Original Article

Dermoscopic Diagnosis of Ashy Dermatosis: A Retrospective Study

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Abstract

Aim: Ashy dermatosis (AD) is a cutaneous pigmentation disorder with unknown etiology characterized by ash-colored hyperpigmented macules. The diagnosis of Ashy dermatosis is primarily based on the clinical and histopathological findings. In this study, we aimed to identify the dermoscopic features of AD, which may facilitate the diagnosis by reducing the need for invasive procedures. **Material and Methods:** The study included the patients diagnosed with Ashy dermatosis. Demographic, clinical, dermoscopic and histopathological features of the lesions were reviewed and the findings observed were recorded. **Results:** A total of 60 lesions from 15 patients were included. The most common dermoscopic finding were irregular linear dots and globules, pinkish brown color was the predominant color of the background, and found to be associated with early lesions. Among the vascular structures observed, irregular linear vessels were the most prevalent. There were no significant differences in terms of dermoscopic structures according to age and localization of the lesions. **Conclusion:** Dermoscopy can serve as a noninvasive helpful tool for the diagnosis of Ashy dermatosis.

Keywords: *Ashy dermatosis, dermoscopy, erythema dischromicum perstans*

Introduction

Ashy dermatosis (AD), also known as erythema dischromicum perstans (EDP), describes an acquired macular hyperpigmentation disorder with unknown etiology.[1] The entity was first described by Ramirez and the term "Ashy" is related to ashy grey color of the lesions[2] AD can involve in any site of the body.[3]

The clinical features of AD are well known, however, dermoscopic features of the entity has rarely been a subject of investigation.[4,5] Here, we aimed to identify the dermoscopic findings of AD which may facilitate the diagnostic process by reducing the need for histopathological examination.

Materials and Methods

Patients

This retrospective study included the patients diagnosed with AD between January 2017 and November 2018. The age, gender, disease durations, symptoms, dermoscopic, and histopathological features of the lesions were reviewed. The patients were grouped according to ages and, duration and distribution of the lesions.

Inclusion and exclusion criteria

The diagnosis of AD was made based on the clinical and pathological correlation in all the patients.

The inclusion criteria were as follows:

1. The presence of brown to blue to grey macular lesions on physical examination
2. The presence of epidermal basal vacuolization, papillary dermal melanophages and mild to moderate dermal lymphocytic infiltration on histopathological examination
3. Treatment naive patients.

The exclusion criteria were as follows:

1. The presence of elevated lesions including plaques and nodules
2. The presence of past or current evidences of lichen planus
3. The presence of moderate to severe pruritus
4. The presence of a history of any contact exposure
5. Coexistence with an inflammatory skin disorder
6. The presence of band like dermal inflammatory infiltration and subepidermal separation
7. Presence of histological findings which may indicate another skin disorder.

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Dermoscopic evaluation

Dermoscopic images of a total of four lesions for each patient were included. All the vascular and non-vascular features observed were recorded. Kittlerian terminology[6] was used to describe the findings observed. Dermoscopic examination performed by a polarized handheld dermoscope with x10 magnification (Dermlite 4, 3GEN Inc, San Juan Capistrano, CA, USA). Capture of dermoscopic images was performed using a high-resolution mobile camera phone attached to the dermoscope (iPhone 7 plus, Apple Inc, CA, USA).

Statistical analysis

The relationship between two categorical independent variables was evaluated using Chi-square test. Descriptive statistics for numeric variables was represented as mean ± standard deviation, and for categorical variables, as numbers and % values. SPSS Windows version 24.0 package software (SPSS Inc., Chicago, IL, USA) was used for statistical analysis and $P < 0.05$ was considered as statistically significant.

Ethic approval

All the procedures followed were in accordance with the Helsinki Declaration and the study was approved by the local clinical research ethics committee (Decision number: 2018/24-207).

