

Factors influencing local recurrence and osteochondral destruction in pigmented villonodular synovitis

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Background

Pigmented villonodular synovitis (PVNS) is a rare benign disease that has a high local recurrence rate after surgical treatment. Osteochondral destruction during clinical course of PVNS is one of the major concern for both patients and physicians. There have been no definitive clinical prognostic factors for local recurrence. We have previously investigated clinical factors that affect osteochondral destruction in PVNS, and concluded that repeated operations for local recurrence resulted in osteoarthritic change in PVNS. Considering these results, clinical factors influencing both local recurrence and osteochondral destruction should be analyzed together.

Purposes

The purposes of this study were to investigate clinical factors affecting local recurrence and occurrence of osteochondral destruction in consecutive cases of PVNS with surgical treatment. In addition, based on the results of clinical factors influencing osteochondral destruction, treatment modality, particularly after local recurrence, was discussed.

Patients and Methods

Ninety (53 females, 37 males) patients who had a histological diagnosis of PVNS and underwent surgery in our institutions were included in this study. There were 56 cases of knee, 13 of ankle, 11 of hip, and 10 of others, and there were 65 cases of diffuse type and 25 of localized type. Mean age was 38.7 years (5-80) and mean follow-up was 59.3 months (3-226 months). We investigated clinical factors influencing osteochondral destruction at first visit, postoperative osteochondral destruction, and local recurrence in PVNSs. The difference of local recurrence free survival was analyzed by log-rank tests and COX regression analysis. Clinical factors which affected osteochondral destruction were analyzed by Fisher's exact test or Pearson's chi-square test.

Results

Osteochondral change was observed in 28 cases (31%) at first visit, and 23 cases (26%) had developed osteochondral destructions after ~~first~~ initial surgery. In 28 cases of osteochondral destruction at first visit, there were 27 cases of diffuse type ($P < 0.001$) and 19 cases of PVNS in other than knees ($P < 0.001$). In 23 cases of postoperative osteochondral destruction, all cases were diffuse type ($p = 0.001$). Local recurrence ($p = 0.002$), secondary surgery ($p = 0.041$), and osteochondral destruction at first visit ($p = 0.045$) were risk factors of for progression of postoperative osteochondral destruction. Local recurrence occurred in 22 cases (24%). Diffuse type ($OR = 7.974$, $P = 0.043$) and knee lesion ($OR = 4.897$, $p = 0.005$) were independent risk factors of local recurrence in multivariate analysis. Among 22 cases with local recurrence and 10 with residual tumor, 18 cases (16 of 24 in knees and 2 of 8 in others, $p = 0.096$) did not require re-operation after initial surgery, so called watchful waiting.

Conclusions

Patient's background and the local recurrence rate in this study were similar to previous studies. Diffuse type was a risk factor of the local recurrences, osteochondral change at first visit, and postoperative osteochondral destruction. PVNS arising in knees was an independent risk factor of local recurrence, but inversely associated with the occurrence of osteochondral change at first visit, which may be probably due to the large joint space of this joint. Previous reports also showed that osteochondral change was less observed in knee joints. Our study has some limitations. At first, this study included relatively small number of patients with PVNS. The second limitation is that the treatment strategy of re-operation was not unified between our institutions.

PVNS in knee was associated with high local recurrence after initial surgery, but osteochondral change was less observed in this joint. When there were no serious symptom, watchful waiting might be one of the options in PVNSs of knee because of the less incidence of osteochondral destruction and more predictable progression of osteochondral destruction after re-operation.