Expression of P53, Bcl-2, Bax, and P-glycoprotein in Relation to Chemotherapeutic Response in Patients with Advanced Non-Small-Cell Lung Cancer

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Background The drug resistance and failure of apoptosis are considered to be the major obstacles in the successful chemotherapy. P53, bcl-2 and bax are well known to be involved in the activation of apoptosis and p-glycoprotein is in multidrug resistance (MR). There have been some reports about the relationship between the expression of those apoptosis- or MR-associated genes and the clinical response in patients with advanced non-small-cell lung cancer (NSCLC), but the exact relationship remains still controversial.

To evaluate the relationship between the expressions of p53, bcl-2, bax, and p-glycoprotein and the chemotherapeutic response in patients with advanced NSCLC.

Methods Forty four patients proven pathologically as NSCLC were reviewed. They had received at least 2 cycles of the same chemotherapeutic agents (cisplatin 60 mg/m² day 1 + vinorelbine 25 mg/m² day 1, 8, 21-day cycle) and the clinical response was evaluated by WHO criteria. The expressions of p53, bcl-2, bax, and p-glycoprotein were determined by immunohistochemistry.

Results CR(2/44) and PR(20/44) were classified as the responder group (22/44) and stable (17/44) and progression (5/44) as the non-responder group (22/44). Positive expression of p53, bcl-2, bax, and p-glycoprotein were 84.1%, 65.9%, 88.6%, and 61.4% respectively. The expression score of p53 was significantly higher in non-responder group than that in responder group (8.59±1.89 vs 5.32±2.15, p<0.05). But the expression scores of bcl-2, bax, and p-glycoprotein were not significantly correlated with the clinical response.

Conclusion This study suggests that p53 gene mutation plays an important role in the clinical response to chemotherapy including cisplatin and vinorelbine. In future investigations, the correlation with the survival time will be studied.