ImmunoTools *special* Award 2015

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Humoral and Cell-mediated Immune Responses after Rabies Booster Vaccination in Previously Rabies Immunized HIV-infected Adults

Rabies is a zoonotic disease caused by *Lyssavirus* of the family *Rhabdoviridae*, of which infection leads to the fatality encephalomyelitis. Domestic dogs are the major host of the disease, while wild carnivores maintain sylvatic reservoirs and enzootic cycles. Virus was transmitted when the saliva or other infective tissues from a rabid mammal come into contact with an open wound or mucous membrane of human. Rabies is a public health threat and burden, especially in Asia and Africa. The World Health Organization (WHO) estimates the human mortality due to rabies exceeding 55,000 cases per year. Millions of people annually receive post-exposure rabies treatment after the mammalian bites. Post-exposure rabies prophylaxis comprised mainly of the vigorous wound cleansing, a series of rabies vaccination and rabies immunoglobulin administration in severe WHO category contact. Repeated rabies exposures frequently occur in endemic areas. In such a case, WHO recommends booster injection without rabies immune globulin for those who previously received complete course of modern cell – culture rabies vaccines. Beyond the primary rabies immunization, the booster inoculation yields robust anamnestic response. Thus its advantages of eliminating immunoglobulin requirement and shortening the vaccination course after subsequent exposure are beneficial particularly in resource – limited countries. However, this approach has never been applied to immunocompromised individuals as the unsatisfactory immune response after the conventional pre- and post-exposure rabies prophylaxis among severely immunosuppressed patients had long been reported. Very limited data are available regarding rabies vaccination in persons with altered immunocompetent, remaining the controversial issue for rabies immunization in these subjects. Through the advancement of HIV medicine and effective highly active antiretroviral therapy (HAART), numerous recent studies have shown the restoration of antibody response in HIV-infected subjects to various vaccines, including rabies. Gelinck L. et.al. demonstrated the acceptable rabies neutralizing antibody (RNab) levels among HIV-

infected adults in both the primary and booster immunization even after an injection each. Thus, we adopt the concept of prime and boost strategies to this study. Previously rabies immunized HIV-infected volunteers are given simulated post-exposure booster vaccination and monitored both the humoral immune response (HIR) and cell – mediated immune response (CMIR) against rabies. For HIR, RNab titers measurement by the Rapid Fluorescent Focus Inhibition Test (RFFIT) as WHO standard are performed. Meanwhile, the specific T cell responses and a panel of chemo- and cytokines are examined to characterized CMIR aspect. Therefore, ImmunoTools reagents will be very useful to investigate the expression of cell surface markers and the chemo- and cytokines production. Toward the goal of ASEAN (Association of Southeast Asian Nations) rabies-free by 2020, the implementation of canine rabies control and post-exposure rabies immunization of human has dramatically decreased human rabies cases. However, there are still unsolved stories. Despite the existing of potent rabies vaccine and immunoglobulin, the accessibility and availability to these costly rabies biologicals in developing countries are sometimes difficult and troublesome. Pre-exposure and thereafter booster immunization as indicated are one of the alternative method utilized to achieve the need in resource-limited regions, as it is now being launched in the Philippines. The findings of our study would ascertain the practical application of booster immunization to some selected vulnerable hosts and give them a chance to gain the advantages of this procedure as general population. Moreover, the immunological results of the study would enable us to better understand the complexities of immune responses to vaccination in HIV-infected patients, leading to the continuing researches, innovative approaches, and indeed, in the public health disease prevention and strategies.

ImmunoTools *special* AWARD for **Suda Punrin** includes 25 reagents

FITC - conjugated anti-human CD25, CD45RA, CD69,

PE - conjugated anti-human CD8, CD19, IFN-gamma, IL-8, TNFa, Control-IgG1, Control-IgG2a, Control-IgG2b,

PerCP - conjugated anti-human CD4,

APC - conjugated anti-human CD3, IL-6,

Multicolour combinations anti-human:
CD3 FITC / CD4 PE
CD3 FITC / CD4 PE / CD45 PE-Dy647

human ELISA-set for 96 wells, human IL-4, human IL-10 (each 3 reagents),

recombinant human cytokines: rh GM-CSF, rh IFNgamma, rh IL-17A

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