Investigation on effects of pregnant mouse serum on dendritic cell Function using allogeneic MLR model

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Abstract

Introduction: Accumulating evidence suggests that the fetus as an allograft is protected by local and systemic modulation of maternal immune responses. It seems that the presence of inhibitory factor(s) in pregnant sera may thus serve as a mechanism for the modulation of maternal immune responses. In this study the effects of normal and pregnant mouse sera on DC function, that is an antigen presenting cell (APC) with a unique ability to induce primary immune responses, were examined by allogeneic MLR.

Materials and Methods: Sera were collected from allogeneic pregnant mice in early, mid and late gestation and were stored in -70^{o}C. DCs were isolated from Balb/C mouse spleens by collagenase digestion and separation of low-density cells using nycodenz gradient. The purity of isolated DCs was determined more than 95% by flow cytometric analysis. Isolated DCs were cultured in RPMI containing early, mid and late pregnant mouse sera. These cells were used as stimulator cells in allogeneic MLR after washing and 3000 Rad irradiation. T cells were also were isolated from C57BL/6 mouse lymph nodes by nylon wool method. The final purity of T cells was determined approximately 90% by flow cytometry. The DCs and T cells were co-cultured in allogeneic MLR and cell proliferation was measured by ^{3}H thymidine incorporation.

Results: Results showed that sera of early and late pregnancy didn't have any effect on DC function, in comparison with normal mouse sera, while mid-pregnancy sera suppressed DC stimulation capacity significantly.

Conclusion: To our knowledge, this is the first report of the effect of pregnant serum on DC functions. Reduced MLR response in mid-pregnancy may be due to overflow of the locally present suppressor factors such as IL-4, IL-10, TGF-β and PGE-2.

Key Words: Dendritic Cells, Spleen, Pregnancy, Serum, Mixed leukocyte culture, and Mouse.

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