

Case Report

A chondroid lipoma in the muscle of the trunk back: a rare case report and review of the literature

Tian Yang¹, Xiuying Shi¹, Yang Zhao², Chuifeng Fan¹

¹Department of Pathology, First Affiliated Hospital and College of Basic Medical Sciences, China Medical University, Shenyang 110001, China; ²Department of Hepatobiliary and Spleenary Surgery, The Affiliated Shengjing Hospital, China Medical University, Shenyang 110014, China

Received July 31, 2017; Accepted February 7, 2018; Epub April 15, 2018; Published April 30, 2018

Abstract: Chondroid lipoma, a benign soft tissue tumor and a subtype of the lipoma, is extremely rare and can be easily mistaken as myxoid liposarcoma and myxoid chondrosarcoma. Here we report a chondroid tumor in the muscle of the trunk back in a 50-year-old female. The tumor was noticed by the patient and growing slowly for a year and had a rapid growth for 3 months before she came to the hospital. The tumor was about 4 cm×3 cm and entirely encapsulated. The cutface was fat-like without hemorrhage and necrosis. The tumor cells showed lipoblastic differentiation and were arranged in nests and embedded in a chondroid matrix. Immunostaining shows diffusely positive vimentin expression, weak S-100 expression and very low Ki67-index of less than 1%. According to these findings, it was diagnosed as a chondroid. The patient experienced no relapse at a 3 years follow-up after total resection of the tumor. Chondroid lipoma is an extremely rare benign adipose tumor which should be carefully differentiated with myxoid liposarcoma and myxoid chondrosarcoma to avoid overtreatment.

Keywords: Case report, chondroid lipoma, lipoma, trunk back

Introduction

Chondroid lipoma is a benign soft tissue tumor showing adipose differentiation [1]. This variant of lipoma is extremely rare and mainly found in adult women [1, 2]. Meis reported 20 cases of chondroid lipoma in 1993 and 16 cases were females [2]. The tumors were mainly located in the proximal extremities and limb girdles [1, 2]. In this case, the patient was a 50-year-old female and had a mass in the muscle of her trunk back, which is a relative rare site of chondroid lipomas. Boets also reported a chondroid lipoma of the trunk [3]. The tumors are usually deep-seated, though they can occur superficially or deeply [1, 4]. Intramuscular lesions are quite common [1, 4]. Escobar reported a case of chondroid lipoma in the deltoid muscle of the left shoulder [5]. Yıldız presented a intramuscular chondroid lipoma in the pelvis [6]. Chondroid lipoma has unique morphological features with chondromyxoid or fibrochondroid matrix [1, 7-11]. Nielsen's study examined the ultra-structure of 2 cases of chondroid lipoma and

found that there were abundant intracytoplasmic lipid, glycogen and pinocytotic vesicles in the tumor tissues which indicated that chondroid lipomas are white fat, but not chondrogenic tumors [12]. As there are frequently myxoid or chondroid matrix in chondroid lipomas, they are easily mistaken as myxoid liposarcoma and myxoid chondrosarcoma, which were malignant tumors and commonly need radiotherapy [2, 13]. To avoid overtreatment, careful investigation of the clinical features, growing patterns, histopathological and immunostaining features are strongly suggested.

Case presentation

The patient was a 50-year-old female. She found a mass in her trunk back about a year and 3 months before she came to the hospital. The mass was growing slowly for a year. The mass was found to have a rapid increase in size 3 months before the patient came to the hospital for a check and treatment. She had no pain in her back. She explained no fever, weight loss

