

Aquaporin 5 Expression and Its Relationship to Apoptosis in Different Grades of Differentiated Non-Small Cell Lung Carcinoma

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Abstract

Aquaporin 5 has been recently found as an important oncogenic marker whose expression levels seem to be determined by the level of cellular differentiation. Despite aquaporin volume decrease (AVD) being the most conserved earliest event in apoptosis, there is still a paucity of studies exploring on aquaporin expression and its relationship with apoptosis in cancer. The aim of this study was to investigate the expression of aquaporin 5 channel protein and to explore on its relationship with apoptosis in well and poorly differentiated non-small cell lung carcinoma both *in-vivo* and *in-vitro*. Findings from the study showed that the expression of AQP5 both *in-vivo* and *in-vitro* was dependent on the type and degree of tumour differentiation. *In-vivo*, an increase in aquaporin 5 expression was associated with an increased apoptosis in both poorly and highly differentiated adenocarcinoma (AC) while there was no association between aquaporin 5 expression and apoptosis in both poorly and highly differentiated squamous cell carcinoma (SCC). *In vitro*, differentiation therapy in the form of ATRA decreased both cell proliferation and increased the expression of AQP5 in A549 cells. The cytomorphological changes, expression of differentiation markers and flow cytometry apoptotic results were dependent on the dose of ATRA treatment. In conclusion, a higher expression of aquaporin 5 was found to promote the rate of the apoptotic process in lung adenocarcinoma (AC).