

# Clear cell sarcoma of the nuchal region with metastasis in stomach

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## SUMMARY

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*Clear cell sarcoma/malignant melanoma of soft parts is a rare malignant tumor that originates from the neural crest. It is most common in young men in the lower limbs, grows slowly in the form of deep localized nodes around the tendons, fascia, and aponeurosis. Prognosis is poor, local recurrences and metastases are common. We present a case of a 53-year-old patient who sought medical attention due to the presence of a tumefaction in the nuchal neck region, followed by pain, heightened sensitivity, and numbness in his right hand. After excision, histological examination, and application of immunohistochemical and histochemical methods, malignant melanoma of soft tissues was diagnosed. Fourteen months after the excision of the neck tumor, a metastatic stomach disease was diagnosed. Larger tumors with necrosis, expressed pleomorphism, and increased mitotic activity give metastases before local recurrence. Diagnosis is set using immunohistochemical methods after surgical excision of the tumor and the prognosis of the disease depends on the size of tumor and complete surgical excision.*

**Key words:** Sarcoma, Clear Cell; Neoplasm Metastasis; Stomach Neoplasms; Head and Neck Neoplasms; Case Reports

## INTRODUCTION

Clear cell sarcoma (SSC) is a rare soft tissue tumor that constitutes 1% of all soft tissue sarcomas (1, 2). As a separate clinicopathological entity, it was first described by Enzinger in 1965 (3). In 1983 Enzinger and Churg suggested that a tumor requires a title malignant melanoma of soft parts (MMSP) since the tumor cells demonstrated the presence of melanin and ultrastructural evidence of melanosomes, which were immunohistochemically positive for S-100 protein, HMB-45 and melanin (indicating the origin from the neural crest) (4). This tumor is characterized by the presence of a chromosome translocation t(12;22)(q13;q12), which involves genes ATF-1, on chromosome 12, and EWS, on chromosome 22 (5-7). Tumor occurs predominantly in young patients between 15 and 35 years of age and it originates chiefly from tendons, aponeuroses, and fascial structures of the extremities with a predilection for the feet, ankles, and knees (1). The tumor grows slowly, it can spread into the subcutaneous fat and lower dermis while the epidermis remains intact. In 50% of cases, it is followed by pain and increased sensitivity (2).

Prognosis is poor, local recurrences and metastases are common. Therapy of MMSP requires a multidisciplinary approach: surgical resection of primary tumor with negative margins, sentinel biopsy, or elective prophylactic dissection of regional lymph nodes, and after that adjuvant chemotherapy and radiotherapy (8).

We present a case of patient diagnosed with MMSP based on of histological and immunohistochemical characteristics of changes in the soft tissues of the neck.

## CASE REPORT

A male patient, aged 53, was admitted to the regional health department due to the appearance of a mass in the neck area. As he stated, the mass had been increasing over the previous six months, it was followed by pain, heightened sensitivity, and numbness in his right hand. Physical examination revealed the presence of deep localized, fixed node in the nuchal region, which was removed by excision under local anesthesia. Macroscopically, the knot was lobular, soft, having a diameter of 75 mm, grey-whitish at the cross-section, with focuses of pigmentation and

necrosis. Pathological examination of the slices, which were processed with standard and special staining methods (HE, Mallory and PAS/Alcian blue), revealed necrotic tumor with infiltrative borders towards the surrounding fatty tissue. The tumor parenchyma was built of polygonal and spindle cells arranged in fascicles and nests separated by thin fibrous septa. The cytoplasm of the tumor cells was abundant, eosinophilic, light, the nuclei were vesicular and the nucleolus prominent with numerous mitosis (Figure 1).

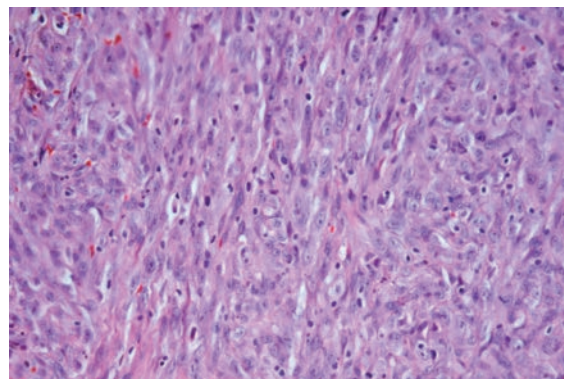


Figure 1. Polygonal and spindle cells with abundant, eosinophilic cytoplasm and vesicular nuclei with prominent nucleoli, arranged in fascicles and nests separated by thin fibrous septa (H&E x20).

