assay for functional studies on human skin mast cells, since the assay requires between 1,000 and 1,500 mast cells per well.

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REFERENCES


Scarring Alopecia in Psoriasis

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Scalp biopsies were taken from 3 patients with a scarring alopecia associated with severe scalp psoriasis. The histological findings in each case showed inflammatory destruction of the infundibular region of the hair follicle. The similarity of these changes in each case strongly suggests an association with the psoriasis. Key words: Scalp folliculitis; Horizontal sections. (Accepted August 17, 1989.)

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Loss of scalp hair is a recognized feature of various forms of psoriasis, particularly acute erythrodermic psoriasis, and chronic plaque psoriasis in childhood (1). In the majority of such cases hair regrows once the psoriasis is in remission. However, one report suggests that psoriasis may also cause a destructive alopecia though only brief mention is made of the histological changes in these cases (2). We have seen 3 adults with scalp psoriasis and scarring alopecia. The clinical and histological features in these cases are described.

CASE REPORTS

In each case an elliptical skin biopsy was taken through the edge of an area of hair loss. This was bisected longitudinally and processed routinely for light microscopy. One half was sectioned in the standard way, that is vertically with respect to the skin surface. The other half was subjected to serial horizontal sectioning.

Case 1

A 24-year-old male with a 19-year history of psoriasis which had never been pustular or erythrodermic presented with a 1-year history of worsening of psoriasis on the scalp. Examination revealed the psoriasis to be localized to the scalp with areas of severe crusting and some pustule formation. There was an area of alopecia approximately 5 cm in diameter over the vertex (Fig. 1). A swab from this area produced a moderate growth of Staphylococcus aureus. No fungi were seen in a wet preparation or grown on culture.

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A biopsy through the edge of an area of hair loss showed almost total loss of hair follicles within the bald area. In the dermis there was a chronic inflammatory infiltrate surrounding the upper permanent infundibular portion of the surviving hair follicles. Some follicles also showed features of an acute folliculitis with collections of neutrophils in the pilosebaceous duct which in places invaded through the infundibular wall (Fig. 2). These inflammatory changes were associated with progressive destruction of the follicular epithelium. Changes were patchy in nature, severely damaged hair follicles being found adjacent to apparently normal ones (Fig. 3). The epidermis between the hair follicles showed changes of psoriasis.

He was treated with coconut oil, tar shampoo and oral fluocinacillin. Follow-up examination at 3 months revealed no scaling or inflammation of the scalp. The area of alopecia remained unchanged.

Case 2

A 78-year-old female presented with a 50-year history of psoriasis which had never been pustular or erythrodermic. She had required four hospital admissions for treatment. Her scalp had been severely affected at times. Examination revealed chronic stable plaque psoriasis on the limbs and trunk. There was scaling around the scalp margin, but otherwise no
scalp involvement. There was an area of patchy alopecia over
the vertex (Fig. 4).

The scalp biopsy showed very sparse hair follicles. Sebaceous
glands were completely absent. A patchy lymphocytic
infiltrate was present in the upper dermis which was localized
around surviving hair follicles (Fig. 5). There was extensive
liquefactive degeneration of the basal layer of the infundibular
epithelium. In places the infiltrate was invading the follicle
wall. Hair follicles were much easier to visualize in hori-
zontal sections. Changes were again patchy in nature, affect-
ed and normal hair follicles being found in close proximity to
each other (Fig. 6). Deeper sections showed absence of the
infiltrate around the lower portion of the hair follicles.

Her psoriasis cleared following standard treatment with
dithranol. Follow-up examination at 3 months showed no
change in the appearance of the scalp.

**Case 3**

A 31-year-old female presented with a 20-year history of
psoriasis which had never been pustular or erythrodermic.
She had required hospital admission on three occasions. Her
scalp was often the worst affected site. She had received
PUVA therapy for a 5-month period 10 years previously but
otherwise treatment had always been with topical agents.
Examination showed moderately extensive stable plaque psori-
asis on the trunk and limbs. There was severe scaling with
adherent crust formation on the scalp. Over the vertex there
was a patchy alopecia (Fig. 7).

The scalp biopsy showed a patchy lymphocytic infiltrate
around hair follicles in the upper dermis. In some areas there
was complete destruction of the upper permanent part of the
hair follicle (Fig. 8). Where follicle epithelium had been com-
pletely destroyed, naked hair shafts could be seen lying free in
the dermis. These were surrounded by a granulomatous infil-
trate consisting of macrophages and foreign body giant cells
(Fig. 9). Horizontal sectioning again revealed the patchy na-
ture of the inflammatory changes around the hair follicles
with thinning of the follicular epithelium.

The scalp was treated with coconut oil, topical steroids and
tar shampoo. Follow-up at 3 months revealed considerable
improvement in the psoriasis, but no change in the hair loss.
DISCUSSION

Each of our cases showed similar histological features. The most consistent change was an accumulation of chronic inflammatory cells around the infundibular region of the hair follicle. This was associated with progressive destruction of the follicular epithelium and loss of sebaceous glands. Complete destruction of follicular epithelium sometimes resulted in keratinized hair shafts lying free in the dermis and provoking a granulomatous reaction. Case 1 also showed features of an acute folliculitis, possibly due to superimposed staphylococcal infection.

The use of horizontal sectioning to study hair follicle pathology has been advocated by Headington (3). Combining serial horizontal sectioning with routine vertical sectioning has a number of advantages. Where there is a decrease in the number of hair follicles, these are much easier to visualize in horizontal sections. Inflammatory changes, particularly if patchy, may be missed in vertical sections and are best assessed in horizontal sections, as was the case in each of the 3 subjects studied here. Serial step sectioning also allows the depth of involvement of the inflammatory changes to be readily assessed.

The histological changes noted are not specific for psoriasis. Indeed, in our experience, destruction of the upper permanent portion of the hair follicle is a feature common to all scarring alopecias. Naked hair shafts in the dermis provoking a foreign body reaction are also frequently found, particularly if transverse sectioning is used. This is in contrast to the non-destructive changes of alopecia areata where inflammation occurs around the lower transient portion of the hair follicle.

It is possible that the alopecia in the 3 patients reported here was due to causes unrelated to their psoriasis. However, the similarity of the changes in each case, the long history of severe scalp involvement and the absence of any other causes for the alopecia strongly suggests an association with the psoriasis. The clinical and pathological classification of scarring alopecias is difficult and controversial. The correct diagnosis may be apparent if specific histological features are present or if typical skin lesions (e.g. lichen planus) are present elsewhere on the skin. Frequently, however, such signs are lacking. Various inflammatory diseases affecting the scalp may cause follicular destruction, e.g. kerion, folliculitis decalvans (4), severe seborrheic eczema (5), probably as a non-specific secondary phenomenon. We feel that psoriasis should be included in this group, and that severe psoriasis of the scalp may cause inflammatory changes which result in a scarring alopecia.

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REFERENCES