Ashy Dermatosis in a Two-year-old Child: A Case Report and Mini-review

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ABSTRACT Ashy dermatosis, or erythema dyschromicum perstans, is characterized by acquired grey patches distributed on the face, neck, trunk, and extremities with an unknown pathophysiology. Herein, we report a case of ashy dermatosis in a two-year-old child, possibly caused by an infection, with eventual improvement within two years, absent any treatment. To our knowledge, this is the second report of ashy dermatosis in a patient under the age of three years, and the first under the age of two years that was followed-up in the English-language literature from 2000 to 2021. Although the eruptions showed eventual improvement without any treatment in our case, all cases do not improve spontaneously. Further research is necessary to differentiate cases that eventually improve from resistant ones and determine treatment options for resistant cases.

KEY WORDS: ashy dermatosis, erythema dyschromicum perstans, 2-year-old, child

CASE REPORT

A two-year-old girl who had had inguinal hernia presented to our hospital with a complaint of multiple greyish-brown macules. She had a family history of inguinal hernia in a younger sister. The eruption had occurred after she developed a cold approximately one month ago. She had taken no medications, including over-the-counter drugs, in the months preceding the eruption. Physical examination revealed more than 11 greyish-brown flat macules, 5 mm to 5 cm in diameter, on the trunk and thigh, without any associated symptoms (Figure 1, A, B). The Darier's sign was negative, as was the dermographism. We suspected spilus nevus, urticaria pigmentosa, multiple fixed drug eruption, lichen planus pigmentosus, idiopathic eruptive macular pigmentation, Riehl's melanosis, or ashy dermatosis as possible diagnoses. The eruption persisted for more than three months, and a biopsy of the macules on the right-sided lumbar back region was performed four months after the first visit. The pathological findings revealed focal thinned epithelium, liquefaction degeneration, some melanophages, melanin deposits, and some lymphocytic perivascular infiltration in the dermis (Figure 2, A, B). Based on these findings, the clinical examination, and a negative history of any preceding medications, we diagnosed the eruption as ashy dermatosis. After ten months, the eruption partially disappeared, but some macules partially increased as well (Figure 3, A, B). After approximately one and a half years, the eruption disappeared almost completely without any treatment (Figure 4, A, B).

Table 1. A summary of data of detailed published cases

Case	Age of onset	Sex	Follow-up year	Treatment	Outcome
1 (3)	3	Male	5	-	Persistence
2 (3)	6	Female	5	-	Persistence
3 (3)	8	Male	4	-	Persistence
4 (3)	10	Female	3	-	Cleared/improved
5 (3)	7	Female	3	-	Persistence
6 (3)	6	Female	3	-	Cleared/improved
7 (3)	5	Female	3	-	Cleared/improved
8 (3)	7	Female	3	-	Cleared/improved
9 (3)	10	Male	2	-	Persistence
10 (3)	3	Male	2	-	Cleared/improved
11 (3)	9	Male	1	-	Cleared/improved
12 (3)	8	Female	<1	-	-
13 (3)	9	Male	<1	-	-
14 (3)	6	Female	<1	-	-
15 (4)	3	Female	33 months	-	cleared
16 (8)	8	Female	4 weeks	Photoprotection Dapsone 25 mg oral intake	Mild decrease in the pigmentation
17*	2	Female	<2	-	improved

*Present case

DISCUSSION

Ashy dermatosis was first described in 1957 by Ramirenz (1). The clinical presentation was described as erythema dyschromicum perstans by Convit in 1961 (2). This disease is characterized by rapid onset of ash-colored macules which are occasionally pruritic. The shape varies between round, oval, or polycyclic, and the size also varies from 3 mm to several centimeters in diameter. The trunk and proximal extremities are more commonly involved, followed by the neck and face (3-6). The etiology of ashy dermatosis is unknown; however, a number of etiological factors such as ingestion of ammonium nitrite, nematode infestation, radiographic contrast media, cobalt allergy, and chlorothalonil exposure among banana farm workers have been implicated (3-6). Consistent trigger factors are absent in prepubertal children with

