addition. Seven of the nine fractures were sustained on high rise cycles. This proportion does not differ significantly from the proportion in the rest of the injured series ($0{\cdot}05 < P < 0{\cdot}1$) but does differ from the proportion in controls ($P < 0{\cdot}002$). Four children had genital injuries, four had significant dental injuries, and two had splenic injuries.

Of the 58 accidents, 24 took place on borrowed bicycles, six on bicycles owned less than three months and 28 on bicycles owned more than three months. The proportion of ordinary to high rise bicycles in these groups did not differ significantly.

Discussion

Our study seems to reinforce the view that high rise bicycles are less safe than those of the conventional design. Nevertheless, clearly other factors are implicated in bicycle accidents in children. Unfamiliarity with the machine seems to be important, as over half the accidents occurred on bicycles which had been either borrowed or owned less than three months. As in other studies, many more boys than girls were affected, and this suggests that personality and patterns of play may be important.

The two children who died were both riding machines of conventional design and were in collision with lorries. Craft[3] suggested that high rise machines are no more liable to accidents involving another vehicle than conventional bicycles. The Consumers' Association[4] commented that in general high rise machines tipped over twice as easily as other bicycles. Nevertheless, recently there have been modifications to the design of one of the commonly available high rise machines, bringing the centre of gravity further forward. Moreover, bicycles with the same general style as high rise machines but with equal size wheels are now being made and advertised.

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Splenic suppressor cells in hypogammaglobulinaemia

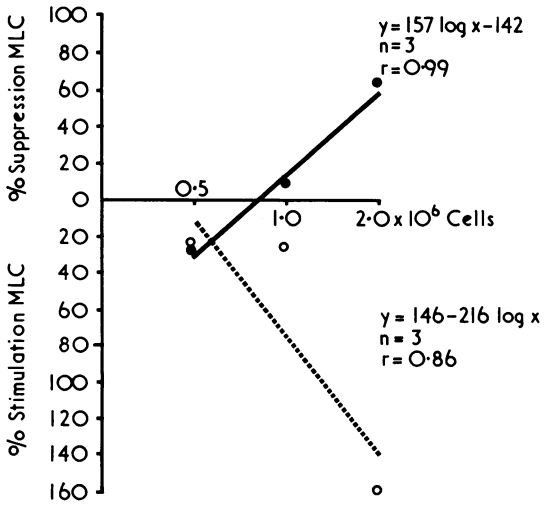
Immune processes may be controlled by a population of immunoregulatory lymphocytes known as suppressor cells. We have been able to find such cells in the spleen[1] and thymus[2] but not in lymph nodes or peripheral blood. Some patients, however, with common variable hypogammaglobulinaemia have circulating T lymphocytes able to depress immunoglobulin synthesis in normal B lymphocytes.[3] A woman who came under our care for recurrent respiratory infections was found to have hypogammaglobulinaemia, and this prompted a study of her peripheral blood lymphocytes.

Patient, methods, and results

A 22-year-old woman with known bronchiectasis presented with recurrent respiratory infection. Physical examination showed scattered rhonchi at both lung bases and pronounced dyspnoea. Her spleen was palpable 4-5 cm below the left costal margin. A chest *x*-ray picture showed patchy infiltrates consistent with bronchiectasis. Protein electrophoresis unexpectedly gave the following values: albumin 44 g/l, α_1-globulin 3 g/l, α_2-globulin 8 g/l, β-globulin 9 g/l, γ-globulin 2 g/l (normal range 5-16 g/l), and total protein 66 g/l. Quantitative immunoglobulin analysis showed IgG 0·14 g/l (normal range 8-18 g/l), IgA $<$ 0·05 g/l (normal range 0·9-4·5 g/l), and IgM 0·04 g/l (normal range 0·7-2·8 g/l). The α_1-antitrypsin concentration, total complement, and relative proportion of T and B lymphocytes in the peripheral blood were normal. In-vitro responses to the mitogens phytohaemagglutinin, concanavalin A, and pokeweed were normal.

Hypogammaglobulinaemia was diagnosed and a search for peripheral blood suppressor cells undertaken.[1 2] In previous assays suspensions of spleen lymphocytes were incubated for three days; added to a mixed lymphocyte culture (MLC) in varying doses; and the percentage depression of counts from tritiated thymidine taken up by the culture was calculated. In the present case a suspension of peripheral blood lymphocytes was prepared by layering on a Ficol-Hypaque gradient, and these cells were added to an MLC from normal subjects. As a control, peripheral blood lymphocytes from a normal volunteer were added to similar cultures.

The results are shown in the figure. In our patient low doses of cells produced some stimulation of the MLC, but as the added dose of peripheral lymphocytes was increased the degree of suppression of the MLC increased. An excellent correlation between the log of the dose and the degree of suppression was seen ($r = 0{\cdot}99$). In contrast, peripheral blood lymphocytes from a normal volunteer stimulated the MLC, and again a correlation with the log of the cell dose was seen ($r = 0{\cdot}94$). The patient's dose-response curve was similar to one found previously when splenic lymphocytes were used.[1]



Dose-response curves for suppression of mixed leucocyte culture (MLC) by peripheral lymphocytes in patient with hypogammaglobulinaemia (solid line), and stimulation of MLC by normal peripheral lymphocytes (dashed line). Standard deviation for each point was about 10%. Each point is mean of three observations.

Comment

Our patient clearly had circulating peripheral lymphocytes able to inhibit an MLC. Moreover, the quantitative pattern of inhibition was identical with the one that we have observed in splenic lymphocytes. The results suggest that the patient's peripheral suppressive lymphocytes may have been of splenic origin and support the hypothesis that some types of hypogammaglobulinaemia may be due to excessive suppressor-cell activity.

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