Association of P2X1 Receptor Signaling With Tissue Factor Expression and Nerve Degeneration in Lung Adenocarcinoma

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Study Objective: The primary aim of this study was to investigate how P2X1 receptor activation in lung adenocarcinoma (LA) influences the tumor microenvironment, particularly in promoting pro-coagulative states and nerve innervation. Although P2X1 receptor has been well studied its role in lung adenocarcinoma is not well understood. Hypothesis: LA patients will have increased expression of P2X1 receptor with associated increased coagulation. Effect of pro-coagulative state on intratumoral nerve innervation was uncertain. Study design: Eleven lung cancer specimens were obtained from cancer patients. The slides from these specimens were initially stained with anti-P2X1 receptor, anti-tissue factor, and anti-PGP antibodies. Subsequently, these slides were again stained with marker anti-antibodies. These slides were studied under a confocal microscope. Results: Increased expression of P2X1 receptor was noticed in eight out of eleven specimens. Increased tissue factor expression was noticed in seven out of eleven specimens. As expected in all but one specimen, where high P2X1 expression was associated with more coagulation. Also, low P2X1 expression in three specimens was associated with less coagulation. A pattern of denervation was noticed in six out of seven specimens where increased coagulation was present. Conclusions: Increased expression of P2X1 receptors was noticed in most lung cancer specimens, with associated increased coagulation. With increased chances of coagulation, patients are at risk for complications like deep venous thrombosis and pulmonary embolism, which can be life-threatening. Association of increased coagulation with nerve denervation was an interesting finding which has not been described before in lung cancer and needs further studies.

Awards Won: