IMMUNOSURVEILLANCE OF TUMORS: IGE AS A NEW PLAYER

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IgE is the class of immunoglobulins conventionally implicated in allergy and anti-parasitic immunity. In the recent years its involvement in the immune response against tumors has been proposed (Cancer and IgE, 2010).

Exogenous mouse and human IgE have been shown to provide a potent adjuvant effect in antitumor vaccination, with a crucial role played by the high affinity IgE receptor (FcεRI) expressed, in mice, on the surface of mast cells and basophils (Reali et al. 2001, Nigro et al. 2009, Nigro et al. 2012). IgE binding to FcεRI, leads to cell degranulation with release of preformed and newly synthesized mediators able to recruit effector cells that induce the establishment of a powerful inflammation at the tumor site leading to the processing of tumor antigens and the resulting immune response against the tumor.

Based on our previous studies on exogenous IgE adjuvanticity in tumor vaccination and on controversial studies proposing a negative link between allergies and cancer, we investigated the possible role of endogenous IgE in tumors immunosurveillance.

While transgenic mice knock-out for the production of IgE (Fc□RI□-/-) show a higher susceptibility to tumor growth after challenge with different tumor models, KN1 mice, high IgE producers, show partial or complete protection depending on the tumor model.

Interestingly, sera from surviving mice contain relevant levels of tumor-specific IgE.

Despite the presence of tumor-specific IgE in the serum, in double mutant (KN1/Fc□RI□-/-) mice the anti-tumor protection is widely lost, demonstrating the involvement of the IgE-Fc□RI axis in tumor protection.

Depletion of CD8 T cells on KN1 mice abolishes the tumor protection, indicating that IgE acts as an adjuvant in the priming step of cellular immunity, rather than at an effector step.

In conclusion, our results provide evidence for the establishment of a potent CD8+ T cells dependent anti-tumor immunity promoted by the IgE system through the IgE - Fc□RI axis (Nigro et al. 2016). This suggests a novel function for the IgE-FceRI system, which could possibly be translated into immunotherapeutic strategies for clinical oncology.

Cancer and IgE (2010)

Reali et al. (2001) Cancer Res. 61, 5517-22.

Nigro et al. (2009) J Immunol. 183, 4530-6.

Nigro et al. (2012) J Immunol. 188, 103-10.

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