SUPPRESSOR CELL ACTIVITY IN MALARIOUS PATIENTS' BLOOD

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OBJECTIVE : To study the suppressor cell activity in the peripheral blood mononuclear cells from patients with malaria.

BACKGROUND : Insofar as suppressor T-cells have been shown to be activated in other protozoan infections, e.g., trypanosomiasis, it would be of interest to determine if suppressor T-cells function normally in patients with naturally acquired malaria. Up to now there has been no convincing evidence for their involvement in malaria infections. However, the recent findings that the peripheral blood T-cell population is decreased in patients with malaria (1), and the occurrence of lymphocytotoxic antibodies (2), as well as, serum blastogenic inhibiting factors (3) in the sera of a high percentage of patients with naturally acquired malaria suggest that a defect in suppressor T-cells may be one mechanisms that influences or regulates the host's immune response to malaria infection.

METHODS : Con A suppressor cell activity of malarious patients' peripheral blood cells was measured using unfractionated mononuclear cells purified from fresh heparinized blood by Ficoll-Hypaque (4) gradient separation.

Aliquots of cells from the patients or healthy Thais were precultured at 37°C at a concentration of 2-5 x 10^6/ml. A standardized amount of Con A was added to one lot of cells, but not to a control set. After 48 hours incubation at 37°C, the cells were washed twice with media and resuspended in media containing 50 μg/ml mitomycin C and incubated an additional 1 hour. A standardized number of the respective Con A treated and control cells were mixed with allogeneic responder cells in microculture wells. The cells were then incubated for 96 hours with either pytohemmagglutinin (PHA), Concanavalin A, Pokeweed mitogen (PWM), or Mitomycin C treated allogeneic stimulator cells (MLC). Then ^{3}H-thymidine was added to each culture well and the contents of each well was harvested 18-24 hours later using a MASH microtiter automatic cell harvester. Incorporation of ^{3}H-thymidine into cells was measured by liquid scintillation counting.

Degree of suppression was calculated according to the previously described formula (5).

A comparison of Con A generated suppressor activities in various patient and control individuals are shown in Figures 1 and 2. In malarious patients the mean level of suppressor cell activity was substantially reduced as compared to controls. Because of the effect of age on the magnitude of

Con A induced suppressor cell activity, we age matched our study groups as closely as possible.

Further studies are aimed at determining :

1. if patients whose serum contain antibodies against T-cells lack the subset of suppressor cells.

2. if patients lacking suppressor cells have a significantly higher number of B cells secreting immunoglobulin, and

3. if the presence of these autoantibodies against suppressor cells appears to correlate with disease activity.

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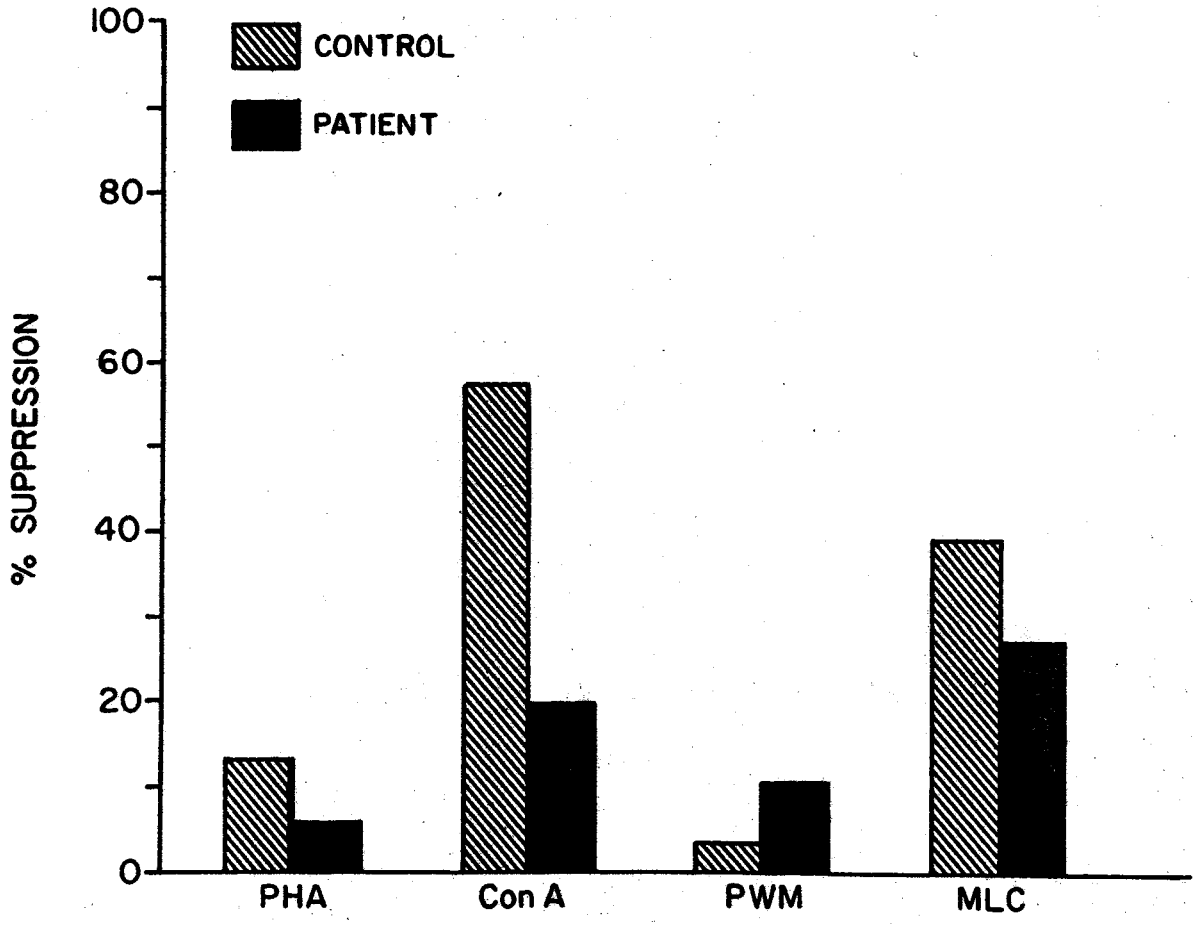