Results

There was a total of 22 patients diagnosed as AD. About 7 patients were excluded due to several factors included insufficient clinical data, insufficient dermoscopic images, low quality dermoscopic images. The patients those who did not fully meet the clinical and histological criteria were also excluded. Thus, a total of 60 lesions from 15 patients were enrolled.

The mean age of the patients was 31.4 ± 10.7 years (age range 7-42 years) and the majority were female (n = 9, 60%). The mean disease duration was 4.3 ± 5.6 months (duration range 0-10 months). Majority of the patients were asymptomatic (n = 10, 66.6%). 5 patients reported mild itching and the remaining patients didn't have any symptom. All the patients presented with a grey macular rash [Figures 1 and 2].

The most common dermoscopic feature was brown to grey dots and globules which were observed in all of the lesions. The most common type of arrangement of dots and globules was irregular linear arrangement followed by circular arrangement [Figure 3].The most common color of background was pinkish brown background followed by skin colored background [Figures 4-7]. The most common vessel pattern was represented by irregular linear and coiled vessels [Figure 8]. All of the dermoscopic findings observed were detailed in Table 1.

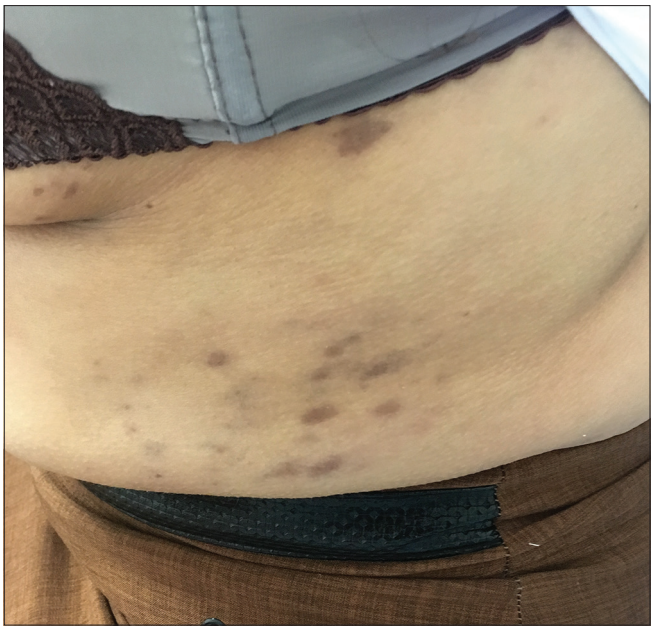

Figure 1: Brown to grey macular lesions localized on the abdominal skin

When the patients were grouped in age groupsas 7-11, 12-16, 17-25, 26-34 and 35-42 years, no statistically significant difference in the presence of dermoscopic findings of the lesions was detected.

When the lesions were grouped in durations as 0-1, 2-4, 5-8 and 9-11 months, the presence of the pinkish brown background showed statistically significant difference in the group of 0-1 month ($P < 0.05$).

And finally, when the lesions grouped as localized and generalized, no statistically significant difference in term of the dermoscopic findings was found.

Discussion

Ashy dermatosis (AD), is a pigmentation disorder of unknown etiology characterized by grey macules. The entity is still a subject of debate as it shares similar clinical and histopathological features with lichen planus pigmentosus (LPP). Some authors argue that AD and LPP are just different names of the same entity.[3] Moreover, some authors suggest the term of "acquired dermal macular hyperpigmentation" as a hypernym encompassing Riehl's melanosis, LPP and AD that show clinicopathological overlap.[7] However, some authors thought that AD and LPP can be differentiated histopathologically. Both AD and LPP show melanophages in the superficial dermis and vacuolar degeneration of the basal cells in the epidermis. A band like lymphocytic infiltration and Max-Joseph spaces as a result of degeneration of the basal layer with separation from underlying lamina propria can be seen in LPP but are absent in AD.[3] In the present study, the lesions showing band like infiltration and Max-Joseph spaces were excluded. All the cases showed histopathological

