Original Contributions

Immunopathological Studies on Alopecia Areata*

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Summary. Anti-endothelial cell antibodies could be removed from circulating lymphocytes by means of acid elution techniques in eight patients with different degrees of alopecia areata. These antibodies were specifically directed against the endothelial cells in the capillary network of the hair bulb, indicating the existence of an antigen, which is unique to these particular endothelial cells. These antibodies do not bind complement “in vitro” and are species-specific.

Circulating ANA (speckled type) were only noticed in cases with alopecia areata in spots. A significant decrease in circulating T cells was noticed in six of eight patients with a certain degree of alopecia.

Key words: Alopecia areata — Antibody against hair capillaries — Elution technique — Immunofluorescence


Schlüsselwörter: Alopecia areata — Antikörper gegen Capillaren im Haargebiet — Elutionstechnik — Immunfluorescenz

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Clinical and biological findings point to the possibility of immunological factors playing a paramount role in the pathogenesis of alopecia areata (a.a.). There have been several reports on the association of a.a. with one or more autoimmune diseases (Muller and Winkelmann 1963; Cunliffe et al. 1969) and on the significant relationship between a.a. and antibodies to thyroglobulin, parietal cells, thyroid cells, adrenal cells (Kern et al. 1973) and muscle tissue (Main et al. 1975).

In addition, in diseases where a decreased T cells-dependent immune response is at play, as in Down syndrome (Carter and Jegasothy 1976) and atopy (Ikeda 1967; Penders 1968), there seems to be an increased incidence of a.a., this agrees with a significant decrease in the number of circulating T cells which has been demonstrated in a.a. (Gianetti et al. 1978).

Immunofluorescence studies seem to confirm this point of view: immune deposits around the injured hair follicles and circulating antibodies on the membrana vitrea have been noticed in some cases of alopecia areata and alopecia totalis respectively (Fülop 1977).

On the other hand, the relationship between a.a. and autoimmunity has been denied (Betterle et al. 1975; Cochran et al. 1976) and in fact no antibodies to hair follicle cells have so far been demonstrated.

On these grounds we investigated the presence of specific antibodies “in vivo”, in the serum and on the membrane of circulating lymphoid cells in a.a. by using immunofluorescence and elution methods.

**Materials and Methods**

**Patients**

We studied eight patients, five males and three females, aged 17–42 at the time of examination. The degree and duration of the disease as well as localization of hair loss are summarized in Table 1. Classification of a.a. was based on clinical criteria, as described by Kern et al. (1973). The following abbreviations will be used in this article: alopecia areata in spots (AA), alopecia totalis (AT) and alopecia universalis (AU).

Only patients nos. 2 and 4 were in the stabilized stage of the disease with no spreading tendency of the bald spots.

As to family history, it is worth mentioning that the brother of case no. 4 and the mother of case no. 6 also suffered from a.a., whereas the mother of case no. 1 complained of asthma.

**Healthy Controls**

Eight healthy male controls, four with male pattern baldness, were included in this study for testing the serum and eluates of circulating lymphoid cells in the presence of antibodies.

**Biopsies**

Specimens were taken with 3 mm punch under local anesthesia (2% xylocaine) from

a) the areas involved in alopecia areata and male pattern baldness;

b) the borders of areas involved;

c) the clinically uninvolved scalp areas in patients with AA, AT, and the four non-bald male controls.

**Chemicals and Reagents**

1. Twenty milliliters of metrizoate sodium (Isopaque) solution was diluted with 25 ml of distilled water.

2. Ten parts of metrizoate (IP) were mixed with 24 parts of 9% solution of a copolymer of sucrose and epichlorohydrin (Ficoll).