DNA-synthesizing T and Non-T Cells in Bacterial Infections* **

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DNA-synthetisierende T- und Nicht-T-Zellen bei bakteriellen Infektionen


Schlüsselwörter: Bakterielle Infektionen – T-Zellen – lymphatische S-Phase-Zellen

Summary. The results of autoradiographic determination of DNA-synthesizing lymphocytes (³H-thymidine) in 10 patients with bacterial infections were compared with results in 10 normal patients and contrasted with 23 CLL patients in different stages [12]. In patients with infectious diseases the absolute number of T cells was lower and the mean values of S-phase T cells and S-phase non-T cells was higher than in normal persons. In contrast to the patients with infections, CLL patients in stage 0–III have lower S-phase T cell values and higher S-phase non-T cell values. In stage IV, on the other hand, all DNA-synthesizing lymphocytes are increased.

Key words: Bacterial infections – T cells – S-phase lymphoid cells

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A high uptake of $^3$H-thymidine in the blood of CLL patients indicates a high proliferation rate of lymphocytes, a rapid progression of the disease and a poor prognosis [8]. In a previous article we investigated the proliferation rate of lymphoid cells in CLL patients in different stages (0–IV, Rai-classification) of the disease [13]. To explain the extremely high values in stage IV (see Table 1), we suggested that frequent infections in the course of the final stage of the disease could possibly be the reason. To test this hypothesis we estimated T cells and DNA-synthesizing cells in patients with bacterial infections and 38–40 °C fever.

**Patients and Methods**

Ten patients with bacterial infections, 19–77 years of age, were investigated. All patients were untreated, except pat. Mül, who received Butazolidin and pat. Bel, who received chloramphenicol the day before the investigation. Ten normal persons were estimated with the same, formerly described, methods [13].

**Results and Discussion**

Quantitative results of the total number and of cells in S-phase of blood lymphocytes and subfractions of T and non-T lymphocytes are indicated in Table 1 and Fig. 1. Significant differences compared to the control group were demonstrated for lymphocytes, S-phase lymphocytes, S-phase T cells, non-T cells ($p < 0.01$), and T cells ($p < 0.1$). As compared to CLL, stage IV, differences were significant for lymphocytes, T cells, non-T cells ($p < 0.01$).

By using E-rosette markers and $^3$H-thymidine incorporation in vitro, [1, 4, 9, 10] we estimated the number of DNA-synthesizing lymphocytes and of subfractions of them in the blood of 10 patients with bacterial infections. Our normal T-cell values [3, 11] were in good agreement with Catovsky et al. [2], 700–1,600/µl; Jain et al. [7], 1,250–1,500/µl; and Huber et al. [6], 700–1,500/µl. To exclude precursor cells of granulocytes, bloodsmears were stained for peroxidase before autoradiography and Giemsa-staining were performed [5]. We compared the results and proliferation rates of: (1) lymphoid cells (S-phase lymphoid cells); (2) T cells (S-phase T cells); and (3) non-T cells (S-phase non-T cells) in patients with acute infections, normal persons, and patients with different stages of CLL. In infected patients more lymphoid cells, T cells and non-T cells, are marked with $^3$H-thymidine than in normal persons, but not so many as in stage IV of CLL [13]. The values in infected patients show that the very high T-cell proliferation in stage IV of CLL (about twice as high as compared to the infected patients) cannot only be caused by an increased incidence of infections in this group of patients.

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