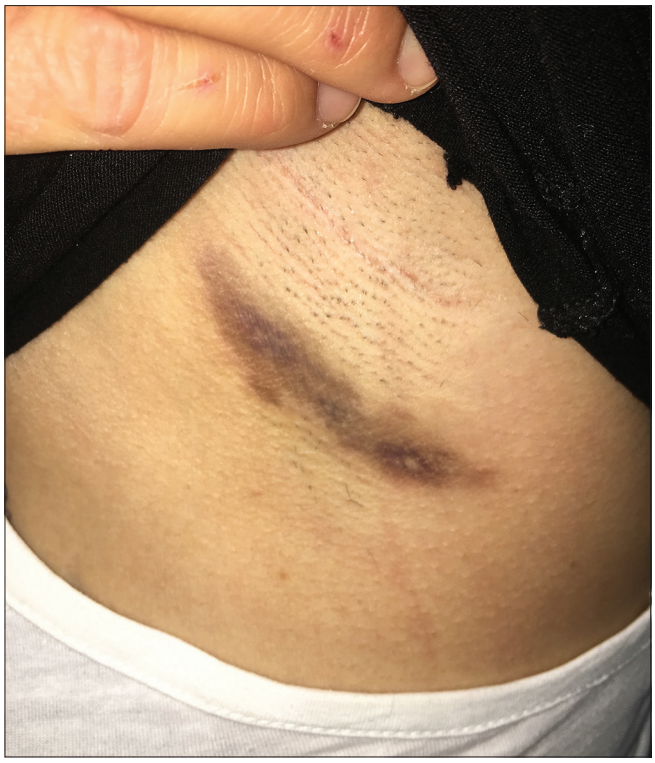

Figure 2: Brown to grey macular lesion localized on the axillary skin

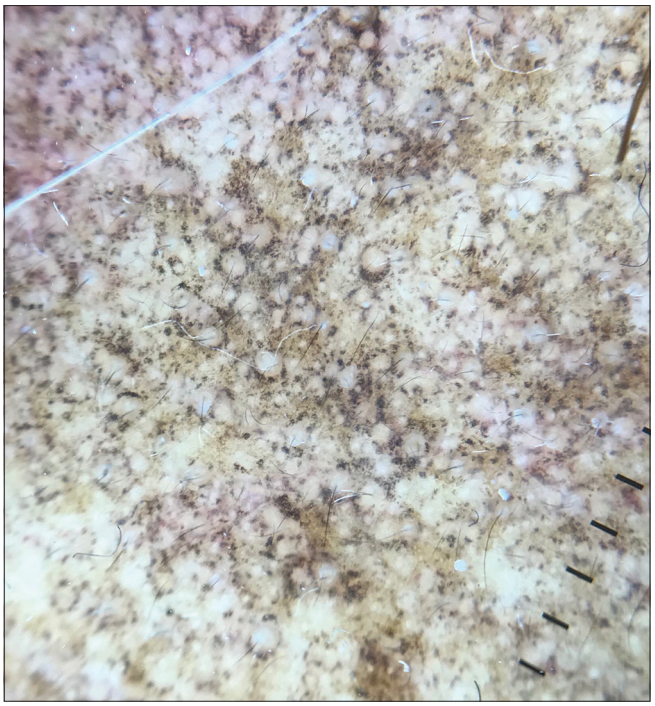

Figure 3: Brown to grey dots and globules forming irregular lines, circles and angulated lines arranged in a reticular pattern. A light brown background can also be observed (Dermlite 4, 10x)

