

REFERENCES

1. Bancroft, J. D. & Stevens, A.: Theory and Practice of Histological Techniques, p. 156. Churchill Livingstone, Edinburgh, 1977.
2. Huber, J. D., Parker, F. & Odland, G. F.: A basic fuchsin and alkalised methylene blue rapid stain for epoxy embedded tissue. *Stain Technol* 43: 83, 1968.
3. Leder, L. D.: Über die selektive fermentstoffchemische Darstellung von neutrophilen myeloischen Zellen und Gewebestrastzellen im Paraffinschnitt. *Klin Wochenschr* 42: 553, 1964.
4. Lennert, K. & Pawaresch, M. R.: Mast cells and mast cell neoplasia: a review. *Histopathol* 3: 349, 1979.
5. Lever, W. F.: *Histopathology of the Skin*, 5th ed., p. 116. J. B. Lippincott Company, 1975.

Impairment of Some Microphage Functions in Recurrent Herpes simplex

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Abstract. Chemotactic, phagocytic and intracellular killing activities of polymorphonuclear leukocytes (PMNL) were investigated in vitro in 49 patients suffering from recurrent bouts of herpes simplex. A slight impairment of chemotactic activity and a markedly reduced capacity of killing *Candida albicans* blastospores were revealed. Phagocytic capacity and NADH-dependent oxidase activity of PMNL proved to be normal. The results point to an alteration of some PMNL functions in these patients.

Key words: Recurrent herpes simplex; Microphage function; Chemotaxis; Killing test

Polymorphonuclear leukocytes (PMNL), or microphages, resp., are intimately involved, by means of their chemotactic, phagocytic and intracellular killing properties, in the complex organization of the immunological balance and antimicrobial protection of the individual (2, 9). For control of herpes virus hominis infections, the cell-mediated immune response also plays an important part (8). Recent

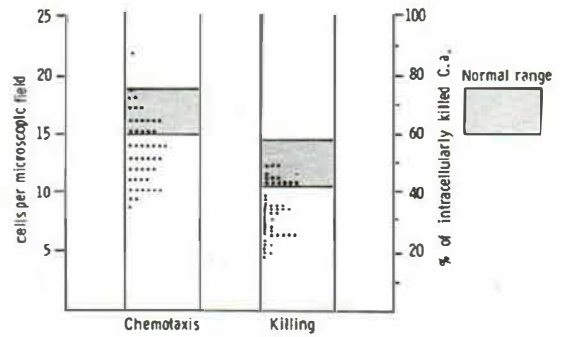


Fig. 1. Results of chemotactic and intracellular killing activities of PMNL in RHS ($n=49$).

studies on recurrent herpes simplex (RHS) has shown some defects or disturbances of lymphocyte functions, in particular of the T cell line (4, 6). However, the possibility of an additional defect in the PMNL system—which, like a Rapid Deployment Force of the cellular immune apparatus, constitutes the body's 'first line of defence'—is still an open question. The present paper deals with in vitro investigation into the functional activity of PMNL in patients suffering from RHS.

MATERIAL AND METHODS

The study involved 49 patients (38 women and 11 men, mean age 34 years) suffering from RHS, examined in 1978–80. Diagnosis was based in the typical clinical symptoms of labial or genital lesions.

Individual evolution of RHS ranged from 2 to 15 years. Relapses occurred in periods varying from 3 weeks to 6 months. All the data were compared with those of healthy individuals ($n=100$) in a sex- and age-matched control group examined the same way.

PMNL were separated using the sedimentation method described elsewhere (2). Chemotaxis of PMNL was tested by means of the 'in filter count' technique, by a modification of Boyden's method (1, 2). Intracellular killing activity, phagocytosis of viable and heat-inactivated *Candida albicans* (C.a.) blastospores were assessed by applying Lehrer's method (5), and the NADH-dependent oxidase activity using the nitroblue-tetrazolium test (NBT) *ad modum* Preisig & Hitzig (7).

RESULTS

Compared with the findings in 100 normal test persons, a marked disturbance of chemotactic activity and intracellular killing of C.a. blastospores was observed in most of the cases (Fig. 1). Phagocytic capacity and the NADH-dependent oxidase activity of PMNL appeared to be regular (Fig. 2).

