Maternal immunization as a new tool against non-infectious related diseases in newborns

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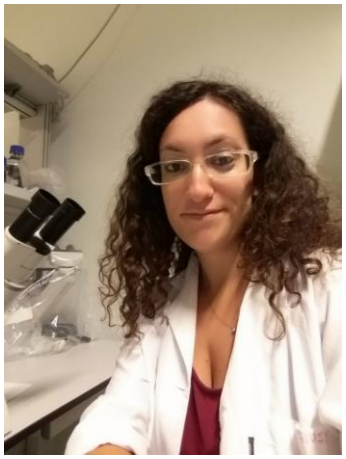
Abstract

The continuous evolution in preventive medicine has anointed vaccination a versatile, human-health improving tool, which has led to a steady decline in deaths in the developing world. Maternal immunization represents an incisive step forward in the field of vaccination as it provides protection against various life-threatening diseases in pregnant women and their children. Interestingly, some studies described maternal immunization as a tool inducing protection in infants from non-infectious related diseases, such as allergy, asthma and congenital metabolic disorders. However, barely any attempt at applying maternal immunization to the prevention of childhood cancer has been made. The most recent study reported in this new field consists a proof of concept on the efficacy of maternal immunization in protecting cancer-prone offspring against mammary tumor progression, published by our group. Moreover, a new promising investigation into the possibility of exploiting maternal immunization to hamper the progression of neuroblastoma, the most common extracranial solid malignancy in childhood, is in progress. This study about maternal immunization against an oncogene involved in neuroblastoma, the Anaplastic Lymphoma kinase (ALK), is showing so far the efficacy of this approach in slowing-down tumor progression in a preclinical model of spontaneous neuroblastoma. Moreover, the natural immunological exchange between mothers and offspring, lead to the activation of offspring own immune response against ALK, following maternal immunization.
Overall, our results indicate maternal immunization as a possible intervention to hamper tumor development in genetically predestined offspring and shed light on the versatility of maternal immunization approach.

Keywords: DNA immunization, immunotherapy, maternal immunization, neuroblastoma

Professional Biography

Giuseppina Barutello (Torino, October 3rd 1985) has completed her PhD in Molecular Medicine at the University of Turin in 2016.
During her scientific career, Dr. Barutello has mainly focused on the role of maternal immunization against oncoantigens as a new tool for anti-tumor immunotherapy.
Dr. Barutello was awarded with a fellowship by CUS Torino for the best PhD research program of the University of Torino in 2015, based on the project "Mother to offspring anti-tumor immunity transfer".
Dr. Barutello has received a three-year Fellowship from the Associazione Italiana per la ricerca sul Cancro, which funds the project "Anti-tumor immunity transfer from mother to offspring: a new way to fight neuroblastoma", carried on since 2017 at the Dept. of Molecular Biotechnology and Health Sciences in Turin.
Dr. Barutello has published 14 papers in reputed journals and she is serving as an editorial board member of Journal of Clinical Medicine since December 2018.



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