CASE REPORT

Ash-leaf spots or naevus depigmentosus: a diagnostic challenge

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SUMMARY

Ash-leaf spots, a diagnostic manifestation of tuberous sclerosis complex, are sometimes difficult to differentiate from other hypopigmented lesions. Vitiligo, naevus anaemicus and naevus depigmentosus are important clinical differentials for ash-leaf spots. Among these naevus depigmentosus poses maximum difficulty because of clinical as well as histological similarities. Here we describe a 6-month-old child with multiple segmental hypopigmented macules over the face. In isolation lesions appeared to be those of naevus depigmentosus. However, the presence of other manifestations of tuberous sclerosis favoured the diagnosis of ash-leaf spots. Important similarities and differences between the two have also been discussed.

BACKGROUND

Localised hypopigmentation is a common cause of dermatological consultation in children. Important differential diagnoses to be considered in such cases are vitiligo, naevus depigmentosus (ND), naevus anaemicus, ash-leaf spots (ALS), piebaldism and hypomelanosis of ito. Vitiligo can easily be diagnosed because of its acquired and progressive nature and also by its chalk white colour. Naevus anaemicus on diascopy merges with the surrounding skin and does not get accentuated on Wood's Light Examination as it lacks any underlying pigmentary abnormality and is because of locally increased vascular reactivity to catecholamines. Hypomelanosis of ito presents as bizarre whorled areas of depigmentation along Blaschko's lines. In piebaldism and Wardenburg syndrome presence of a white forelock and normal pigmented skin in the hypopigmented areas is typical, along with increased interpupillary distance, deafness and heterochromic irides in the later. Most challenging is to differentiate between ND and ALS because of their clinical and histopathological similarities. Few ultrastructural differences do exist but mostly differentiation is performed clinically by looking for other features of tuberous sclerosis complex (TSC). In the present case initial possibility of ND was considered for facial lesions but on detailed evaluation other features of TSC became evident thus clearing the diagnostic dilemma. The case is being reported to highlight the importance of ash-leaf spots, the earliest cutaneous manifestations of TSC and also to emphasise its important differential diagnoses.

CASE PRESENTATION

A 6-month-old baby boy with infantile spasms was referred to our dermatology department for multiple

segmental hypopigmented non-scaly macules over left cheek, forehead and temporal region of scalp since birth. These had serrated margins and overlying leucotrichia (white hair), which varied in sizes from 1×1 to 4×5 cm (figure 1). On Wood's Light Examination their margins became prominent. There was no change in their colour on diascopy. Similar ovoid hypopigmented macule was also present over front of right shoulder. The patient's developmental milestones were normal for age. Cutaneous examination of the patient's father who accompanied him during the first visit was normal and he failed to report any significant cutaneous lesions in the mother. Considering the provisional diagnosis of ash-leaf spots, ND and vitiligo, a skin biopsy was taken from face and sent for histopathological examination. Histopathology showed the presence of melanocytes in basal layer of epidermis (figure 2). The patient's mother was later called for evaluation, and she was found to have multiple facial angiofibromas, four ash-leaf spots over her trunk and multiple collagenomas (Shagreen patches) over her back. However, there was no history of epilepsy in mother. MRI of the patient's brain showed the presence of multiple subependymal tubers. Ophthalmological examination, ECG and sonography of abdomen were normal. Thus the final diagnosis made was TSC with large segmental ash-leaf spots. The patient was referred to neurology for further management.

Figure 1 Large hypopigmented macules with serrated margins and leukotrichia over left cheek, forehead and temporal region of scalp and an ovoid hypopigmented macule 1×1.5 cm over right shoulder.

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Figure 2 H&E-stained section showing melanocytes in basal layer of epidermis.

DISCUSSION

TSC is a multisystem autosomal dominant genetic disorder with an estimated prevalence of 1/10 000–1/30 000.¹ In this neuro-cutaneous disorder cutaneous lesions act as earliest markers of disease. These help in identification of at risk cases in need of periodic evaluation. Characteristic cutaneous lesions include ash-leaf spots, facial angiofibromas, Shagreen patches and peri-ungual fibromas. Among these ALS are first to appear usually at birth or during infancy and are present in more than 90% of patients with TSC.² These present as hypopigmented off-white coloured macules 1–3 cm in size, predominantly over trunk and buttocks. Their shape may vary, classical lesions are ovoid or leaf shaped hence their name. Other morphological patterns include confetti-like, thumb print shaped or segmental lesions. Lesional leucotrichia and poliosis have also been described.³ In fair skinned individuals ALS can be made prominent by Wood's Light Examination. Up to two ALS in the absence of other manifestations of TSC are considered normal but three or more lesions form major diagnostic criteria of TSC.² Such patients need careful evaluation and periodic follow-up. Differentiation of an isolated ALS from ND becomes difficult clinically as both can present as irregular round or polygonal macules, both can be segmental in distribution and leucotrichia is a feature of both. Histopathologically number of melanocytes in these two can be normal or decreased. Ultrastructural differences have been described which include reduction in number, size and

melanisation of melanosomes in ALS which form aggregates within keratinocytes. On the other hand in ND, there is decrease in transfer of melanosomes to keratinocytes.⁴ However in resource poor settings where facility of electron microscopy (EM) is not easily available, one has to rely on identification of other features of TSC cutaneous as well as systemic. We though could not perform EM in our patient, were able to reach the final diagnosis on the basis of history of infantile spasms, characteristic ovoid ALS over trunk and subependymal tubers on MRI. Further confirmation of TSC in mother substantiated our diagnosis.

Learning points

- ▶ The presence of a single hypopigmented macule in a child should prompt a Wood's Light Examination to look for similar lesions elsewhere.
- ▶ Important differential diagnoses of hypopigmented macules include naevus depigmentosus (ND), naevus anaemicus, ash-leaf spots and vitiligo.
- ▶ As clinical differentiation between ash-leaf spots and ND is not always possible, other features of tuberous sclerosis complex (TSC) should be searched to help in making the final diagnosis.
- ▶ Ash-leaf spots being the earliest cutaneous manifestation of TSC should not be missed as early diagnosis and prompt institution of therapy if needed can prevent development of long-term harmful sequelae.

Competing interests None.

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