A chondroid lipoma in trunk back

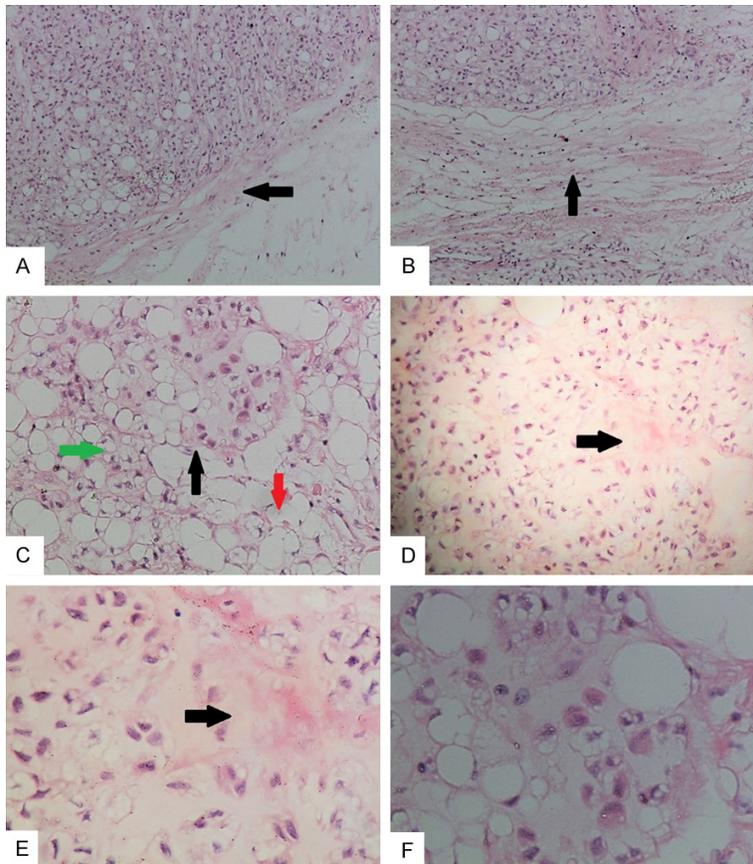


Figure 1. Histological features of the tumor. Encapsulation (A, the arrow) and lobulation (B, the arrow) were seen in the tumor tissues. The tumor cells were arranged in nests (C, the black arrow). There were chondroid matrix in the tumor tissues (D, E, the arrows). Round vacuolated tumor cells (the green arrow) were mingled with mature adipose tissues (the red arrow) (C). There were also tumor cells with eosinophilic cytoplasm (F). (A, B: $\times 100$; C, D: $\times 200$; E, F: $\times 400$).

and other symptoms. She had no other tumor history.

The tumor was totally resected. It was situated in the muscle of the trunk back. It was about 4 cm \times 3 cm. The tumor was entirely encapsulated and well defined. The cutface was yellow, fat-like and relatively firm. There were no hemorrhage and necrosis detected.

Materials and methods

Immunohistochemistry was performed according to the instruction of the producer. This study was approved by the institutional Ethics Committees of China Medical University and conducted in accordance with the ethical guidelines of the Declaration of Helsinki.

Results

There was fibrous capsule around the tumor (**Figure 1A**). Lobulation was also seen inside the tumor tissues (**Figure 1B**). The tumor cells were arranged in nests (**Figure 1C**). There was chondroid matrix in the tumor tissues (**Figure 1D, 1E**). Round vacuolated tumor cells were mingled with mature adipose tissues (**Figure 1C**). There were also tumor cells with eosinophilic cytoplasm (**Figure 1F**). The atypia of the tumor cells was not marked. No nuclear mitosis was found. No hemorrhage and necrosis were found in the tumor tissues.

Immunohistochemical staining shows that the tumor cells were negative for actin(sm) (**Figure 2A**). The tumor cells were diffusely positive for vimentin (**Figure 2B**). S-100 staining were weak (**Figure 2C**). Ki67 index was very low and less than 1% (**Figure 2D**).

The patient received a surgery of the tumor and no other therapy. There was no local recurrence or tumor metastasis at a flow-up of 3 years after the surgery.

Discussion

Chondroid lipoma is an extremely rare benign soft tissue tumor showing adipose differentiation [1]. It commonly affects females [1, 2, 14]. In the 6 cases of chondroid lipomas that Mentzel reported, 4 cases were females and 2 cases were males [14]. While Meis reported 20 cases in which 16 cases were females [2]. Chondroid lipoma commonly involves adults [2, 14]. In Meis's report, the ages of the patients ranged from 14 to 70 years old and the median age were 36 years [2]. The ages of patients in Mentzel's report ranged from 34 to 75 years old [14]. However there was a report of a tumor