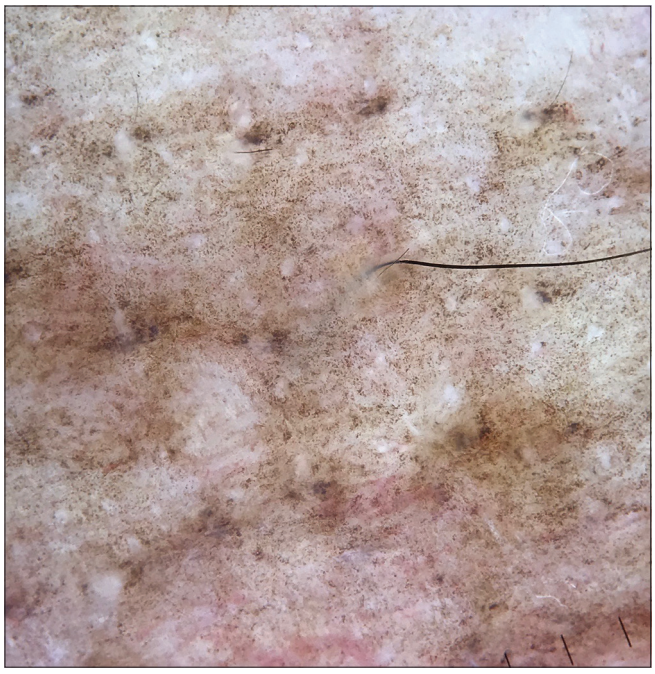

Figure 4: Widespread distributed brown to grey dots with a pinkish background (Dermlite 4, 10x)

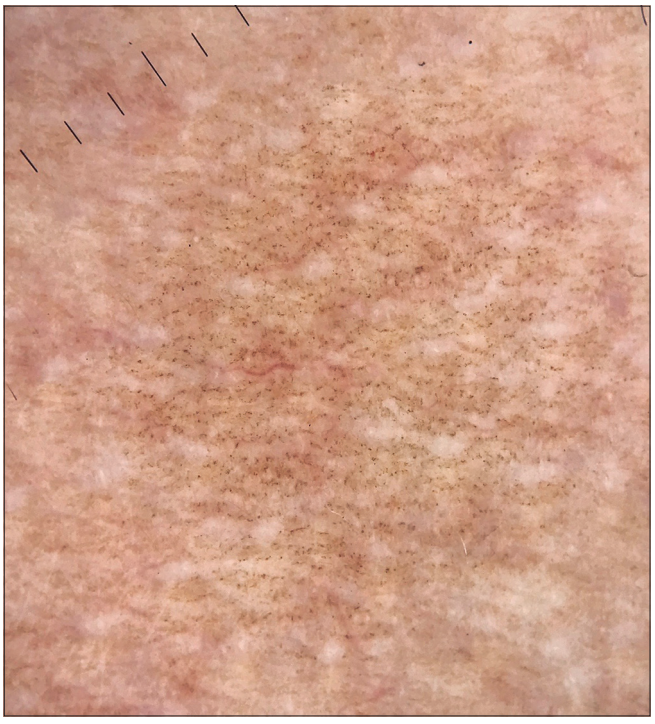

Figure 5: Widespread distributed brown to grey dots and irregular linear vessels with a skin colored background (Dermlite 4, 10x)

inclusion criteria which have already been described in material and methods part. Errichetti *et al*., described dermoscopic features of AD in a case study.[5] These features were gray-bluish small dots over a bluish background.[5] In another study, Vinay *et al*. investigated dermoscopic features of acquired dermal macular hyperpigmentation including Riehl's melanosis, LPP, idiopathic macular eruptive pigmentation and AD.[6] In the present study, dermoscopic features were evaluated in three subheadings: dots/globules, background color and vascular structures.

