Prognostic factors associated with clear cell sarcoma in 14 Chinese patients

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ABSTRACT

Purpose. To identify prognostic factors associated with clear cell sarcomas in 14 Chinese patients.

Methods. Medical records of 7 men and 7 women (mean age, 36 years) with histologically confirmed clear cell sarcoma of tendons and aponeuroses were reviewed. Patient demographics, tumour characteristics, and treatment modalities were retrieved. Prognostic factors associated with favourable 5-year survival were determined.

Results. The most affected sites were the thigh (n=5) and the foot (n=4); the mean time from symptom onset to diagnosis was 9.5 months. The tumour stage at diagnosis was IIA in 8 patients, IIB in 2, and III in 4. The mean tumour size was 4.5 cm in diameter. One patient was lost to follow-up. For the remaining 13 patients, the mean time to disease-related mortality was 2.5 years. Nine patients had distant metastases; the most common sites were lungs and pleura (n=7), followed by distant lymph nodes (n=4), bone (n=2), pericardium (n=2), and brain (n=1). All patients underwent surgical excision. Three women and one man (mean age, 27 years) attained 5-year disease-free survival. All had stage IIA tumours at diagnosis. Their mean tumour size was 1.75 cm in diameter, which was significantly smaller than that of all patients (4.5 cm). Tumour size of ≤2.5 cm in diameter (p=0.004) and stage IIA tumour at diagnosis (p=0.04) were significant prognostic factors for 5-year survival.

Conclusion. Tumour size of ≤2.5 cm and early stage tumour are associated with 5-year disease-free survival. Early detection is crucial for the prognosis of clear cell sarcomas.

Key words: sarcoma, clear cell; tendons

INTRODUCTION

Clear cell sarcomas of tendons and aponeuroses are soft-tissue sarcomas of neural crest origin with melanocytic differentiation1-3 and account for only 1% of all soft-tissue sarcomas.4 The 5-year survival rates have been reported to be 47 to 75%.5-10 This study aimed to identify prognostic factors associated
with clear cell sarcomas in 14 Chinese patients.

MATERIALS AND METHODS

Medical records of 7 men and 7 women (mean age, 36 years) with histologically confirmed clear cell sarcoma of tendons and aponeuroses who underwent treatment in 2 hospitals in Hong Kong from 1994 to 2011 were reviewed. Patient demographics, tumour characteristics, and treatment modalities were retrieved.

The tumour stages were classified according to the Enneking staging system for malignant musculoskeletal tumours. Stages IA and IB are of low grade without metastasis; stages IIA and IIB are of high grade without metastasis; and stage III indicates regional or distant metastasis.

Prognostic factors associated with favourable 5-year survival were determined using the Pearson’s Chi squared test. Missing data were not counted. A p value of <0.05 was considered statistically significant.

RESULTS

Most patients were aged 30 to 40 years (n=4); the most commonly affected sites were the thigh (n=5) and the foot (n=4); most patients presented with a mass (n=12); and the mean time from symptom onset to diagnosis was 9.5 months (Table). The tumour stage at diagnosis was IIA in 8 patients, IIB in 2, and III in 4. The mean tumour size was 4.5 cm in diameter.

One patient was lost to follow-up. For the remaining 13 patients, the mean follow-up time was 6.4 years, and the mean time to disease-related mortality was 2.5 years. Nine patients had distant metastases; the most common sites were lungs and pleura (n=7), followed by distant lymph nodes (n=4), bone (n=2), pericardium (n=2), and brain (n=1).

All patients underwent surgical excision; 3 underwent additional locoregional lymph node dissection. They did not develop any local recurrence but eventually died within 5 years due to distant metastases. Two patients with stage II tumours underwent sentinel lymph node biopsy; both had negative biopsies but eventually died within 5 years due to distant metastases. Seven patients (5 in stage II and 2 in stage III) received additional adjuvant radiotherapy; the main indications were margin involvement after surgical excision. None of them had local recurrence; 3 (with stage II tumour) survived after 5 years. The other 4 died within 5 years due to distant metastases; four patients received palliative chemotherapy for recurrence and distant metastases.