A chondroid lipoma in trunk back

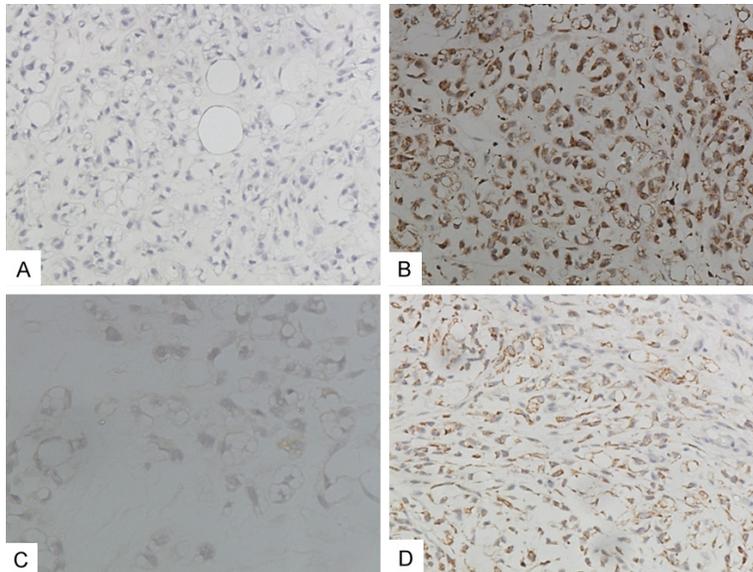


Figure 2. Immunohistochemical staining of the tumor. Actin(sm) was negative in the tumor cells (A). Vimentin was diffusely positive (B). S-100 staining was weak (C). Ki67 index was very low and less than 1% (D).

myxoid-chondroid matrix in both tumors [1]. However, the tumor cells showing lipoblastic differentiation are mainly seen in chondroid lipoma. Chondroid lipoma is a benign tumor which doesn't need radiotherapy which is unlike myxoid liposarcoma. So it is important for an appropriate diagnosis to avoid overtreatment. Metaplastic bone formation can be seen in chondroid lipoma, though very rare [22, 23]. Al yousef reported a case of chondroid lipoma in which osteoclast-like multinucleated giant cells were seen in the tumor tissues [24]. Chondroid lipoma can also mimic pleomorphic adenoma on cytology [25].

in a 7 year-old child in the right thigh [15]. In the current case, the patient was a 50-year-old female.

The most frequent sites that chondroid lipoma localize are proximal extremities and limb girdles [1]. There were some chondroid lipomas in rare sites reported. Park reported an intraneural chondroid lipoma on common peroneal nerve [16]. Darling reported a case of chondroid lipoma in the oral cavity [17]. Villarroel reported 2 cases of chondroid lipomas in the tongue [18]. Choi reported a right supraclavicular chondroid lipoma [19]. Vasili reported an incidental finding of chondroid lipoma at total hip arthroplasty [20]. The tumor of the current case was located in the trunk back which is also a relative rare site.

Histologically, chondroid lipoma has many similarities with myxoid liposarcoma [2, 21]. Thus it is easily be mistaken as myxoid liposarcoma. There are tumor cells with lipoblastic differentiation in both tumors [1]. Myxoid matrix can be also found in both tumors [1]. However, the myxoid stroma with a characteristic branching vascular pattern was mainly seen in myxoid liposarcoma but not chondroid lipoma [1]. As chondroid matrix is usually a characteristic feature of chondroid lipoma, another main differentiation is myxoid chondrosarcoma. There is

Immunohistochemical staining may helpful for diagnosis of chondroid lipomas. The tumor cells of chondroid lipoma commonly show diffuse vimentin expression [1]. However in the 4 cases investigated by de Vreeze, 1 case showed no vimentin expression [26]. In addition the tumor cells of chondroid lipoma can also be focally positive for Cytokeratin (CK) [14]. Kindblom analyzed 13 cases of chondroid lipoma and none showed actin(sm) immunostaining [27]. In the current case, the tumor cells showed diffusely staining for vimentin but negative for actin(sm) which was consistent with these reports. The tumor cells in the current case showed very weak focal staining for S-100. Gomez-Ortega reported a case of chondroid lipoma in the submandibular region in a 21-year-old man which also showed focal weak expression of S-100 [28]. de Vreeze investigated 4 cases of chondroid lipomas using IHC and found that 2 case were S-100 positive, 1 case was focally positive and 1 case was negative [26]. In the 4 cases, actin(sm) was all negative as in the current case [26]. Ki67 index was usually very low [27] as in the current case, which also supports that chondroid lipoma is a benign tumor.

