

## Classification of the types of androgenetic alopecia (common baldness) occurring in the female sex

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### SUMMARY

Androgenetic alopecia in the female occurs much more frequently than is generally believed. The condition is still considered infrequent, for it differs, in its clinical picture and in the sequence of events leading to it, from common baldness in men. To facilitate an early diagnosis (desirable in view of the therapeutic possibilities by means of antiandrogens) a classification of the stages of the common form (female type) of androgenetic alopecia in women is presented. The exceptionally observed male type of androgenetic alopecia can be classified according to Hamilton or to the modification of this classification proposed by Ebling & Rook.

The occurrence of androgenetic alopecia (common baldness) in both sexes is uncontested (Sabouraud, 1902; McCarthy, 1940; Maguire & Kligman, 1963; Ludwig, 1964a; Rook, 1965; Montagna & Parakkal, 1974). Although Behrman (1952) pointed out that androgenetic alopecia in the female sex ('female pattern baldness') is of more frequent occurrence than generally believed (a statement that has been confirmed since by Binazzi & Wierdis (1960); Barman, Pecoraro & Astore (1962); Smith & Wells (1964); Ludwig (1964b); Vadász & Debreczeni (1967); Goldschmidt (1969)), it is still considered infrequent or even exceptional (Pillsbury, Shelley & Kligman, 1956). The main reason for this erroneous belief is that many cases of sparseness or diffuse thinning of the hair are rather meaninglessly diagnosed as 'diffuse alopecia'. This misinterpretation often occurs because many dermatologists are unaware that the clinical picture of androgenetic alopecia in the female and the sequence of events leading to it differ from those observed in men.

Treatment with antiandrogens during early stages can arrest or at least retard the progress of androgenetic alopecia to a stage where correction with a wig would be required (Neale, Krebs & Bettendorf, 1971; Winkler & Schäfer, 1972; Ludwig & Zaun, 1973). Therefore, early and correct diagnosis is highly desirable. Accordingly the objective of this paper is to facilitate the diagnosis by a classification of the consecutive stages of androgenetic alopecia in women, comparable to that given by Hamilton (1951) for the common baldness in men. The following introductory remarks may contribute to a better understanding of the proposed classification.



FIGURE 1. (a-c). Perceptible thinning of the hair on the crown with a well preserved frontal fringe. Early stage of the female type of androgenetic alopecia.

