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EDITORIAL

Towards A Malaria Vaccine ?

The last few years have seen a marked change in the understanding of malaria immunology. We have very little knowledge on immunity of Malaria based on experiments in human beings due to ethical reasons. Whatsoever our knowledge exists at present is based on experimentas in mice and monkey. However it is clear that it is sporzoite or merozoite which is directly exposed to our immune system in the life cycle of Malaria parasite. On the basis of human experiments we can draw inference that immunity to malaria is species-specific (on cross immunity), stage specific and strain specific as well acquired in the response to surfacc antigen and relapsed antigen although the parasite also demonstrates escape machanism to immune system.

So the host system kills or eliminate the parasite by means of (a) Antbody to extracellular form of parasite with the help of mechanism of Block invasion, Agglutination or opsonization and/or (b) Cellular machanism-either by phago-cytosis of parasite or by antibody dependent cellular cytotoxicity ABCC (?) or by effects of mediators like tumor necrosis factor (TNF) in cerebaral malaria or crisis forming factor as found in sudan or by possible role of lysis mechanism.

However, inspite of all these theories the parasite has been able to invade the immune system by virtue of its intracellular development stage specificity, sequestration in capillaries and also by its unusual characteristics of antigenic diversity and antigenic variation.

So on the basis of our knowledge on immunity of malaria the aim of possible malaria vaccine may be fixed for either vaccine for malaria infection versus malaria disease or for a traveller vaccine versus endemic vaccine. To achieve this we can targets malaria vaccine on

(a) Intracellular form of parasite either erythrocytic or hepatocytic stage.

(b) Extra cellular form either sporozoite or gametocyte

The possible approaches for development of an effective malaria vaccine may be :—

1. Parasite antigen vaccine.
2. Infectious vector vaccine.
3. Anti-idiotype vaccine.
4. Sub-unit vaccine.

1. **Parasite Antigen Vaccine :** It is very difficult to get purified parasite antigen in man due to practical reasons.

2. **Infectious vector vaccine :** The circum-sporozoite protein NANP 40 seems to be emerging as source of potent antigen efforts are being made to develop vaccine using NANP 40 expressed in recombinant E. coli and also using vaccinia virsus or salmonella as vector.

3. **Anti idiotype vaccine :** Anti-Igm derived from infected Malaria antigen can be act as a candidate vaccine. The Malaria vaccine so produced is hopeful to achieve :—

(a) 100·/. protection-It can be achieved using sporozoite vaccine which may lead to no malaria infection and subsequents prevention of disease and prevention of transmission.

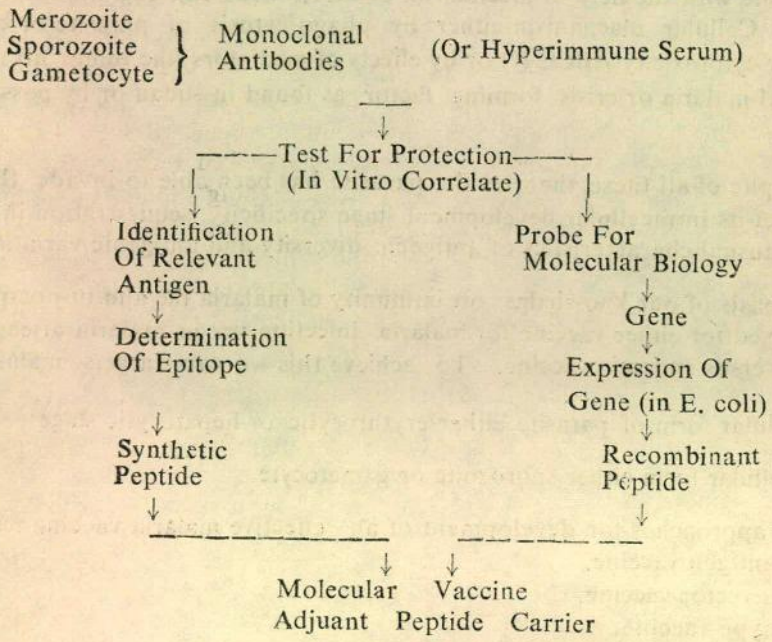
(b) Partial protection using gametocyte antigen however there will be infection with reduced mortality but no transmission.

(c) However one should consider the possibility that the vaccine so produced may not be able to produced any prevention against infection, disease and transmission due to certain unknown reasons.

4. **Molecular or sub unit vaccine :** The strategy for sub unit vaccine is to develop molecular vaccine derived from monoclonal antibody and adjuant peptide carrier where. E. coli epitopoe can be attached to an adjuants and B. cell epitope to a carrier however it has MHC restriction The such Strategy be understand by fig. 1.

FIG.-1

STRATEGY FOR THE DEVELOPMENT OF MALARIA VACCINE



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