Therapeutic Effect of Indoleamine 2,3-Dioxygenase (IDO) Inhibitor in the Male Genital Inflammation

Background Indoleamine 2,3-dioxygenase (IDO) catalyzes the first and rate-limiting step of tryptophan catabolism. IDO is induced in various tissues during systemic infection and plays a key role in immune response. Therapeutic effect of IDO inhibitor for systemic infection was already reported, but the effect for local infection was still unclear. We hypothesize that IDO play a central role for local immunological reaction in the male genital inflammation and IDO inhibitor contribute to innovative therapy for the male genital inflammation. To validate this hypothesis, we inhibited IDO using 1-methyltryptophan (1-MT) and investigated inflammatory changes in the male genital inflammation model.

Methods Twelve weeks old C57BL/6 male mice were used through the study. 1-MT 100 mg was intraperitoneally administrated and confirmed inhibitory effect of 1-MT. Lipopolysaccharide (LPS) 100μg was injected to the male genitalia (epididymis and prostate) and confirmed validity of modeling. Based on the results of preliminary examination, LPS was injected three hours after 1-MT administration. After modeling, male genitalia were removed in a time-dependent manner. Inflammatory changes were analyzed using comprehensive cytokines/chemokines assay and immunohistochemical changes were analyzed using representative candidates. Biochemical and immunohistochemical changes were observed in male genital inflammation model of 1-MT(+) mice compared with that of 1-MT(-) mice. Same results were obtained from separate quantitative assay and immunofluorescent staining.

Conclusion Ido is involved in immunological reactions via cytokines/chemokines in the male genitalia. Inhibition of Ido may contribute to protection of the male genital inflammation. Therefore, Ido inhibitor might be a novel target therapy for the male genital inflammation.

Disclosure No significant relationships.