Chondroid lipoma usually presents as a slowly enlarging mass [1]. The sizes of chondroid lipoma range from 2 to 7 cm [1]. Jorwekar reported

A chondroid lipoma in trunk back

a case of giant chondroid lipoma of breast which was about 15×6×4 cm [29]. There were some reports of chondroid lipomas showing recently rapid growth [1, 15]. In Patne's case of a 7 year-old child, the tumor also grew rapidly after a year of slow growth [15]. In the current case, the patient also experienced a rapid growth of the tumor after slowly growing for 1 year. There was no report of malignant transformation of chondroid lipoma to liposarcoma. What does the rapid growth mean remains unknown. Complete surgical excision is commonly curative and local recurrence is rare [1]. The 2 patients that Villarroel reported both received surgery and neither had relapse 2 years after the surgery [18]. Patne's case also showed no local recurrence or metastasis 4 years after the surgery [15]. Capodiferro presented a case of chondroid lipoma of the tongue effectively treated by Diode laser excision [30]. In the current case, the patient did not recur at a follow-up of 3 years after the surgery.

Conclusion

Chondroid lipomas are very rare benign lipomatous tumors which may be easily mistaken as myxoid liposarcoma and myxoid chondrosarcoma. It is important for an appropriate diagnosis to avoid overtreatment. The clinical features of the patient and the growing pattern of the tumors are also very useful for an appropriate diagnosis.

Acknowledgements

This study was supported by grants from the National Natural Science Foundation of China (No.81472599 to Chuifeng Fan).

Disclosure of conflict of interest

None.

Address correspondence to: Chuifeng Fan, Department of Pathology, First Affiliated Hospital and College of Basic Medical Sciences, China Medical University, Number 155, Nanjingbei Street, Heping District, Shenyang 110001, China. Tel: +86 24 23261638; Fax: +86 24 23261638; E-mail: fanchuifeng2013@163.com

References

[1] Fletcher CD, Bridge JA, Hogendoorn PC and Mertens F. WHO classification of tumour of soft tissue and bone. Lyon, IARC Press, 2013; 28-9.

- [2] Meis JM and Enzinger FM. Chondroid lipoma. A unique tumor simulating liposarcoma and myxoid chondrosarcoma. *Am J Surg Pathol* 1993; 17: 1103-12.
- [3] Boets A, Van Mieghem IM, Sciote R and Van Breuseghem I. Chondroid lipoma of the trunk: MRI appearance and pathologic correlation. *Skeletal Radiol* 2004; 33: 666-9.
- [4] Thway K, Flora RS and Fisher C. Chondroid lipoma: an update and review. *Ann Diagn Pathol* 2012; 16: 230-4.
- [5] Escobar E, Nguyen BD and Colvin OC. PET/CT and MRI of chondroid lipoma of the deltoid muscle. *Clin Nucl Med* 2014; 39: 984-7.
- [6] Yıldız AE, Aydıngöz Ü, Sökmensüer C and Karçaaltıncaba M. Intramuscular chondroid lipoma: magnetic resonance imaging diagnosis by 'fat ring sign'. *Balkan Med J* 2015; 32: 107-10.
- [7] Thomson TA, Horsman D and Bainbridge TC. Cytogenetic and cytologic features of chondroid lipoma of soft tissue. *Mod Pathol* 1999; 12: 88-91.
- [8] Gisselsson D, Domanski HA, Höglund M, Carlén B, Mertens F, Willén H and Mandahl N. Unique cytological features and chromosome aberrations in chondroid lipoma: a case report based on fine-needle aspiration cytology, histopathology, electron microscopy, chromosome banding, and molecular cytogenetics. *Am J Surg Pathol* 1999; 23: 1300-4.
- [9] Yang YJ, Damron TA and Ambrose JL. Diagnosis of chondroid lipoma by fine-needle aspiration biopsy. *Arch Pathol Lab Med* 2001; 125: 1224-6.
- [10] Gokhale U, Pillai GR, Varghese PV and Samarsinghe D. Chondroid lipoma: a case report. *Oman Med J* 2008; 23: 116-7.
- [11] Yaranal PJ and Hegde V. Chondroid lipoma of the thigh: a case report. *Indian J Pathol Microbiol* 2013; 56: 464-5.
- [12] Nielsen GP, O'Connell JX, Dickersin GR and Rosenberg AE. Chondroid lipoma, a tumor of white fat cells. A brief report of two cases with ultrastructural analysis. *Am J Surg Pathol* 1995; 19: 1272-6.
- [13] Lakshmiah SR, Scott KW, Whear NM and Monaghan A. Chondroid lipoma: a rare but diagnostically important lesion. *Int J Oral Maxillofac Surg* 2000; 29: 445-6.
- [14] Mentzel T, Remmler K and Katenkamp D. Chondroid lipoma. Clinicopathological, immunohistochemical, and ultrastructural analysis of six cases of a distinct entity in the spectrum of lipomas. *Pathologe* 1999; 20: 330-4.
- [15] Patne SC, Aryya NC and Gangopadhyay AN. Chondroid lipoma in a child. *Indian J Pathol Microbiol* 2008; 51: 541-2.
- [16] Park SE, Lee JU and Ji JH. Intraneural chondroid lipoma on the common peroneal nerve.

