Not all RV144 vaccine induced IgA responses are bad.

The RV144 or Thai Trial conducted in Thailand, is the only HIV vaccine trial to date that has demonstrated modest efficacy, 60.5% efficacy up to 12 months after vaccination. Analysis of results from the RV144 HIV vaccine trial showed that high levels of HIV Envelope protein (Env)-specific IgA antibodies correlated with increased risk of HIV infection. However, evidence from non-human primate simian immunodeficiency virus (SIV) challenge models suggests that SIV-specific IgA can result in reduced HIV acquisition at mucosal sites. Wills \textit{et al.}, aimed to determine if human HIV-specific IgA antibodies induced by RV144 vaccine can mediate antiviral activity in vitro.

Researchers isolated two IgA monoclonal antibodies (MAb), HG129 and HG130, from memory B cell cultures of peripheral blood from HIV-uninfected RV144 vaccinees. Characterisation of antibody binding specificity demonstrated that HG130 bound to various gp120 vaccine strain antigens, illustrating that HG130 was indeed a vaccine induced antibody. Unlike HG130, HG129 weakly bound to any vaccine strain antigens, suggesting that HG129 was likely an HIV Env cross-reactive clone that was not directly elicited by vaccination.
Analysis of HIV-specific IgA responses suggested that increased risk of HIV acquisition could be attributed to Env-specific IgA competing with IgG-mediated antibody mediated cellular cytotoxicity (ADCC). Researches showed that HG129 and HG130 IgA MAbs were unlikely to interfere with IgG-mediated ADCC because HG129 and HG130 were unable to bind to HIV infected cells nor neutralize HIV in vitro cell cultures.

Galactosylceramide (Galcer) is an alternative receptor HIV-1 receptor that allows HIV to infect cells that do not express CD4 receptor, such as epithelial cells. Researchers demonstrated that HG129 but GH130 was able to block HIV-1 1086.C strain gp140 Env glycoprotein binding to Galcer. Thus HG129 could be a potential candidate for blocking binding of virus to epithelial lining at mucosal sites.

Finally, the researchers demonstrated that dimeric and polymeric HG129 and HG130 IgA were able to induce monocyte-mediated phagocytosis. However, difference in antigen recognition were observed, where HG129 and HG130 mediated phagocytosis HIV-1 virions and gp140 Env-coated beads, respectively.

In summary, this study showed that HIV-specific IgA MAb, induced in the Rv144 trial have the potential to mediate anti-viral responses.