Analysis of Progression of Cervical OPLL using Computerized Tomography - Typical Sign of Maturation of OPLL Mass

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Introduction: Cervical ossification of the posterior longitudinal ligament (OPLL) is a disease with various clinical symptoms and courses. Previous studies of the progression of OPLL have simply analyzed the cases, while there are no studies which compare and analyze the factors related to the progression of OPLL using computerized tomography (CT). The purpose of this study is to analyze the progress of cervical OPLL by using computerized tomography (CT), and to evaluate the relating factors and typical CT findings of non-progression (maturation) of OPLL mass.

Methods: Sixty patients with OPLL who underwent at least 24 months follow up with CT were included for analysis. They were divided into two groups according to progression; 14 people (group A) with OPLL progress and 46 people (group B) without progress. We evaluated the gender, age, number of involved segments, type of OPLL, follow up period, treatment methods between two groups. The CT finding, radiological findings of the connection of OPLL mass with the vertebral body, and formation of trabeculation in the mass were evaluated (Figure 1).

Results: There were no significant differences in genders, follow up periods or treatment methods between two groups. There was no significant difference according to the operation or not (p=0.06), anterior or posterior surgery (p=0.361), and fusion or non-fusion surgery (p=0.431). The age of group A was significantly lower than that of group B (p=0.03). The involved segment of each group was 5.3 in group A and 3.6 in group B (p=0.002). For the ossification types, group A was dominated by mixed types as 10 and group B is dominated by segment types as 23 (p=0.02). There were 2 cases showing connection of the vertebral body with the OPLL mass in group A, and 43 in group B (p<0.01). There were 2 cases of trabeculation formation in group A, and 40 in group B, showing a significant difference (p<0.01).
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Conclusions: The progression of OPLL was much more common in younger, multi-level involved and mixed type patients. And the progression was not related with the follow-up period and treatment methods. CT findings of the connection of the vertebral body with the OPLL mass and trabeculation formation in the mass are useful findings in predicting the incidence of non-progression of the mass.

Figure 1. Typical sign of non-progression (maturation) of OPLL mass
(A) Connection with the vertebral body.
(B) Trabeculation.
OPLL mass showed trabeculation which was similar appearance with the cancellous bone in vertebral body and connection with the vertebral body.