Editorial

A Short Note on T Follicular Helper Cells

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Editorial

A single dose of the replication-competent, live-attenuated Yellow Fever Virus (YFV) 17D vaccine provides lifelong protection against YFV infection in humans. B cell responses to YFV 17D are less well understood than T cell responses in terms of magnitude, kinetics, and specificity. We focused on early immune events critical for the development of humoral immunity to YFV 17D vaccination in 24 study subjects in this clinical study. FluoroSpot analysis confirmed that plasmablasts were YFV-E protein specific. T follicular helper cells (Tfh) are a type of CD4+ T cell that was discovered in the human tonsil. They play an important role in protective immunity by assisting B cells in producing antibodies against foreign pathogens. Despite the existence of an effective vaccine, recent outbreaks of Yellow Fever (YF) in South America and Sub-Saharan Africa demonstrate that YF remains a serious global health problem. Numerous studies have examined and confirmed the development of protective immunity following YFV 17D vaccination by characterising YFV-specific T cell and Ab responses. B and T cell interactions are required for the effective generation of protective neutralising Abs and immunological memory. This interaction takes place primarily in secondary lymphoid organ germinal centres. The magnitude, kinetics, and specificity of the B cell response to YFV 17D have not been as extensively studied as T cell responses. Recent studies on early B cell responses to vaccination with YFV 17D indicate that there is an expansion of plasmablasts in peripheral blood.

Tfh is required for the formation of Germinal Centres (GCs), which are distinct structures that form within the B cell zones of SLOs during an ongoing immune response. B cells within GCs are known as GC B cells, and they undergo rapid proliferation and antibody diversification, allowing them to produce a wide range of antibodies with higher affinity for their targets. GCs are also where B cells can differentiate into antibody-secreting plasma cells and memory B cells, allowing for long-term antibody production. The YFV 17D vaccine is unique in that a single dose of the vaccine can provide humans with lifelong immunity. In the majority of study subjects, innate immune signatures such as the activation of both CD56bright and CD56dim NK cells, as well as an increase in a number of soluble pro-inflammatory and innate markers, were observed. Antigen activates a subset of naive T cells in the T cell zone, causing them to migrate to the follicles and differentiate into TFH cells, which interact with and instruct Follicular B (Fo B) cells to undergo isotype switching, somatic hyper mutation, and rapid cellular division in order to seed Germinal Centres (GC).

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