

Diffuse Partial Woolly Hair

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We report here a 14-year-old girl with diffuse partial woolly hair. The patient presented mild hair loss associated with the presence of fine, short and kinky hairs closely interspersed with the normal hair throughout the scalp. The pathology of the scalp revealed the presence of intermediate-sized hair follicles regularly intermingled with normal follicles in each follicular unit. The possibility that diffuse partial woolly hair may result from a progressive miniaturization of the hair follicles may explain the presence of evident hair thinning in several adult patients affected by this rare abnormality. *Key word: androgenetic alopecia; histology.*

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Diffuse partial woolly hair (DPWH) is a rare disturbance of scalp hair growth, first described by Ormerod et al. in 1987 (1). Patients affected by this condition present two distinct hair populations: straight, blond or brown, long shafts are interspersed with short, fine, hypopigmented and curly shafts. We report here a 14-year-old girl with such scalp hair abnormalities.

CASE REPORT

A 14-year-old girl was referred to our department of clinical dermatology because of mild hair loss. Physical examination revealed normal-looking light brown hair. On closer inspection, short and curly, hypopigmented, easily pluckable hairs were found, interspersed throughout the scalp with the normal straight hairs (Figs. 1, 2).

Hairs elsewhere on the body did not show any abnormality. The

patient stated that she had first noticed isolated curly hairs on her scalp 1 year before. The number of these abnormal hairs had gradually increased over time in association with a mild hair loss. No other members of the child's family were affected. Her father and her 19-year-old brother suffered from androgenetic alopecia.

The patient had never suffered from any systemic illness and had no history of recent drug administration. She had not used chemical scalp treatment and her hairs had never been dyed or permanent-waved.

Direct examination of the abnormal hairs with light microscopy revealed a considerable percentage of telogen hairs (20%). The hair shafts were thinner than the normal ones and presented irregular torsions and alternating segments of different colors. When placed into boiling water, the curly hairs did not assume the spiral appearance typical of woolly hairs.

At scanning electron microscopy the affected hairs showed flattening of the hair shafts and the presence of numerous kinks. Cuticle cells had a normal appearance, but in some portions of the hair shafts their number was reduced, producing fractures and cortical exposure (Fig. 3).

The 1-year follow-up revealed a gradual mild increase of the number of curly hairs.

The patient was submitted to two scalp biopsies: a 5-mm punch biopsy for transverse sections and a 4-mm punch for longitudinal sections.

Longitudinal sections showed the absence of inflammatory infiltrate and the presence of normal parallelly arranged anagen hair follicles containing terminal hair shafts. In particular, no curvatures were detectable. Transverse sections showed a normal density of hair follicles. Three different types of anagen hair shafts were detectable: normal terminal hair shafts with a mean diameter of 0.080 mm, vellus hair shafts with a mean cross-sectional diameter of less than 0.030 and intermediate hair shafts measuring 0.04 to 0.06 mm. Normal terminal follicles measured about 0.29 mm in the transverse sections just below the isthmus and contained medullated hair shafts. Each follicular unit contained two or three normal terminal follicles, one or two intermediate follicles and a vellus follicle (Fig. 4).

No evident structural abnormalities were detectable and hair shafts presented normal round cross sections.

DISCUSSION

In 1987 Ormerod et al. (1) regarded DPWH as a separate entity in the woolly hair group, and they suggested that this pattern of