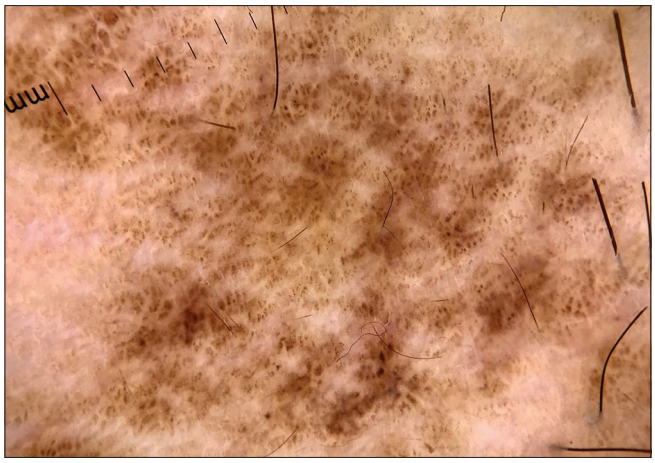

Figure 6: Patchy distributed brown dots and globules with a combination of brown, pinkish and skin colored background (Dermlite 4, 10x)

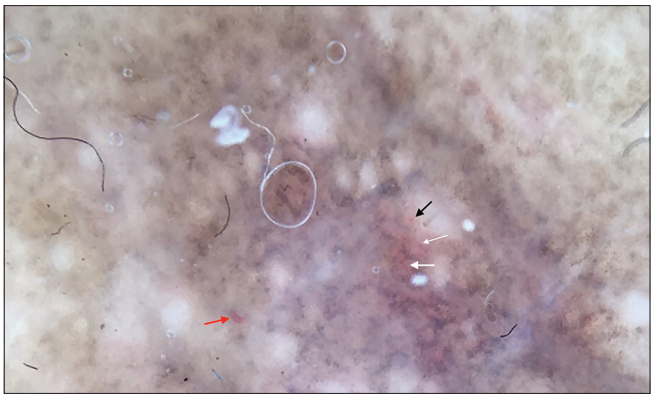

Figure 7: Brown to grey dots, both random distribution and linear arrangement can be observed. Disfocused vessels can also be seen. (Dotted vessel: black arrow, coiled vessel: red arrow and irregular linear vessels: white arrow) (Dermlite 4, 10x)

Figure 8: Patchy distributed brown to grey dots with a pinkish brown background (Dermlite 4, 10x)

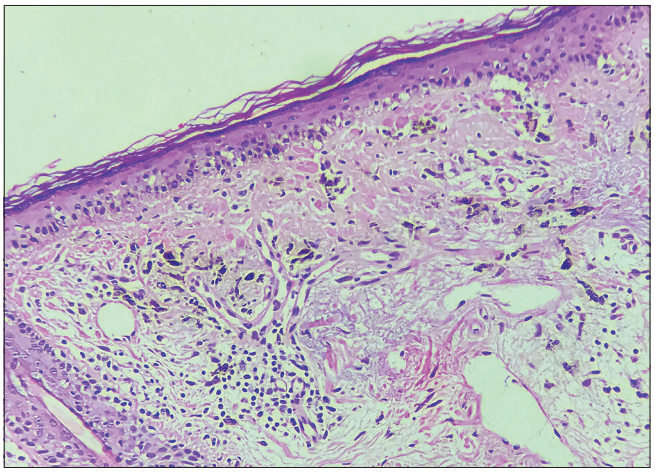

Figure 9: Epidermal basal vacuolar degeneration, mild to moderate inflammatory infiltration in superficial dermis, superficial dermal dilated vessels and superficial dermal melanophages. (×10, H and E)

We observed brown-grey dots/globules in all the lesions. In the study of Vinay *et al*., dots and globules were also the most common dermoscopic findings.[6] They classified distribution patterns of these structures as Chinese letter pattern, reticular arrangement and diffuse pattern.[6] In another study, Sharma *et al*. investigated dermoscopic features of face localized LPP. They also found that brown and grey dots were the main dermoscopic features and classified the distribution patterns as hem-like, arcuate, reticular and non-specific.[8] Herein, we preferred Kittlerian terminology for the description and