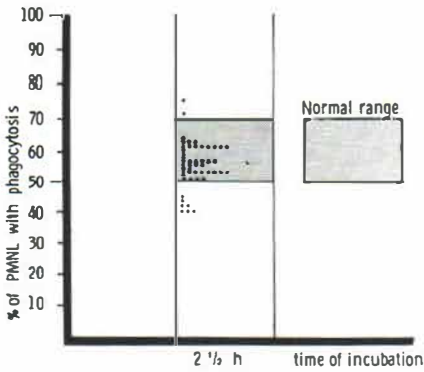


Fig. 2. Results of phagocytic activity of PMNL in RHS ($n = 49$).

DISCUSSION

Recent investigations on T lymphocytes in patients suffering from RHS demonstrated some abnormalities of T cell function reflected by decreased numbers of T lymphocytes in peripheral blood and/or impaired lymphocyte transformation capacity (4, 6). A reduction in the number of positive skin reactions to various recall antigens, and a reduction of C_1 have also been observed. The state of humoral immunity seems to be less important, since even in patients with a lack of immunoglobulins, no predisposition to RHS was observed (10).

There is evidence from our results that in the majority of patients with RHS some additional alteration in PMNL function does exist, manifesting itself in a marked disturbance of chemotactic activity and reduced intracellular destruction of C.a. (Fig. 1). On the other hand, the phagocytic capacity of PMNL is close to normal and the NADH-dependent oxidase activity, on which the intracellular production of H_2O_2 depends, is not impaired at all (Fig. 2).

Further data (unpublished so far) on peripheral blood lymphocytes in patients suffering from RHS demonstrate some derangement of the T-cell system. Disturbances in the PMNL system, together with abnormalities in various T cell, complement (C_1) and macrophage functions (3, 10), apparently point to a disordered balance in the complex organization of cellular defence mechanisms in many patients with protracted RHS.

REFERENCES

- Boyden, S. The chemotactic effect of mixture of antibody and antigen on polymorphonuclear leukocytes. *J Exp Med* 115: 453, 1962.
- Djawari, D., Bischoff, T. & Hornstein, O. P.: Impairment of chemotactic activity of microphages in chronic mucocutaneous Candidosis. *Arch Dermatol Res* 262: 247, 1978.
- Jarisch R. & Sandor, I.: MIF in der Therapiekontrolle von Herpes simplex rezidivans. Behandlung mit Levamisole. BCG, Urushiol and Herpes Antigen Vaccine. *Arch Dermatol Res* 258: 151, 1977.
- Khan, A., Hansen, B., Hill, N. O., Loeb, E., Pardue, A. S. & Hill, J. M.: Transfer factor in the treatment of herpes simplex types 1 and 2. *Dermatologica* 163: 177, 1981.
- Lehrer, R. L.: The fungicidal activity of human leukocytes. In *Phagocytic Mechanisms in Health and Disease* (ed. by R. C. Williams Jr and H. H. Fudenberg), p. 151. Thieme, Stuttgart, 1972.
- Lopez, C. & O'Reilly, R. J.: Cell-mediated immune responses in recurrent herpes virus infections. *J Immunol* 118: 895, 1977.
- Preisig, E. & Hitzig, W. H.: Nitroblue-tetrazolium test for the detection of chronic granulomatous disease. Technical modification. *Eur J Clin Invest* 1: 409, 1971.
- Rasmussen, I. E., Jordan, G. W., Stevens, D. A. & Merigan, T. C.: Lymphocyte interferon production and transformation after herpes simplex infections in humans. *J Immunol* 112: 728, 1974.
- Schiefer, H. G.: Physiologie und Pathophysiologie der antibakteriellen Phagozytose. I. Physiologie. *Med Klin* 70: 1615, 1975.
- Vignale, R. A., Lasalvia, E. & Espasandin, J.: Complement components in recurrent genital herpes simplex. *Int J Dermatol* 20: 487, 1981.

Accidental Induction of Photocontact Allergy to *Heracleum laciniatum*

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Abstract. Photocontact allergy to psoralens in *Heracleum laciniatum* occurred in two persons volunteering for investigations into phototoxicity of plant homogenates and purified psoralens. Photoallergy was noted following the fifth exposure in case 1, and the sixth in case 2. Testing with diluted solutions demonstrated allergy to sphondin, isobergaptin and pimpinellin.

Key words: Photocontact allergy; *Heracleum laciniatum*, Sphondin; Isobergaptin; Pimpinellin