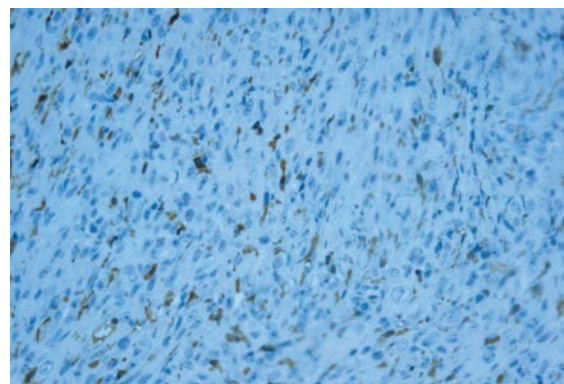


Figure 2. Positivity of the tumor cells for S 100 protein (x10)

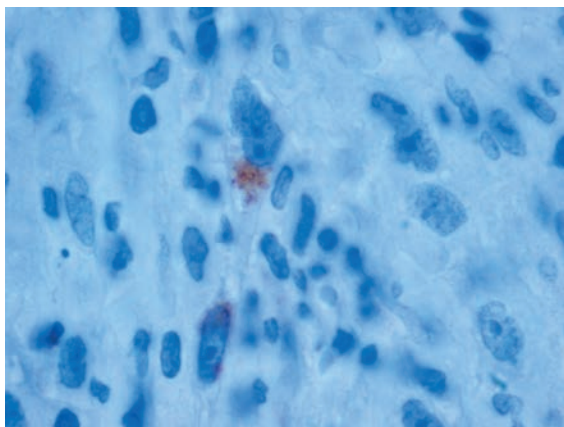


Figure 3. Positivity of the tumor cells for Melan A (x100)

Immunohistochemical analysis was performed (vimentin, HMB45, S-100 protein, Melan A, SMA, and desmin) and then, based on the histological images and the positivity of the tumor cells to vimentin, S-100 protein and Melan A, a diagnosis of melanoma of the soft tissues was set (Figures 2 and 3). In determining the proliferative index Ki67, a distinct nuclear positivity in 50% of the cells was found. On the MR of the right posterior nuchal region of the neck, massive lobular tumor change in dimension 24 x 45 x 68mm was observed, with infiltration of the deep muscle fascia along with the presence of enlarged lymph nodes of all neck groups, of up to 12 mm in diameter. The patient was referred to the Clinic for Maxillofacial Surgery, where he underwent bilateral lymphadenectomy and excision of residual tumor. Of the 26 lymph nodes examined, all were reactively modified without the presence of tumor tissue. Post surgery, radiation therapy was initiated at the Institute of Oncology. Fourteen months after the surgery, the patient was again hospitalized in a regional health facility because of abdominal pain and vomiting of fresh blood. The endoscopic examination led to a diagnosis of bleeding duodenal ulcer, and in the small curve in the antrum, there were signs of stomach wall penetration. The patient underwent upper medial laparotomy, duodenectomy, and a resection of the stomach Billroth II; the macroscopic edge penetrations were homogeneous and whitish, histologically corresponding to secondary tumor deposits. Immunohistochemical analysis (vimentin, S-100, SMA, HMB45, Melan A, CD117, CD34, CD99, Dog 1, PanCK, and MUM1) showed tumor cells as vimentin and S-100 diffusely positive and Melan A and MUM1 positive in rare tumor cells thus confirming the diagnosis of the soft tissue metastatic melanoma.

## DISCUSSION

Malignant melanoma of the soft parts (clear cell sarcoma) is an uncommon soft tissue sarcoma that occurs in tendons and aponeuroses, usually of the lower extremity and it is believed to be of neural crest origin. Although the exact histogenesis of this tumor is unknown and some controversy still exists, the generally accepted view is that it arises from neural crest cells that have the capability to produce melanin. Because melanin or melanosomes can be demonstrated in a majority of these cases, the term malignant melanoma of the soft parts (MMSP) has been advanced (1-4).

