Induction of nephrotoxic serum nephritis in inbred mice and suppressive effect of colchicine on the development of this nephritis

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Abstract

Accelerated nephrotoxic serum (NTS) nephritis is successfully produced in C57BL/6 mice, using anti-murine glomerular basement membrane (GBM) rabbit antiserum. Anti-murine GBM rabbits antiserum was obtained by immunization of New Zealand white rabbit with trypsinized GBM antigen from normal C57BL/6 mice. Preimmunization with normal rabbit IgG and injection with 150 microl of NTS induced typical NTS nephritis with cellular proliferation in glomeruli, occlusion of glomerular loops, crescents, tubulointerstitial changes and hyperazotemia within 14 days. Polymorphonuclear leucocytes (PMN) have an important role in induction and development of NTS nephritis. Furthermore, clinically used colchicine is thought to suppress functions of PMN. Therefore, the therapeutic effect of colchicine on NTS nephritis was examined. The histological score (HS) of the group treated with 60 microg kg (-1) of colchicine (2.8 +/- 0.5) was significantly lower than that of positive control group (4.03 +/- 0.3).The direct immunofluorescent microscopic study revealed that there is no quantitative difference in the deposition of rabbit IgG, mouse IgG and C3 in GBM between these two groups. Urinary protein excretion and hyperazotemia were significantly suppressed by treatment with 60 microg kg (-1) of colchicine. A NTS nephritis model was established, it was found that colchicine may have a suppressive effect on the development of glomerular nephritis.