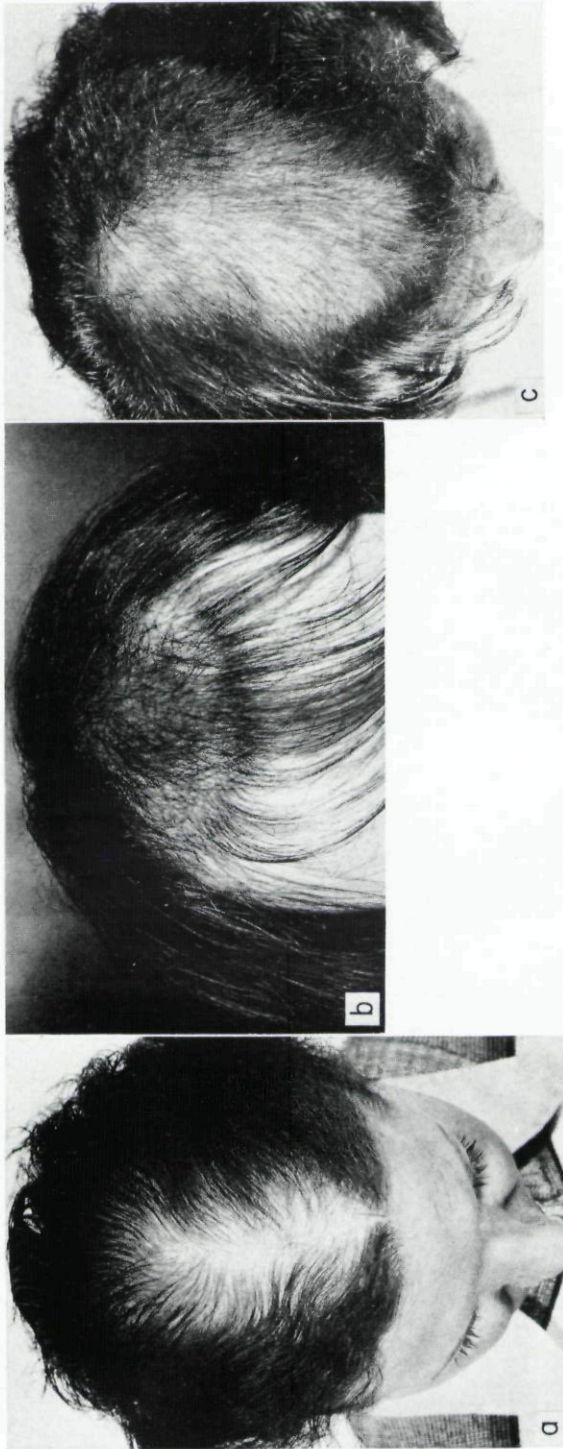


FIGURE 2 (a-c). Pronounced thinning of the hair on the crown still showing a well preserved frontal fringe. Advanced stage of the female type of androgenetic alopecia.

(Fig. 2b reproduced from Zaun, H. (1963) *Zeitschrift für Haut und Geschlechtskrankheiten*, 35, 35.)





FIGURE 3 (a-c). Total or almost total denudation of the crown frontally still limited by a fringe of hair. Facultative final stage of the female type of androgenetic alopecia.

## CLINICAL PICTURE

The balding process in the female starts with a uniform rarefaction of the hair on the crown. The resulting oval shaped area of rarefied hair is surrounded by a circular band of normally dense hair of variable breadth. Frontally the fringe is narrow (1–3 cm), laterally in the temporo-parietal region about 4–5 cm wide. On the back of the head the fully haired occiput is separated from the area of rarefied hair by a semicircular line lying between the vertex and the occipital protuberance. Thus the shape of the area in the female closely resembles that in far advanced male baldness, differing from it only by the preserved frontal fringe.

Within this oval shaped area on the crown the hair is definitely rarefied. Besides inconspicuous hairs of normal length there is a variable percentage of hairs which are thinner, shorter, and occasionally less pigmented. A usually well preserved fringe of hair along the frontal hair line is quite characteristic. (Fig. 1a–c).

With advancing age, the rarefaction on the crown within the aforementioned area becomes more pronounced and the number of thinner and shorter hairs increases. Camouflage of the denudation by special hair styles is no longer possible (Fig. 2a–c). In some women, usually not before the menopause, the crown may become literally bald. Contrary to what happens in men, a fringe of hair along the frontal hair line persists. (Fig. 3a–c). This development is the commonly observed one and represents what can be named the *female type of androgenetic alopecia*.

Apart from this 'female type' androgenetic alopecia in females can in exceptional cases follow a course similar to that seen in men. In such cases the process starts with deep fronto-temporal recessions and the following stages are identical to those defined by Hamilton (1951) (Figs 5–7).

In postmenopausal women occasionally one can observe a special form of alopecia. Here the diffuse thinning of the hair is limited to an orbicular zone around the vertex (skull-cap alopecia). The condition is possibly a variant of androgenetic alopecia. The preceding stages of this form are, however, not known, nor were testosterone excretion studies performed in such cases.



FIGURE 4. Schematic illustration of the 3 grades of the female type of androgenetic alopecia as shown in Figs 1–3.

## CLASSIFICATION

On the basis of 468 cases observed during a period of several years the stages of development of androgenetic alopecia in the female may be classified as follows:



