**Name of Journal:** *World Journal of Clinical Cases*

**Manuscript NO:** 76356

**Manuscript Type:** LETTER TO THE EDITOR

**Commentary on "Primary orbital monophasic synovial sarcoma with calcification: A case report"**

Tokur O *et al*. To the editor

Oguzhan Tokur, Sonay Aydın, Erdal Karavas

**Oguzhan Tokur,** Department of Radiology, Ankara Training and Research Hospital, Ankara 06230, Turkey

**Sonay Aydın, Erdal Karavas,** Department of Radiology, Erzincan University, Erzincan 24100, Turkey

**Author contributions:** Tokur O and Aydin S contributed equally to this work; Tokur O, Aydin S, and Karavas E designed the letter; Tokur O and Aydin S performed the research; Tokur O wrote the manuscript; all authors have read and approved the final manuscript.

**Corresponding author: Oguzhan Tokur, MD, Attending Doctor,** Department of Radiology, Ankara Training and Research Hospital, SBÜ Ankara Eğitim ve Araştırma Hastanesi Hacettepe Mh. Ulucanlar Cd. No. 89 Altındağ/ANKARA, Ankara 06230, Turkey. oguzhantokur@gmail.com

**Received:** March 13, 2022

**Revised:** May 30, 2022

**Accepted:** June 24, 2022

**Published online:** August 6, 2022

**Abstract**

The present letter to the editor is related to the study titled “Primary orbital monophasic synovial sarcoma with calcification: A case report’’. Orbital synovial sarcoma is one of the rare intraorbital masses seen in adult and pediatric populations. Some case reports in the literature revealed that synovial sarcoma may contain calcifications. Therefore, it is important to make differential diagnosis among calcified orbital masses in childhood.

**Key Words:** Orbital tumor; Synovial sarcoma; Calcification; Children; Histopathology; Radiology

**©The** **Author(s) 2022.** Published by Baishideng Publishing Group Inc. All rights reserved.

**Citation**: Tokur O, Aydın S, Karavas E. Commentary on "Primary orbital monophasic synovial sarcoma with calcification:A case report". *World J Clin Cases* 2022; 10(22): 8054-8056

**URL:** https://www.wjgnet.com/2307-8960/full/v10/i22/8054.htm

**DOI:** https://dx.doi.org/10.12998/wjcc.v10.i22.8054

**Core Tip:** This letter to editor serves to contribute additional information regarding differential diagnosis and immunohistochemical features to the article. We hope that by using radiographic and immunohistochemical features, we can assist in differentiating calcified orbital masses in the pediatric population.

**TO THE EDITOR**

We read the article ‘’ Primary orbital monophasic synovial sarcoma with calcification: A case report’’[1] with great interest and appreciated the authors for this comprehensive case report. We also thought that it might be favorable to contribute additional information about differential diagnosis and shortly immunohistochemical features to the discussion. For this purpose, we focused on the differentiation among the pediatric intraorbital calcific masses.

In the literature, intraocular[2] and extraocular[3-5] synovial sarcoma cases have been reported. Retinoblastoma is one of the most common intraocular tumors with calcification in children under 5 year old. The presence of calcification is an essential feature[6]. It is hypointense on T2 gravimetric imaging (WI), and slightly hyperintense on T1WI on magnetic resonance imaging (MRI) compared with the vitreous humor. Besides, heterogeneous enhancement can be seen on post-enhanced imaging. This case report reported introocular synovial sarcoma in a 48-year-old female patient[2] and retinoblastoma was not included in the differential diagnosis due to the possible age factor.

Rhabdomyosarcoma is one of the relatively more common masses in children. On computed tomography (CT), it is usually seen as an extraconal irregular ovoid, well-circumscribed mass. If there is adjacent bone destruction, concurrent calcification can be seen. As its size increases, it becomes more heterogeneous and its borders are unclear. The eyelid thickening is a typical finding even without an extension. On MRI, it is hypointense on T1WI and hyperintense on T2WI[7].

Synovial sarcomas should also be differentiated from metastases. The most common pediatric orbital metastases are neuroblastoma. The presence of a primary tumor in the retroperitoneum or posterior mediastinum would facilitate the diagnosis[7]. Hyperdense appearance of neuroblastoma metastases on CT series is also helpful in differential diagnosis[7]. Ewing sarcoma metastasis can also be considered in children. Immunohistochemical features are helpful in differentiating Ewing sarcoma from the synovial sarcoma. EMA and CK7 are helpful in diagnosing synovial sarcoma, while CD99/Fli-1 is helpful in Ewing's sarcoma[8]. In addition, calcification can be seen as a result of dystrophic calcification in metastatic tumors, unlike the others[3].

Dermoid cyst is one of the most common orbital masses in children. Since it may contain calcification, it should be included in the differential diagnosis of synovial sarcoma. Bone changes may be the cause. The cystic component, fluid levels, and the presence of fat attenuation (associated with high T1 signal on MRI) are helpful in the differential diagnosis[7]. In addition, diffusion restriction on diffusion weight imaging, non-enhancement in post-contrast images, and smooth contours can aid in differential diagnosis[6].