A chondroid lipoma in trunk back

- Knee Surg Sports Traumatol Arthrosc 2011; 19: 832-4.
- [17] Darling MR and Daley TD. Intraoral chondroid lipoma: a case report and immunohistochemical investigation. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2005; 99: 331-3.
- [18] Villarroel Dorrego M, Papp Y, Shelley MJ and Barrett AW. Chondroid lipoma of the tongue: a report of two cases. *Oral Maxillofac Surg* 2014; 18: 219-22.
- [19] Choi DL, Strychowsky JE, Chen V and Gupta MK. A painless right supraclavicular mass. Chondroid lipoma (CL). *JAMA Otolaryngol Head Neck Surg* 2013; 139: 1069-70.
- [20] Vasili C, Kligman M and Kirsh G. An incidental finding of chondroid lipoma at total hip arthroplasty. *J Surg Orthop Adv* 2004; 13: 42-3.
- [21] Manna AK, Chattopadhyay A, Chowdhury K and Chowdhury MK, Dutta SK. Chondroid lipoma—a case report. *Indian J Pathol Microbiol* 2006; 49: 422-4.
- [22] Hoch B, Hermann G, Klein MJ and Abdelwahab IF. Ossifying chondroid lipoma. *Skeletal Radiol* 2008; 37: 475-80.
- [23] Setiawati R, Dimpudus FJ and Sun Z. Chondroid lipoma of the right thigh: correlation of imaging findings and histopathology of an unusual benign lesion. *Australas Med J* 2012; 5: 355-8.
- [24] Alyousef M and Al Nemer A. Chondroid lipoma associated with osteoclast-like multinucleated giant cells—a case report. *APMIS* 2017; 125: 506-8.
- [25] Gandhi A, Mahajan G and Sharma S. Chondroid lipoma mimicking pleomorphic adenoma on cytology. *Diagn Cytopathol* 2013; 41: 1012-3.
- [26] de Vreeze RS, van Coevorden F, Boerrigter L, Nederlof PM, Haas RL, Bras J, Rosenwald A, Mentzel T and de Jong D. Delineation of chondroid lipoma: an immunohistochemical and molecular biological analysis. *Sarcoma* 2011; 2011: 638403.
- [27] Kindblom LG and Meis-Kindblom JM. Chondroid lipoma: an ultrastructural and immunohistochemical analysis with further observations regarding its differentiation. *Hum Pathol* 1995; 26: 706-15.
- [28] Gomez-Ortega JM, Rodilla IG and Basco López de Lerma JM. Chondroid lipoma. A newly described lesion that may be mistaken for malignancy. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1996; 81: 586-9.
- [29] Jorwekar GJ, Baviskar PK, Sathe PM and Dandekar KN. Giant chondroid lipoma of breast. *Indian J Surg* 2012; 74: 342-3.
- [30] Capodiferro S, Loiudice AM, Pilolli G, Lajolo C, Giuliani M, Maiorano E and Favia G. Diode laser excision of chondroid lipoma of the tongue with microscopic (conventional and confocal laser scanning) analysis. *Photomed Laser Surg* 2009; 27: 683-7.