Long-term treatment of pigs with low doses of monoclonal antibodies against porcine CD4 and CD8 antigens

In vivo depletion of lymphocyte subsets allows investigation of the role of specific subsets in protective immunity. In the present study we evaluated the effects of long-term, low-dose treatment with murine monoclonal antibodies (mAbs) against porcine CD4 and CD8 surface antigens on lymphocyte subsets in pigs. Four-week-old pigs were treated by intramuscular injections of hybridoma cell culture supernatants containing anti-CD mAbs twice a week for a period of 5 weeks. The immunomodulatory effects of the treatments were assessed by flow cytometry (FCM) analysis of peripheral blood lymphocytes. Treatment with the anti-CD4 mAb almost completely eliminated the CD4(+) T-cell subset from the circulation after 2 weeks of therapy. This depletion persisted until the end of the experimental period 5 weeks after initiated therapy. Treatment with the anti-CD8 mAb was less effective, reducing the CD8(+) T-cell subset in peripheral blood by approximately 50% of the initial level after 3 weeks of therapy. Further, the anti-CD8 mAb-treated pigs showed a parallel increase in the CD4(+) T-cell subset from day 7. Two-colour FCM analysis indicated that a shift in phenotype from single-positive CD4(+)CD8(-) to double-positive CD4(+)CD8(+) T-cells might have occurred in these pigs. In the present experiment we demonstrated specific modulation of the peripheral blood T-lymphocyte population in pigs with continuous low-dose injections of specific mAb. The ability to modulate individual T-cell subsets should provide a method to elucidate their functionality in protection against infectious disease.

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