Infantile hemangioma is the most common tumor in infancy and although calcification is rarely present, it should be considered in the differential diagnosis. It is usually located extraconally and makes some changes to adjacent bone like expanding or scalloping, but invasion occurs extremely rare. It is enhanced homogenously after contrast administration. On T1WI, the well-defined marginated mass is often isointense to hyperintense compared to muscle, and moderately hyperintense on T2WI with flow voids within the tumor. The presence of a flow void is an important feature to differentiate from the other masses[7].

Meningiomas account for 2% of primary orbital tumors and they are caused by the periosteum of the orbital wall. It may show coarse diffuse calcifications and sclerosis in the optic foramen that are helpful in the diagnosis. Although not specific, central radiolucent line may be seen[3,6].

Peripheral nerve sheath tumor (PNST) is one of the calcified intraorbital tumors. Histopathologically, it can express S100, EMA, CK7, CK19, TLE 1, and SOX10 as synovial sarcoma. On the other hand, while PNST expresses CD34, it is rarely seen in synovial sarcoma[3,9].

Finally, we could contribute to the current study about immunohistochemical features of synovial sarcomas. They nearly all express EMA (+) and cytokeratin (especially CK 7) (+), and 30% of them express focal S100 (+). CD99 (+) is also expressed in 60%-70%, and LTE1 (+) occurs in > 90%. In contrast, CD34 is rarely/seldom expressed. The current study presented that EMA, CK 7, and S-100 were negative and CD34 was positive in immunohistochemical study, unlike the previous studies[3,5,9].

**REFERENCES**

1 **Ren MY**, Li J, Li RM, Wu YX, Han RJ, Zhang C. Primary orbital monophasic synovial sarcoma with calcification: A case report. *World J Clin Cases* 2022; **10**: 1623-1629 [PMID: 35211602 DOI: 10.12998/wjcc.v10.i5.1623]

2 **Ito J**, Suzuki S, Yoshida A, Mori T. Primary intraocular synovial sarcoma in the post retinal detachment operative state. *BMJ Case Rep* 2015; **2015** [PMID: 26250366 DOI: 10.1136/bcr-2015-209919]

3 **Stagner AM**, Jakobiec FA, Fay A. Primary orbital synovial sarcoma: A clinicopathologic review with a differential diagnosis and discussion of molecular genetics. *Surv Ophthalmol* 2017; **62**: 227-236 [PMID: 27697479 DOI: 10.1016/j.survophthal.2016.09.001]

4 **Ratnatunga N**, Goodlad JR, Sankarakumaran N, Seimon R, Nagendran S, Fletcher CD. Primary biphasic synovial sarcoma of the orbit. *J Clin Pathol* 1992; **45**: 265-267 [PMID: 1313455 DOI: 10.1136/jcp.45.3.265]

5 **Liu K**, Duan X, Yang L, Yu Y, Liu B. Primary synovial sarcoma in the orbit. *J AAPOS* 2012; **16**: 582-584 [PMID: 23158553 DOI: 10.1016/j.jaapos.2012.09.002]

6 **Gokharman D**, Aydin S. Magnetic Resonance Imaging in Orbital Pathologies: A Pictorial Review. *J Belg Soc Radiol* 2018; **101**: 5 [PMID: 30128415 DOI: 10.5334/jbr-btr.1308]

7 **Chung EM**, Smirniotopoulos JG, Specht CS, Schroeder JW, Cube R. From the archives of the AFIP: Pediatric orbit tumors and tumorlike lesions: nonosseous lesions of the extraocular orbit. *Radiographics* 2007; **27**: 1777-1799 [PMID: 18025517 DOI: 10.1148/rg.276075138]

8 **Olsen SH**, Thomas DG, Lucas DR. Cluster analysis of immunohistochemical profiles in synovial sarcoma, malignant peripheral nerve sheath tumor, and Ewing sarcoma. *Mod Pathol* 2006; **19**: 659-668 [PMID: 16528378 DOI: 10.1038/modpathol.3800569]

9 **Portelli F**, Pieretti G, Santoro N, Gorelli G, De Giorgi V, Massi D, Dei Tos AP, Mazzini C. Primary Orbital Synovial Sarcoma Mimicking a Periocular Cyst. *Am J Dermatopathol* 2019; **41**: 655-660 [PMID: 30624245 DOI: 10.1097/DAD.0000000000001351]

**Footnotes**

**Conflict-of-interest statement:** All the authors declare that they have no competing interests to disclose.

**Open-Access:** This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: https://creativecommons.org/Licenses/by-nc/4.0/

**Provenance and peer review:** Invited article; Externally peer reviewed.

**Peer-review model:** Single blind

**Peer-review started:** March 13, 2022

**First decision:** May 30, 2022

**Article in press:** June 24, 2022

**Specialty type:** Radiology, nuclear medicine and medical imaging

**Country/Territory of origin:** Turkey

**Peer-review report’s scientific quality classification**

Grade A (Excellent): 0

Grade B (Very good): B, B

Grade C (Good): 0

Grade D (Fair): 0

Grade E (Poor): 0

**P-Reviewer:** Du BB, China; Hegazy AA, Egypt **S-Editor:** Liu JH **L-Editor:** Wang TQ **P-Editor:** Liu JH



Published by **Baishideng Publishing Group Inc**

7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

**Telephone:** +1-925-3991568

**E-mail:** bpgoffice@wjgnet.com

**Help Desk:** https://www.f6publishing.com/helpdesk

https://www.wjgnet.com



**© 2022 Baishideng Publishing Group Inc. All rights reserved.**