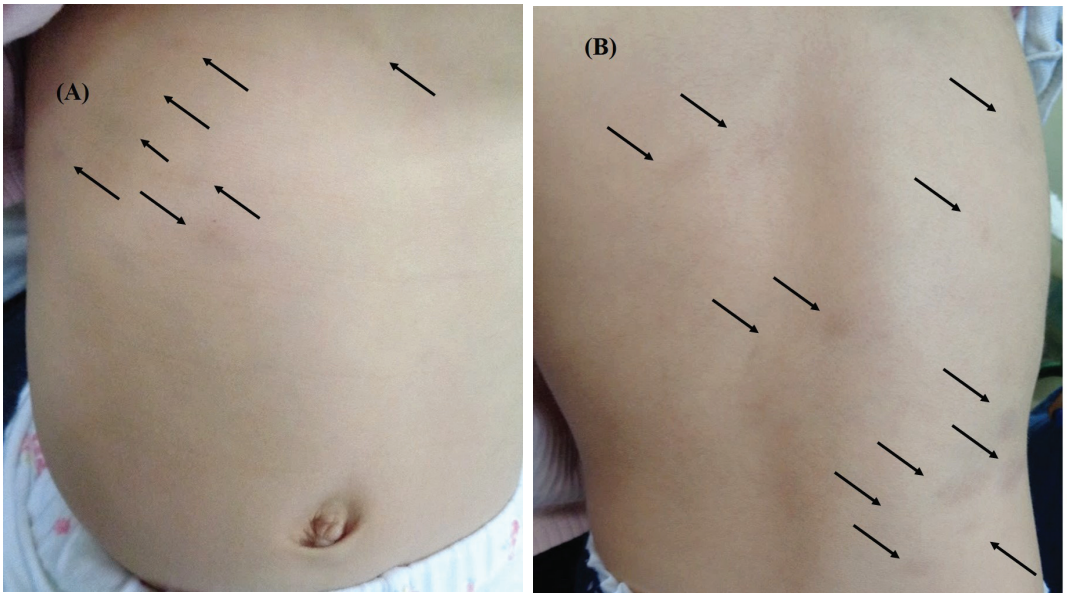

Figure 1. Clinical features of ashy dermatosis in the patient at first visit. (A) Several greyish-brown flat macules 2 cm to 5 cm in diameter on the chest and abdomen. (B) More than five greyish-brown flat macules of 5 mm to 5 cm in diameter on the back.

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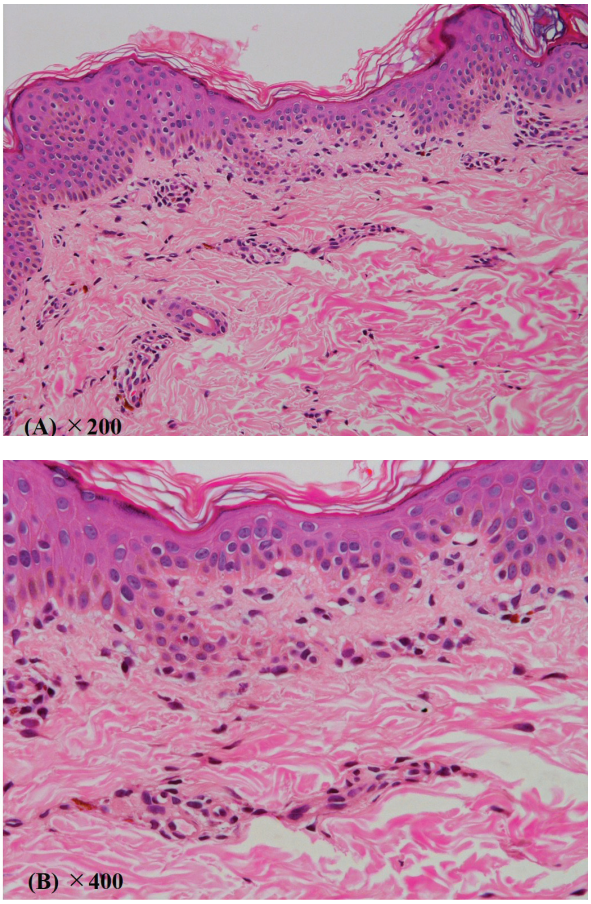

Figure 2. Histological examination of the greyish-brown flat macule. Hematoxylin and eosin staining. (A) Focal thinned epithelium and some perivascular lymphocyte infiltration in the dermis. Original magnification: ×200. (B) Liquefaction degeneration, some melanophages, and melanin deposits were seen. At higher magnification: ×400.

ashy dermatosis, and eventual improvement within 2-3 years is observed in about 50% cases (3).

There have been 22 cases in the literature, including five reports, of ashy dermatosis or erythema dyschromicum perstans in children under ten years of age in the English-language literature from 2000 to 2021 (3,4,7-9). Of these reports, 17 cases could be followed up, including our case (3,4,8) (Table 1). Chang *et al.* and Torrelo *et al.* reported that, unlike adult patients, no consistent causal or trigger factors were identified in children with ashy dermatosis (3,4). In addition, eventual improvement or resolution of the macules was observed more commonly than in adults (3,4,8). After two to five years, six out of 11 children with ashy dermatosis had shown improvement without treatment (3). In addition, 9 out of the 14 cases that were followed-up had shown improvement (Table 1). Only one case was treated with oral dapsone 25 mg daily, with a mild decrease in pigmentation observed after four weeks of treatment (8).

To date, no effective treatment for ashy dermatosis is available. Therapeutic options include avoidance of sun, sun-blocking agents, keratolytics, chemical peels, dapsone, oral and topical steroids, antibiotics such as tetracycline, griseofulvin, ascorbic acid, chloroquine, hydroquinone, estrogen, antihistamines, laser therapy, vitamins, clofazimine, and phychotherapy (3,4,8).