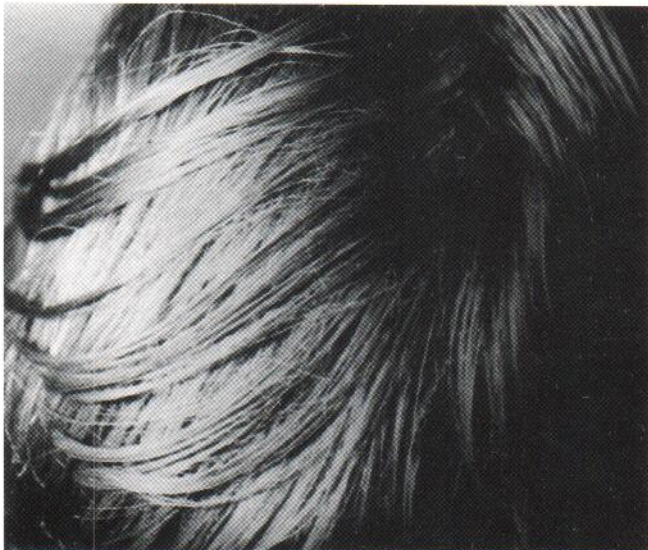


Fig. 1. DPWH. Note the presence of curly, thin, hypopigmented hairs interspersed with the normal straight hairs.



Fig. 2. Normal hairs and curly hairs taken from our patient's scalp.

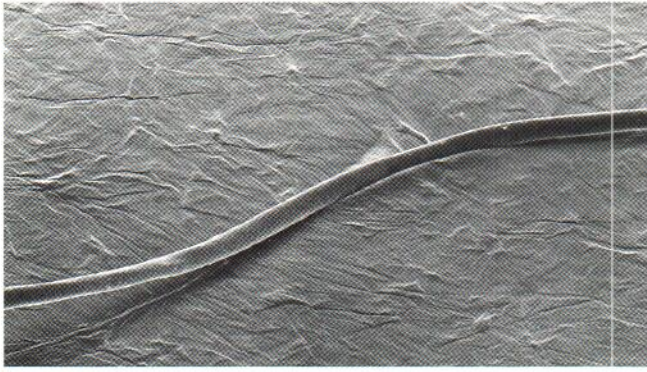


Fig. 3. S.E.M. of a curly hair, showing flattening of the hair shaft and the presence of numerous kinks.

hair growth is probably inherited as an autosomal dominant trait. Recently 4 cases with similar characteristics of the hair scalp have been reported by Lalevic-Vasic et al. (2), who found that under scanning-electron microscopic analysis straight and curly hairs presented similar abnormalities even though they showed different degrees of severity.

In our case the normal hair did not show any sign of kinking. On the other hand angular kinks and weathering of the cuticular cells were present along the shafts of the curly hairs.

Our pathological study indicates that DPWH is characterized by a reduction in the number of terminal hair follicles and by the presence of intermediate-sized hair follicles regularly intermingled with normal follicles in each follicular unit. These intermediate follicles probably produce the abnormal curly hair shafts, which are in fact considerably thinner than the straight hair shafts. The possibility that DPWH may result from a progressive miniaturization of the hair follicles may explain the presence of evident hair thinning in several adult patients affected by this hair abnormality (3 of the 7 previously reported cases). In this respect DPWH has some similarities with acquired progressive

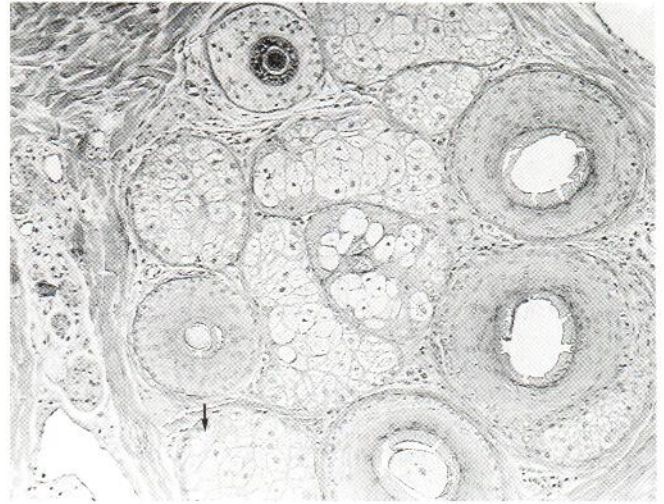


Fig. 4. Transverse section of a scalp biopsy just below the isthmus, showing a follicular unit containing three normal terminal follicles, one intermediate follicle (arrow) and one vellus follicle.

kinking of the hair (APKH), where the development of symmetrical kinking of frontal, temporal and parietal hairs precedes the development of androgenetic alopecia (3, 4).

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