The physiological alteration of histidine-rich glycoprotein on the mice perinatal period.

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Histidine-rich glycoprotein (HRG) is an anti-inflammatory factor that controls the progression of systemic inflammatory pathology. In more severe inflammatory condition such as sepsis syndrome, the reduced level of plasma HRG is exacerbating the mortality by inducing to the neutrophil hyperactivity, the promotion of blood coagulation cascade, the vascular endothelial dysfunction, and so on. Although HRG is mainly produced from liver and present at high level of 100 ug/mL in plasma, the physiological functions of plasma HRG on healthy conditions have not been clarified yet. Recently, it was reported that an excess reduction of plasma HRG level in human pregnant was correlated with the hypertensive disorders of pregnancy (HDP) seriousness. In this study, we examined the involvement of plasma HRG on the gestational period using C57BL/6 mice and HRG gene-deficient (HRG KO) mice. Plasma HRG level was decreased during the healthy gestational period in C57BL/6 mice. In addition, HRG reduction was restored at post-partum and did not depend on the HRG gene expression in liver. Hysterectomy to the gestational C57BL/6 mice also restored the plasma HRG level up to the normal level. When Human plasma-purified HRG was injected to C57BL/6 mice on nulliparity or gestation, biological half-time of the injected HRG was short in the gestational mice compared with the nulliparous mice. Moreover, HRG KO mice showed hypertension by the gestation, whereas rise in blood pressure did not observed in the healthy gestational C57BL/6 mice. These results suggest that HRG may have a physiological function in gestational period. Pregnant HRG KO mice may be a HDP-like pathological model.