To our knowledge, this is the second report of ashy dermatosis in a patient under the age of three years, and the first under the age of two years that

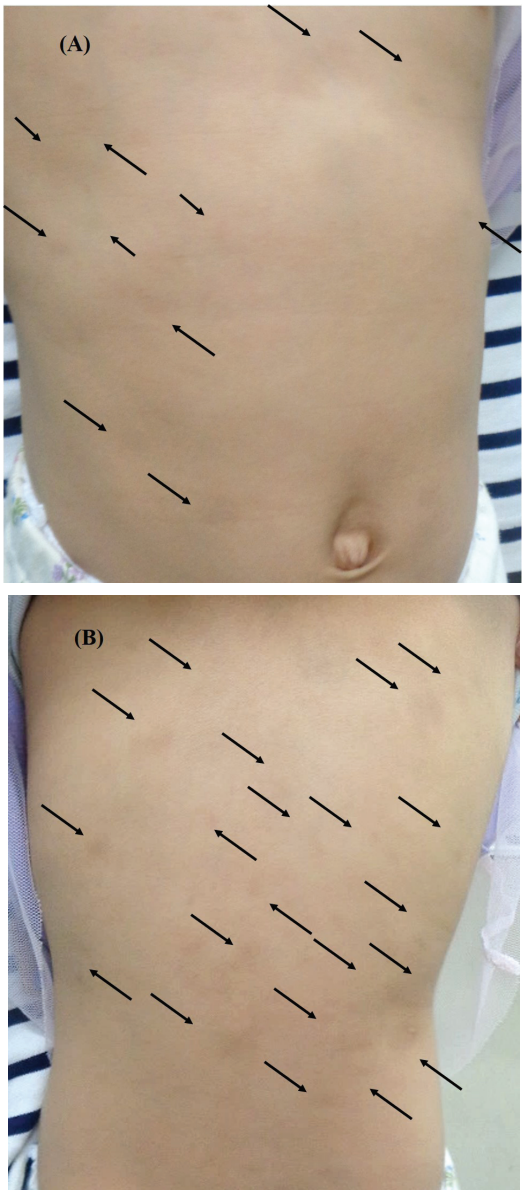

Figure 3. The patient after 10 months. The eruption partially disappeared, but some macules partially increased as well. (A) The chest and abdomen. (B) The back.

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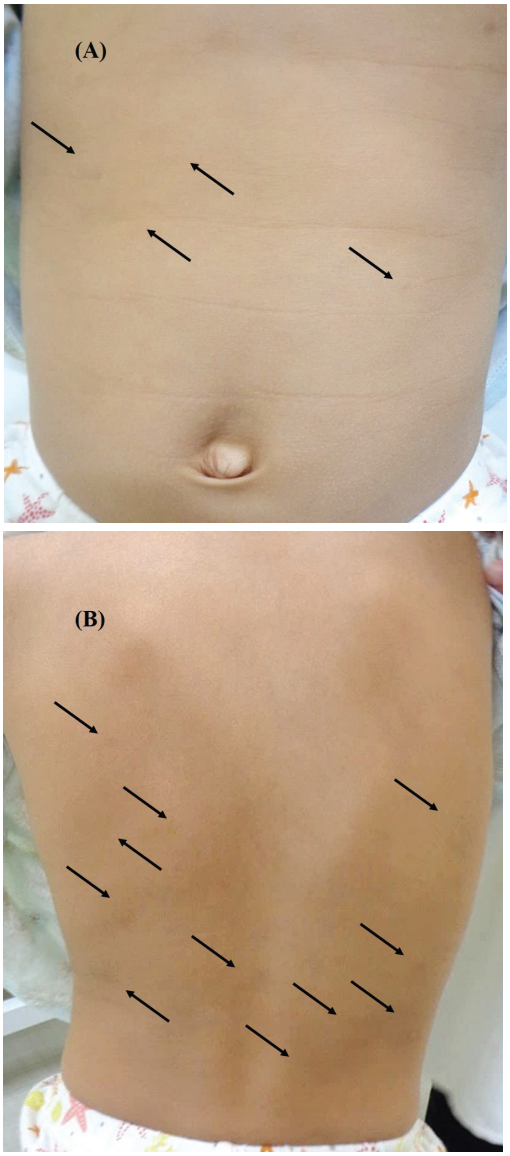

Figure 4. The patient after 1 and a half years. The eruption almost disappeared. (A) The chest and abdomen. (B) The back.

was followed-up in the English-language literature from 2000 to 2021. In our case, an infection such as a cold could have caused the ashy dermatosis. Although the eruptions showed eventual improvement without any treatment in our case, all cases do not improve spontaneously.

CONCLUSION

We report a case of ashy dermatosis in a two-year-old child with eventual improvement without any treatment within two years. Further research is necessary to differentiate cases that eventually improve from resistant ones and determine treatment options for resistant cases.

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