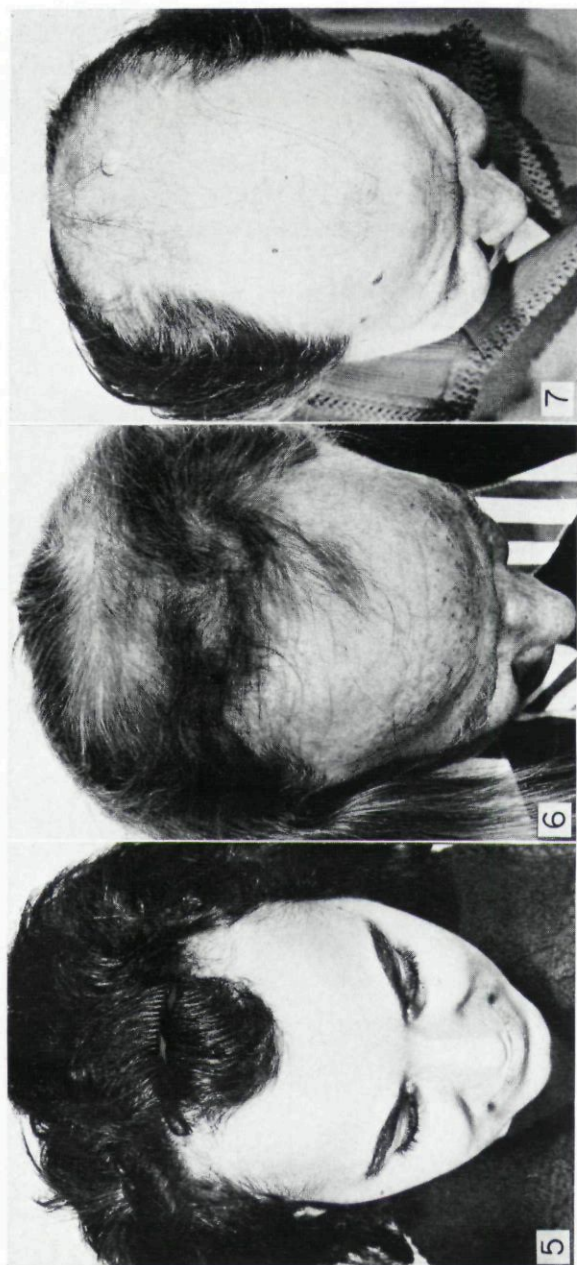


FIGURE 5. Deep fronto-temporal recedings in a 24 year-old female patient with accompanying hirsutism. Male type of androgenetic alopecia corresponding to Hamilton type IV (I in the modification of Ebling-Rook).

FIGURE 6. Male type of androgenetic alopecia in a 66 year-old female patient treated for years with testosterone-containing injections. Corresponding to Hamilton type VII (IV in the modification of Ebling-Rook).

FIGURE 7. Hippocratic baldness in a 57 year-old female patient with extremely high urinary testosterone excretion. Corresponding to Hamilton type VIII (V in the modification of Ebling-Rook).

*Grade I.* Perceptible thinning of the hair on the crown, limited in the front by a line situated 1–3 cm behind the frontal hair line (Fig. 1a–c and 4a).

*Grade II.* Pronounced rarefaction of the hair on the crown within the area seen in Grade I (Fig. 2a–c and 4b).

*Grade III.* Full baldness (total denudation) within the area seen in Grades I and II (Fig. 3a–c and 4c).

These grades I–III which represent stages of the female type of androgenetic alopecia are schematically illustrated in Fig. 4a–c.

The stages of development of the rather exceptional 'male type' (Figs 5–7) may be classified according to Hamilton (1951) or to Ebling & Rook (1972), who in their modification of Hamilton's original classification distinguish 5 types of common baldness in the male.

For instance Fig. 5 can be classified equal to Hamilton IV (or Ebling and Rook I), Fig. 6 equal to Hamilton VII (or Ebling and Rook IV) and Fig. 7 equal to Hamilton VIII (or Ebling & Rook V).

#### DISCUSSION

Sex determined differences in the aspect, structure and function of various human organs are well known. However, the reasons for different appearances of androgenetic alopecia in the male and the female and the occurrence of two different types of the same condition in the female are still not fully understood. Based upon urinary testosterone excretion studies (Apostolakis, Ludwig & Voigt, 1965; Pierard, Kint & de Backer, 1968) the view has been expressed (Ludwig, 1968) that there is a relationship between the degree of androgenic stimulation and the type of androgenetic alopecia which develops in genetically predisposed females. Thus moderately increased levels of circulating androgens appear to be correlated with the female type, while women with testosterone levels comparable with those in normal men develop the male type of baldness, indistinguishable from that occurring in men. In agreement with this concept the patient shown in Fig. 5 had besides her deep fronto-parietal recessions also a pronounced hirsutism. The female patient of 66 years of age (Fig. 6) has been treated for years with injections of high doses of testosterone. The patient shown in Fig. 7 had a urinary excretion of testosterone far exceeding all values found in normal young men. Further comparative endocrinological studies of females with the male and female type of androgenetic alopecia are required to corroborate the validity of this concept.

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