

Surgical Strategies in Patients with Spinal Giant Cell Tumor: Twelve-year's Clinical Experience and Outcomes

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Abstract:

Background: Giant cell tumor (GCT) is rare in the spine. Although classified as benign, GCT has most aggressive behavior in the benign primary tumors of the spine with a high predilection for local recurrences. Spinal GCT is a challenge for surgeons due to the limited surgical accessibility and proximity to spinal cord and nerve root.

Purpose: We mean to share our experience in choosing appropriate surgical strategies for spinal giant cell tumor with different WBB staging and evaluated the factors of potential prognostic significance for spinal GCT.

Patients and Methods: We retrospectively reviewed 61 patients with spinal GCT treated in the musculoskeletal tumor centre of Peking University People's Hospital from July 2000 to March 2012. This series included 35 females and 26 males with the average age of 34.5 years (ranging 16 to 66 years). 5 tumors were located in cervical vertebrae, 37 in thoracic vertebrae and 19 in lumbar vertebrae. All the tumors were evaluated before surgery according to the WBB staging system. 10 patients had tumors involved in two or more segments of vertebra. 38 patients received primary surgeries in our hospital and the others came for surgeries of the recurrent tumors. The treatment strategy of spinal GCT differed depending on tumor site and extent. 48 patients received selective arterial embolization (SAE) within 24 hours before surgery.

Results: The average blood loss was 3100ml (ranging 800 to 8200ml). SAE helped to reduce bleeding, averagely 2500ml in the patients with SAE compared with 4300ml in the patients without SAE. This study had a medium-term follow-up with an average period of 65.3months (range, 26–146 months). Total 20 cases (32.8%) developed local recurrences. No significant difference was found between patients with primary tumor or recurrent tumor when they were admitted in our institute ($P=0.09$). 10 out of 11 patients with total en bloc spondylectomy achieved well local control. However, 7 out of 24 patients (29.2%) developed recurrence after tumor resection by the combined posterior and anterior approaches. Furthermore, 12 out of 26 patients (46.2%) receiving single-stage resection had local relapse during the follow-up. 5 patients (8.2%) were found pulmonary metastases. At the last follow-up, 38 patients were alive without evidence of disease, 15 patients with local tumor or stable metastases. 8 patients (13.1%) died of tumor progression or morbidity. The overall survival (OS) and evidence-free survival (EFS) rates were respectively 89.4% and 69.6% at 5 years, 79.6% and 47.3% at 10 years.

Conclusion: Total tumor resection is necessary to achieve acceptable local control and morbidity for spinal GCT, whether in piecemeal or en bloc fashion, by combined posterior-anterior approaches or one stage posterior approach. The use of SAE could significantly reduce the blood loss during the surgery and help patients a better local control.

Key words: Spine; Giant cell tumor; Surgical approach.