Over 95% of MMSPs are present in the extremities, with the head and neck region (1.9%) being an unusual site. Hicks et al. presented an additional case of MMSP of the head and neck region involving the posterior cervical region in a 15-year-old Hispanic male (9). Other sites of primary tumor are very rare. First visceral case was described in 1993 in the duodenum (10) and in 1998 a first case of multiorgan localization in a 64-years old man with malignant melanoma of soft parts in the stomach, in the pancreas, in the mesocolon, in the left thigh and in the left axilla (11). Bury et al. reported a case of a 36-year-old woman with pleural tumor in which histological examination revealed clear cell sarcoma of the soft tissue (12). Bones and skeletal muscles also are very rare sites of primary clear cell sarcoma of soft tissue (13-15).

MMSP usually grows slowly. However, Kawai et al. and Montgomery et al. in a series of 75 and 58 cases showed that cases with rapid growth and size over 50 mm indicate a more aggressive tumor behavior and a greater probability of metastases (16, 17).

Grossly, the tumor is usually circumscribed with a histologic pattern of uniform polygonal to fusiform cells with clear to pale eosinophilic cytoplasm divided into variably sized clusters by fibrous septa. Immunohistochemical studies in most cases show that the neoplastic cells are positive with HMB-45 and react with antibody against S100 protein. According to Churg and Enzinger, melanin was demonstrated in 72% and S-100 protein was positive in 13 of 19 cases (4). In our case, to set a definite diagnosis, we used immunostaining for vimentin, HMB45, S-100 protein, melan A, SMA and desmin. Vimentin, S-100 protein and melan A were positive, indicating the origin of tumor cells from the neural crest. Differential diagnosis of CCS includes: melanoma, cellular blue nevus, malignant blue nevus, PEComa, paraganglioma-like dermal melanocytic tumor, epithelioid leiomyosarcoma, malignant peripheral nerve sheath tumor, synovial sarcoma and paraganglioma (18).

The prognosis is poor, local recurrence and regional metastases are common and are usually followed by distant metastases and death. In the series of Churg and Enzinger, the average time between diagnosis and recurrence was 2.6 years and between diagnosis and metastasis 3.5 years. Of 115 patients, 46% had died and 21 of the 62 living patients experienced one or more recurrences, and 7 had a metastatic disease (4). Poor prognostic indicators include a tumor size equal to or more than 5 cm, necrosis, local recurrence and presence of metastasis. Larger tumors with necrosis, expressed pleomorphism and increased mitotic activity give metastases before than local recurrence (16). According to the literature, MMSP often metastasizes to regional lymph nodes and less to the lungs, brain, bones and other organs (1, 2, 4). Di Seri et al. described the case of a 34-year-old man in who MMST metastasized in septum and in the inferior portion of left ventricular myocardium (19).

The mainstay of treatment is wide excision of the tumor with clear margins, which offers the best chance of cure. The use of sentinel lymph node biopsy may become an important procedure in detecting occult regional metastasis and guiding the extent of surgery. The beneficial effects of adjuvant chemotherapy and radiotherapy have not been fully evaluated although in some studies adjuvant radiotherapy to the primary tumor site also seemed to have a beneficial effect on survival (8, 20, 21).

## CONCLUSION

Melanoma of soft tissue of the neck is a rare soft tissue tumor. The biological behavior of this tumor is unpredictable and metastatic tumors of the stomach are rare. Diagnosis is set using immunohistochemical methods after surgical excision of the tumor and the prognosis of the disease depends on the size of a tumor and complete surgical excision.

## Conflict of interest

We declare no conflicts of interest.

