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Histological Assessment of Pelvic Osteosarcoma after Heavy Ion Radiotherapy – a report of two cases

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Background

Surgical treatment of pelvic osteosarcoma is difficult. We present 2 cases in which time-dependent histological assessment of pelvic osteosarcoma was performed after heavy ion radiotherapy.

Cases

Case 1 was of a 14-year-old girl and Case 2 was of a 30-year-old woman. Both the patients presented with sacral osteosarcoma. They were diagnosed on the basis of the findings of needle biopsy. After chemotherapy, they underwent heavy ion radiotherapy. Thereafter, histological observation was performed using needle biopsy.

Result

Case 1

Four months after heavy ion radiotherapy, extensive necrosis was still observed on histological examination, and the osteosarcoma was classified as Grade III/IV according to Rosen & Huvos classification. The observation further revealed lung metastasis, and thus, chemotherapy and lung tumor excision were enforced. Histological analysis of the lung tumor revealed viable tumor cells, and the tumor was classified as Grade II/IV according to Rosen & Huvos classification. Fifteen months after heavy ion radiotherapy, viable tumor cells were still observed, suggesting a recurrence. Twenty-one months later, the patient died of respiratory failure due to increasing pulmonary metastasis.

Case 2

Three months after heavy ion radiotherapy, fibrosis with scattered atypical cells was observed on histological examination. Even this patient showed lung metastasis, and thus, underwent chemotherapy and lung tumor excision. Viable tumor cells were observed on histological examination of the lung tumor. Twenty months after heavy ion radiotherapy, viable tumor cells persisted. However, imaging studies showed no increase in the volume of the pelvic tumor. The patient progress is being continuously monitored.

Conclusion

We have presented 2 cases in which that heavy ion radiotherapy was believed to have good prognosis for pelvic osteosarcoma. We believe that heavy ion radiotherapy may be effective for treating pelvic osteosarcomas that are difficult to treat surgically.

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