Three women and one man (mean age, 27 years) attained 5-year disease-free survival. All had stage IIA tumours at diagnosis. Their mean tumour size was 1.75 cm in diameter, which was significantly smaller than that of all patients (4.5 cm). Tumour size of ≤2.5 cm in diameter (p=0.004) and stage IIA tumour at diagnosis (p=0.04) were significant prognostic factors for 5-year survival.

DISCUSSION

Surgical excision is the treatment of choice for clear cell sarcomas. In our study, regional lymph node dissection was usually reserved for patients with clinical or radiological lymph node metastasis. None of these patients had local recurrence, but all of them eventually died from distant metastasis. Thus, regional lymph node dissection may be of no benefit for survival despite local control. Sentinel lymph node biopsy, which has been used successfully for patients with breast cancer and melanoma, enables early detection of lymph node metastasis in patients with clear cell sarcoma. In our study, 2 patients who received sentinel lymph node biopsy had recurrence eventually and died. Therefore, sentinel lymph node biopsy may be of no benefit for survival. In our study, adjuvant radiotherapy did not have any benefit on survival, despite local control of disease. Adjuvant chemotherapy is of no use for treating clear cell sarcoma. Its role is mainly palliative in late stages of the disease.

Smaller tumour size at presentation and detection of the disease in an early stage are the most favourable prognostic factors for survival, and prognosis is dismal once regional lymph node metastases and distant metastases have occurred. Larger tumours may have micrometastases. In our study, 4 out of 5 patients with the tumour size of <2.5 cm in diameter at presentation survived after 5 years.

The main limitations of this study included small sample size and confounding factors such as surgeon factors. Besides, some patient data were inadequate owing to the retrospective nature of the study.

CONCLUSION

Tumour size of <2.5 cm and early stage tumour are
associated with 5-year disease-free survival. Early detection is crucial for the prognosis of clear cell sarcomas.

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**DISCLOSURE**

No conflicts of interest were declared by the authors.
| Follow-up (years) | Recurrence (months) | Distant metastasis                      | Palliative treatment after recurrence                          | Outcome (time since treatment) |
|------------------|---------------------|----------------------------------------|----------------------------------------------------------------|-------------------------------|
| 8                | No                  | No                                     | No                                                             | Alive (8 years)                |
| 0.4              | 8                   | Distant lymph nodes, lung              | Palliative chemotherapy (doxorubicin, ifosfamide x1 cycle)     | Dead (8 months)                |
| 4                | 8                   | Lung                                   | No                                                             | Dead (22 months)               |
| 3.3              | 17                  | Lung                                   | Shoulder disarticulation                                       | Dead (3 years)                 |
| 0.5              | 1                   | Distant lymph nodes, lung, bone        | Palliative chemotherapy (doxorubicin, ifosfamide x2 cycles) + palliative external radiotherapy 40 Gy to pelvis & T8 to T10 | Dead (6 months)                |
| 1.2              | 9                   | Distant lymph nodes, lung, bone        | Palliative chemotherapy (doxorubicin, ifosfamide x1 cycle), palliative external radiotherapy 12 Gy to T9 to L1 | Dead (13 months)               |
| 2.6              | 13                  | Lung                                   | No                                                             | Dead (16 months)               |
| 2.7              | -                   | Brain                                  | No                                                             | Dead                            |
| 16.3             | No                  | No                                     | No                                                             | Alive (15 years)               |
| 9                | 9                   | Distant lymph nodes, pericardium, pleura | No                                                             | Dead (9 years)                |
| 8.4              | No                  | No                                     | No                                                             | Dead unrelated to disease (9 years) |
| 1.3              | -                   | -                                      | -                                                              | -                              |
| 15               | No                  | No                                     | No                                                             | Alive                          |
| 12               | 132                 | Pericardium                            | Palliative chemotherapy (adriamycin, ifosfamide x2 cycles)     | Dead (12 years)                |

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