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The utility of chromosome analysis in patients with the adipocytic tumors of extremities

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Objective: The diagnosis of adipocytic tumors is based on clinical and histologic features. However, atypical lipomatous tumor/well-differentiated liposarcoma (ALT) and dedifferentiated liposarcoma (DLPS) are often difficult to distinguish morphologically from benign adipocytic tumors and other high-grade sarcomas, respectively. The purpose of this study is to evaluate the utility of the chromosomal analysis in the diagnosis of adipocytic tumors.

Methods: A total of 80 patients (32 males and 48 females; mean age, 58.5 years) with adipocytic tumors arising from extremities were enrolled in this study. The histological subtypes were lipoma in 50, ALT in 12, myxoid liposarcoma in 9, DLPS in 7, pleomorphic liposarcoma in 1, and hibernoma in 1. In those cases, we performed the chromosomal analysis by the G-band method. We evaluated the success rate of the chromosomal analysis and the rate of concordance with chromosome analysis and a histopathological diagnosis. When the karyotype abnormality is consistent with the karyotype described in text book of WHO, we defined them as "concordance type". When the karyotype abnormality is not consistent with the karyotype abnormality described in text book of WHO, we defined them as "other type".

Results: Of all 80 patients, it is impossible in 18 cases (23%), normal in 5 (6%), concordance in 37 (46%), and other in 20 (25%). Of 50 patients with lipoma, it is impossible in 10 cases (20%), normal in 4 (8%), concordance in 24 (48%), and other in 12 (24%). Of 29 patients with ALT and liposarcoma, it is impossible in 6 cases (21%), normal in 2 (7%), concordance in 13 (45%), and other in 8 (27%).

Conclusions: The current WHO classification of adipocytic tumors includes benign, intermediate, and malignant subtypes. Thus, adipocytic tumors represent the largest group of soft tissue tumors that have been studied by cytogenetic analysis. In this study, about half cases showed karyotype abnormality reported to date. Whereas we showed the karyotype abnormality that has not been reported previously in 25%. Understanding of the molecular biology of adipocytic tumors will undoubtedly lead to the development of novel diagnostic strategies.