Lymphotoxin, NF-κB, and Cancer: The Dark Side of Cytokines

Abstract:

Cytokines have been implicated in a variety of physiological processes involving lymphoid tissue development, lymphocyte activation, and control of regenerative processes such as wound healing. The first characterization of a cytokine implicated in abolishing or killing tumor cells – the tumor necrosis factor (TNF) – fostered and boosted a completely new field of research that in addition to cancer research started to generate an overwhelming amount of knowledge in immunology, various pathological processes, and other fields of research. Due to the complex networks and versatile functions of cytokines, it soon became clear that cytokines can possess diametric functions in various biological processes. As for tumor research it was shown that some cytokines – depending on the type of organ, the time of action, gender, and the cellular environment – can have either pro- or anticarcinogenic action. For those cytokines reported to be procarcinogenic, this could be accomplished by directly acting as oncogenes or generating an inflammatory environment that is procarcinogenic. Here we review a novel role for TNF family members – in particular lymphotoxin (LT) α and β – in physiology and in driving tumorigenesis, with special focus on the liver. We believe that recent findings on this particular cytokine might have strong implications for the therapy of liver cancer or other inflammation-induced cancer types.

Stichworte:

Lymphotoxin; Cytokine; Cancer