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Biological role of mannose binding lectin: From newborns to centenarians

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Mannose binding lectin (MBL) is a protein of innate immunity that activates the complement and promotes opsonophagocytosis. The deficiency of MBL due to several common gene polymorphisms significantly enhances the risk of severe infections, particularly in the neonatal age and in childhood and a recombinant protein is now available. We demonstrated that in patients affected by cystic fibrosis (CF) the deficiency of MBL acts as a negative modifier gene enhancing significantly the risk for pulmonary bacterial colonisation and for severe liver disease infections. On the contrary, the role of the protein in carcinogenesis and atherogenesis is still debated: MBL has a relevant role against neoplastic cells, in fact our group demonstrated that an MBL deficient haplotype is a risk factor for gastric cancer in subjects with H. pylori infection. Other studies described a protective effect of low levels of MBL toward breast cancer and a longer survival of lung cancer patients with a reduced MBL activity. Similarly, some studies concluded on the protective role of low levels of MBL toward cardiovascular diseases while other focused on a higher risk of myocardial infarction in subjects with a deficient activity of the protein. Finally, a role of MBL in the clearance of senescent cells emerged, and a study by our group in two large cohorts of centenarians demonstrated that a high biological activity of the protein enhances the risk of autoimmune diseases. This body of data strongly suggests that the optimal levels of MBL activity depend on the age and on the environmental context of each subject.

Biography

Giuseppe Castaldo, MD is a European Specialist in Clinical Chemistry and Laboratory Medicine. He is a Full Professor of Laboratory Medicine, School of Medicine, University of Naples Federico II. His recent studies include Cystic Fibrosis: Gene analysis, search of new mutations, genotype-phenotype correlation, studies on genes modifier of phenotype; functional studies of novel mutations and drug effect on ex-vivo epithelial nasal cells; epigenetics of CF (methylation and microRNA); analysis of specific mRNAs in blood from cancer patients; molecular genetics of congenital diarrhea; epigenetics of suicide.

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