion of the elbow, pain was detected in the corresponding area. MRI revealed a tumor mass located in close relation to the neurovascular bundle (Figure 1). A wide excision was performed with preservation of the aforementioned bundle. The pathological finding of BFH (Figure 2 and 3) was confirmed by two independent pathologists. Eight months postoperatively (Figure 4 and 5), no local recurrence was reported.

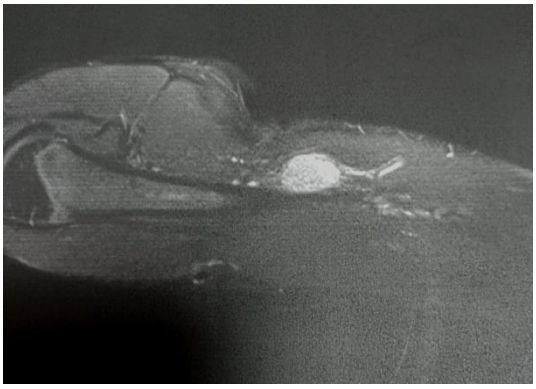

Figure 1. Preoperative MRI

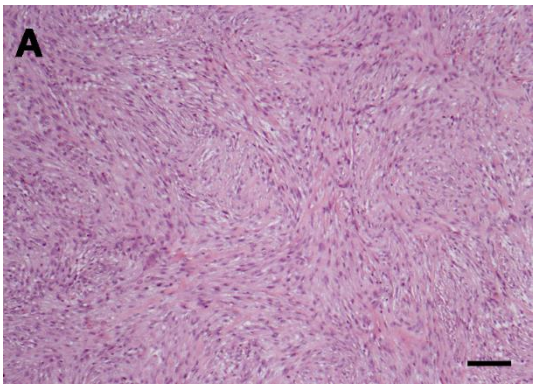

Figure 2. Microscopic view of the tumour. Scale bar 100 µm

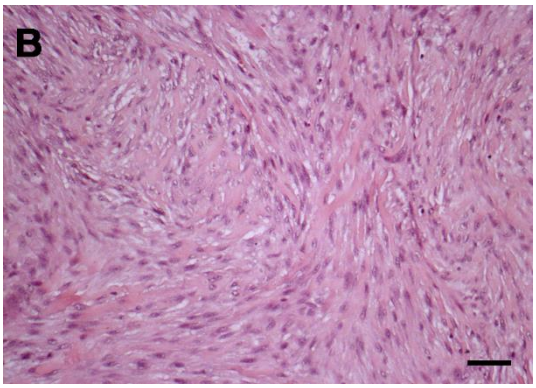

Figure 3. Microscopic view of the tumour. Scale bar 50 µm

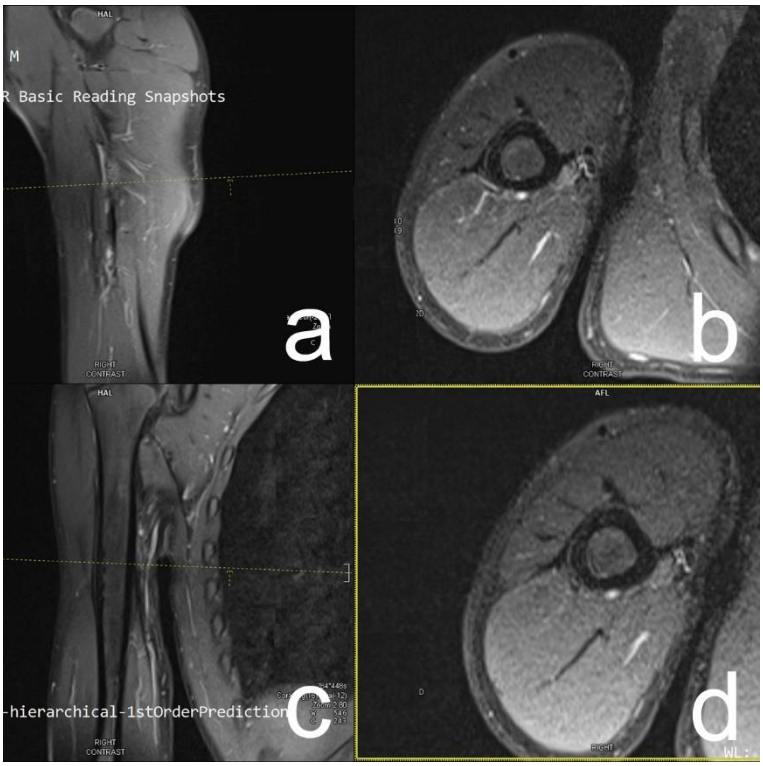

Figure 4. Postoperative MRI on the eight month after operation

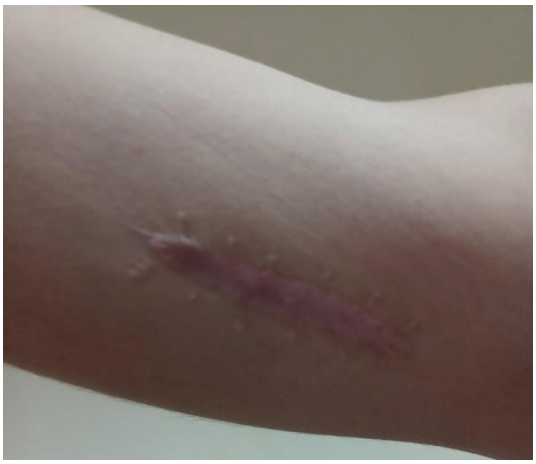

Figure 5. Postoperative photography on the eight month after operation

3. Discussion and Conclusion

In the current literature, BFH in children is extremely rarely reported[1]. Described for the first time in our country, a case of BFH in the brachium aims to expand the knowledge of this benign tumor of different specialties.