FIGURE I. Mean Con A-induced Suppression (8 assays) of Mononuclear Cells Obtained from Patients with P. falciparum Malaria

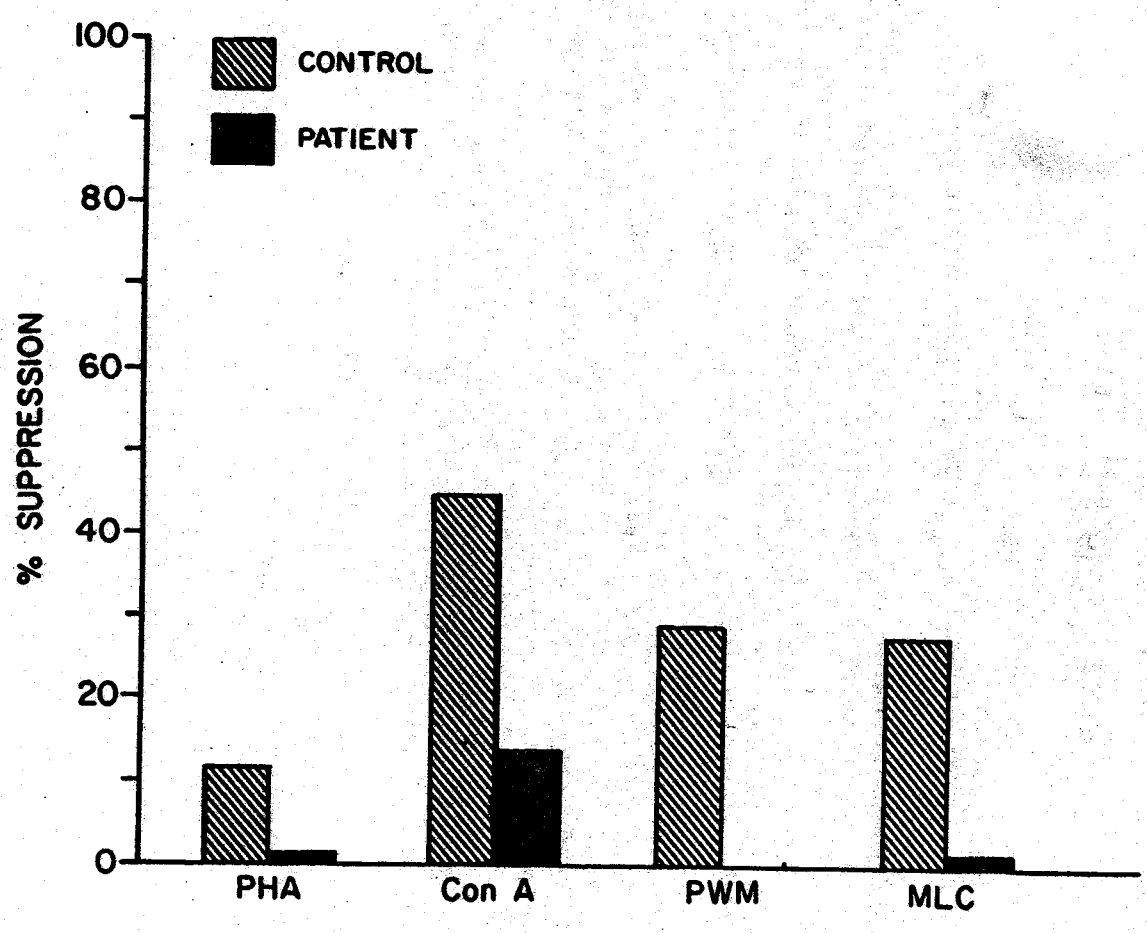

FIGURE 2. Mean Con A – induced Suppression (4 assays) of Mononuclear Cells Obtained from Patients with P. vivax Malaria.