Table 1: Distribution of the dermoscopic findings of the lesions

Dermoscopic features	Number and percent of the lesions(%)
Brown dots/globules	
Widespread distribution	*n*=13, 21.6
Random distribution	*n*=21, 35
Irregular linear arrangement	*n*=24, 40
Circular arrangement	*n*=22, 36.6
Patchy clustered arrangement	*n*=20, 33.3
Arrangement in angulated lines	*n*=14, 23.3
Background	
Brown background	*n*=21, 35
Pinkish brown background	*n*=32, 53.3
Skin colored background	*n*=28, 46.6
Vessels	
Irregular linear vessels	*n*=8, 13.3
Dotted vessels	*n*=4, 6.6
Coiled vessels	*n*=8,13.3

avoided metaphorical terminology to make the findings more understandable.[6] In the present study, irregular linear configuration of dots and globules was the most common type of arrangement followed by circular arrangement. None of the lesions showed a reticular arrangement unlike the above-mentioned studies. The histological counterparts of the dots and globules are thought to be dermal melanophages[6] [Figures 9 and 10]. The presence of dermal melanophages on histopathology was one of the inclusion criteria in our study.

Unlike the other studies, we also evaluated the lesions in terms of dermoscopic background colors and vessels pattern. The most common background color was pinkish brown followed by skin colored and brown. Brown background histologically corresponds to epidermalmelanin.[6] The presence of pinkish brown background showed statistically significant difference for early lesions (0-1 month). However, some of the lesions showing pinkish background also demonstrated a gradation of pigmentation which may be a sign of late stage. So that, more comprehensive studies with large sample sizes are needed to clarify the dermoscopic signs for early and late stages of the lesions. It is interesting that none of the cases showed a peripheral rim of erythema which is generally accepted a sign of early lesion in AD.

We observed vascular structures in 33.3 percent of the lesions. Irregular linear pattern was the most common vessel pattern we identified. In the study of Vinay *et al*., 82.4 percent of the lesions showed telangiectasia.[7] Vascular structures seen on dermoscopy are thought to be associated with superficial dermal telangiectatic vessels [Figure 9].[6] Additionally, 12 percent of the biopsies also demonstrated an increased superficial dermal vascularity which showed a correlation with the presence of vascular structures on dermoscopic examination.

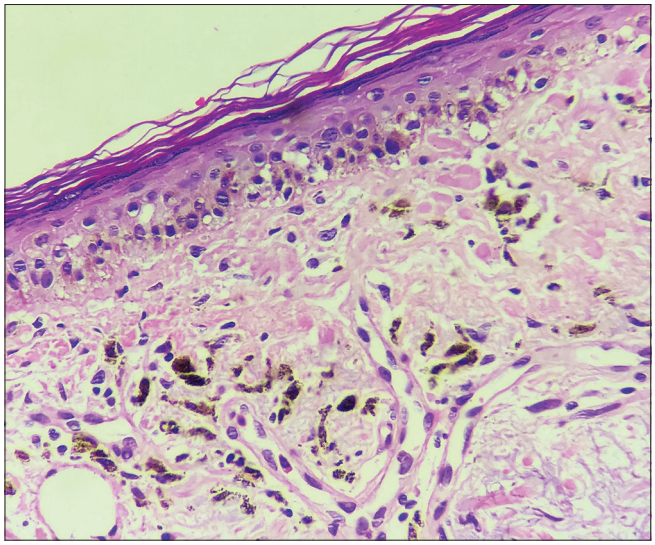

Figure 10: Melanophages which are the histological counterpart of brown dots and globules are more clearly visible (×40, H and E)

In conclusion, the main dermoscopic findings of AD were brown to grey dots and globules. Brown and pinkish brown background and different patterns of vessels are the other dermoscopic findings that can be observed. As the dermoscopic findings of AD in our study were found to be similar to those of LPP, and we are of the opinion that this similarity supports the view that the LPP and AD are just the different names of the same entity. However, dermoscopic examination in suspected AD casesmay be helpful in excluding other possible diseases.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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