## REFERENCES

- Dim DC, Cooley LD, Miranda RN. Clear cell sarcoma of tendons and aponeuroses: a review. *Arch Pathol Lab Med.* 2007;131(1):152-6.
- Deenik W, Mooi WJ, Rutgers EJ, Peterse JL, Hart AA, Kroon BB. Clear cell sarcoma (malignant melanoma) of soft parts: A clinicopathologic study of 30 cases. *Cancer.* 1999;86(6):969-75.
- Enzinger FM. Clear cell sarcoma of tendons and aponeurosis: an analysis of 21 cases. *Cancer.* 1965;18:1163-74.
- Churg EB, Enzinger FM. Malignant melanoma of soft parts. A reassessment of clear cell sarcoma. *Am J Surg Pathol.* 1983;7(5):405-13.
- Neil HS, Pavlidis P, Noble WS, Antonescu CR, Viale A, Wesley UV, et al. Classification of clear-cell sarcoma as a subtype of melanoma by genomic profiling. *J Clin Oncol.* 2001;9:1775-81.
- Antonescu CR, Tschernyavsky SJ, Woodruff JM, Jungbluth AA, Brennan MF, Ladanyi M. Molecular diagnosis of clear cell sarcoma: detection of EWS-ATF1 and MITF-M transcripts and histopathological and ultrastructural analysis of 12 cases. *J Mol Diagn.* 2002;4:44-52.
- Albert MV, Verdeguer A, Fernandez JM, Castel V Hernandez M, Oltra JS. Malignant melanoma of soft parts: a rare entity with a specific genetic marker. *Pediatr Blood Cancer.* 2006;46(5):659.
- Kuiper DR, Hoekstra HJ, Veh RPH, Wobbes T. The management of clear cell sarcoma. *EJSO.* 2003;29(7):568-70.
- Hicks MJ, Saldivar VA, Chintagumpala MM, Horowitz ME, Cooley LD, Barrish JP, et al. Malignant melanoma of soft parts involving the head and neck region: review of literature and case report. *Ultrastruct Pathol.* 1995;19(5):395-400.
- Ekfors TO, Kujari H, Isomäki M. Clear cell sarcoma of tendons and aponeuroses (malignant melanoma of soft parts) in the duodenum: the first visceral case. *Histopathology.* 1993;22(3):255-60.
- Kothaj P, Turcan I, Marko L, Cunderlik P, Fukal J, Okavec S. Malignant melanoma of soft parts (clear cell sarcoma)-a rare case of multiorgan localization. *Rozhl Chir.* 1998;77(7):328-33.
- Bury TH, Hermans G, Alexis-Agnant R, Chevallier Ph, Limet R, Bartsch P. Clear cell sarcoma: an extremely rare cause of pleural disease. *Eur Respir J.* 1997;10:2653-6.
- Gelczer JJ, Kramer DE, Wold LE. Primary clear cell sarcoma of bone: a unique site of origin. *Skeletal Radiol.* 1999;28:240-3.
- Kazakos CJ, Galanis VG, Giatromanolaki A, Verretas DA, Sividis E. Clear cell sarcoma of the scapula. A case report and review of the literature. *World J Surg Oncol.* 2006;4:48.
- Dae-Hyun K, Ki-Hwan C, Young-Dae C. Clear cell sarcoma of the upper thoracic back muscle. *J Korean Neurosurg Soc.* 2009;45(2):112-4.
- Kawai A, Hosono A, Nakayama R, Matsumine A, Matsumoto S, Ueda T, et al. Clear cell sarcoma of tendons and aponeuroses a study of 75 patients. *Cancer.* 2007;109:109-16.
- Montgomery E, Meis J, Ramos A. Clear cell sarcoma of tendons and aponeuroses. A clinicopathologic study of 58 cases with analysis of prognostic factors. *Int J Surg Pathol.* 1993;1:89-100.
- Hantschke, Markus MD, Mentzel, Thomas MD, Rütten, Arno MD, et al. Cutaneous clear cell sarcoma: A clinicopathologic, immunohistochemical, and molecular analysis of 12 cases emphasizing its distinction from dermal melanoma. *Am J Surg Pathol.* 2010;34(2):216-22.
- Di Seri M, Zullo A, Miele E, Spinelli GP, Tomao F, Cerbone L, et al. Cardiac metastasis from a clear cell sarcoma of tendons and aponeurosis. *Cancer Therapy.* 2007;5:531-6.
- Van Akkooi ACJ, Verhoef C, Van Geel AN, Kliffen M, Eggermont AMM, De Wit JHW. Sentinel node biopsy for clear cell sarcoma. *EJSO.* 2006;32(9):996-9.
- Fujimoto M, Hiraga M, Kiyosawa T, Murakami T, Murata S, Ohtsuki M, et al. Complete remission of metastatic clear cell sarcoma with DAV chemotherapy. *Clin Exp Dermatol.* 2003;28(1):22-4.