Despite its benign nature, BFH can metastasize. Gleason and Fletcher[6] observed two cases of metastasized BFH with dimensions of 6 and 9 cm, respectively. At the same time, an identical histological appearance with nonmetastatic BFH was established. Tumor necrosis was proven in one of the reported cases. The authors consider that 20% of deeply located BFHs recur and rarely metastasize.

The extreme rarity of BFH does not allow for a more in-depth discussion.

4. References

1. Fletcher CDM, Unni KK, Mertens F. WHO pathology and genetics of tumours of soft tissue and bone, chap 13. IARC Press, Lyon, 2002: 291–296.
2. Fletcher CD. Benign fibrous histiocytoma of subcutaneous and deep soft tissue: a clinicopathologic analysis of 21 cases. Am J Surg Pathol. 1990;14(9):801-9.
3. Kauffman SL, Stout AP. Histiocytic tumors (fibrous xanthoma and histiocytoma) in children. Cancer. 1961;14:469-82. doi: 10.1002/1097-0142(199005/06)14:3<469::aid-cncr2820140304>3.0.co;2-q.
4. Shrier DA, Wang AR, Patel U, Monajati A, Chess P, Numaguchi Y. Benign fibrous histiocytoma of the nasal cavity in a newborn: MR and CT findings. AJNR Am J Neuroradiol. 1998;19(6):1166-8.
5. Skoulakis CE, Papadakis CE, Datseris GE, Drivas EI, Kyrmizakis DE, Bizakis JG. Subcutaneous benign fibrous histiocytoma of the cheek. Case report and review of the literature. Acta Otorhinolaryngol Ital. 2007;27(2):90-3.
6. Gleason BC, Fletcher CD. Deep "benign" fibrous histiocytoma: clinicopathologic analysis of 69 cases of a rare tumor indicating occasional metastatic potential. Am J Surg Pathol. 2008;32(3):354-62. doi: 10.1097/PAS.0b013e31813c6b85.

Authors

Luben Stokov, M.D., Ph.D. is a member of the **Bulgarian Orthopedic and Traumatology Association (BOTA).** He works as an ortopaedic surgeon at Clinic of Orthopedics and Traumatology, UMHAT “St. Anna”, Sofia, Bulgaria. He is professor at the Department of Orthopedics and Traumatology, Medical University of Sofia, Sofia, Bulgaria. He is a member of the Editorial Board of the Journal of the Bulgarian Orthopaedics and Trauma Association (JBOTA).

Spas Krastev, M.D. is member of the **Bulgarian Orthopedic and Traumatol-ogy Association (BOTA).** He works as an ortopaedic surgeon at Clinic of Orthopedics and Traumatology, UMHAT “St. Georgi”, Medical University of Plovdiv, Plovdiv, Bulgaria.

Albert Chifligarov, M.D., Ph.D. is member of the **Bulgarian Orthopedic and Traumatology Association (BOTA).** He works as an ortopaedic surgeon at Clinic of Orthopedics and Traumatology, UMHAT “St. Georgi”, Medical University of Plovdiv, Plovdiv, Bulgaria. He is Assistant Professor at the Department of Orthopedics and Traumatology, Medical University of Plovdiv, Bulgaria.

Boycho Landzhov, M.D., Ph.D. is a member of the **Bulgarian Anatomical Society**. He is professor at the Department of Anatomy, Histology and Embryology, Medical University of Sofia, Sofia, Bulgaria. His PhD thesis is at the Department of Orthopedics and Traumatology, Medical University of Sofia, Bulgaria, on the theme “Age-related changes in human intervertebral discs and their relation with degenerative diseases”.

Georgi P. Georgiev, M.D., Ph.D., D.Sc. is member of the **Bulgarian Orthopedic and Traumatology Association (BOTA)**. He works as an orthopaedic surgeon at the Department of Orthopedics and Traumatology, University Hospital "Queen Giovanna - ISUL", Medical University of Sofia, Bulgaria. He is Assistant Professor at the Department of Orthopedics and Traumatology, Medical University of Sofia, Bulgaria. He is a member of the Editorial board of BMC Musculoskeletal Disorders and Clinical Anatomy.

Luben Lubenov Stokov, is a member of the **Bulgarian Orthopedic and Traumatology Association (BOTA)**. He works as volunteer at Clinic of Orthopedics and Traumatology, MHAT "St. Sofia", Sofia, Bulgaria. He is medical student, Medical University of Sofia, Sofia, Bulgaria.