

adhere to the skin, but was connected to the platysma muscle, presenting an erythematous nodule. It might be easily misdiagnosed, as it is extremely rare and the skin lesion may present without any cutaneous opening. Dermatologists should keep in mind the possibility of fistula of the submandibular gland when examining painful masses in the neck.

## CONFLICTS OF INTEREST

The authors have nothing to disclose.

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<https://doi.org/10.5021/ad.2020.32.1.83>



# Pityriasis Amiantacea: An Epidemiologic Study of 44 Cases in Korean Patients

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Dear Editor:

Pityriasis amiantacea (PA) is a unique clinical skin condition characterized by thick, asbestos-like, adherent scales that engulf the scalp hairs<sup>1</sup>. It has been reported as a clinical manifestation, or sequela, of various inflammatory or

infectious diseases of the scalp<sup>2-4</sup>. Although it is occasionally seen in clinical practice, the data on PA are scarce in the literature.

We investigated the epidemiologic and clinical characteristics of PA. We retrospectively analyzed a series of 44 PA

Received March 4, 2019, Revised May 15, 2019, Accepted for publication June 18, 2019

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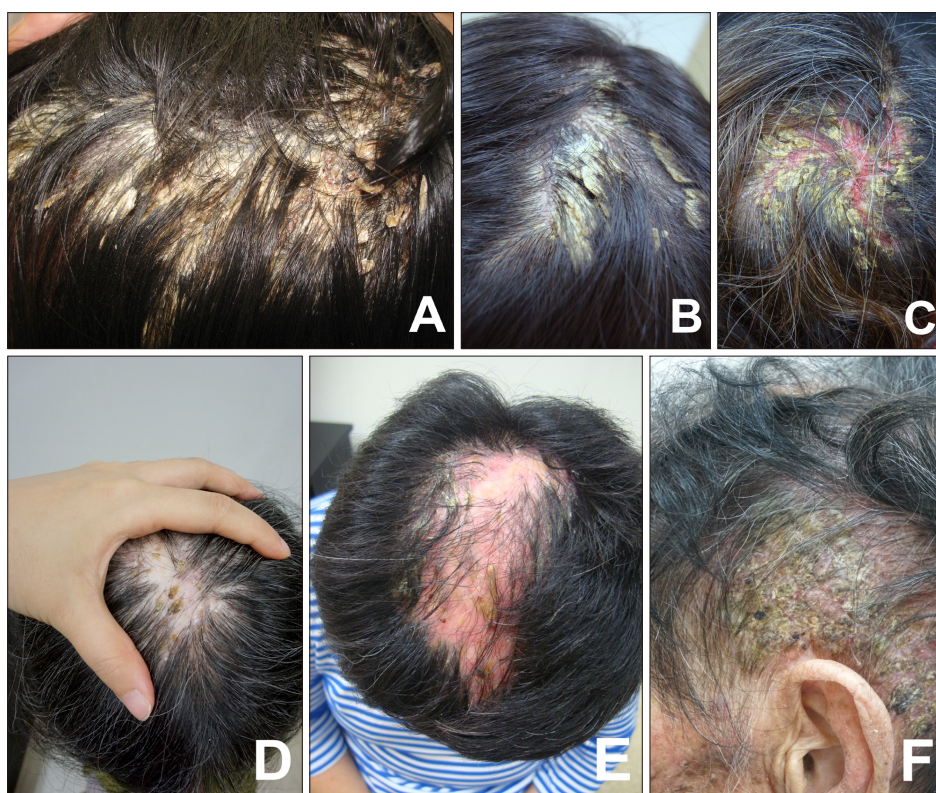
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**Table 1.** Demographic and clinical characteristics of 44 patients with pityriasis amiantacea in this study

Characteristic	n
Age (yr)	42.4 ± 23.4 (0.25 ~ 79)
Sex	
Male	17 (38.6)
Female	27 (61.4)
Disease duration (mo)	50.0 ± 42.5 (0.08 ~ 144)
Degree of pityriasis amiantacea	
Localized	21 (47.7)
Widespread	16 (36.4)
Whole scalp	7 (16.0)
Underlying erythema	14 (31.8)
Alopecia	21 (47.7)
Nonscarring	10
Scarring	11
Clinical associations	
Eczema	17 (38.6)
Seborrheic dermatitis	16 (36.4)
Atopic dermatitis	1 (2.3)
Primary cicatricial alopecia	11 (25.0)
Folliculitis decalvans	4 (9.1)
Lichen planopilaris	3 (6.8)
Discoid lupus erythematosus	1 (2.3)
Central centrifugal cicatricial alopecia	1 (2.3)
Folliculitis keloidalis	1 (2.3)
Unclassified	1 (2.3)
Psoriasis	5 (11.4)
Pemphigus	5 (11.4)
Tinea capitis	2 (4.5)
Drug-related skin dermatosis (afatinib)	1 (2.3)
None	3 (6.8)
Bacterial examination (scale and hair shaft)	22
Positive	16 (72.7)
<i>Staphylococcus aureus</i>	12
<i>Staphylococcus lugdunensis</i>	2
<i>Staphylococcus capitis</i>	1
<i>Staphylococcus caprae</i>	1
<i>Staphylococcus pneumoniae</i>	1
<i>Acinetobacter baumannii</i>	1
<i>Enterobacter cloacae</i>	1
<i>Klebsiella pneumoniae</i>	1
<i>Moraxella osloensis</i>	1
<i>Pseudomonas aeruginosa</i>	1
Negative	6 (13.6)
Mycological examination (scale and hair shaft)	7
<i>Microsporum canis</i>	2 (28.6)
Negative	5 (71.4)
Treatment	
Topical agents	
Ciclopirox olamine or 2% ketoconazole shampoo	44 (100)
Corticosteroids (clobetasol propionate)	41 (93.2)
Calcipotriol	5 (11.4)
Antifungal agent (terbinafine)	2 (4.5)
Systemic treatments	31 (70.5)
Corticosteroids (prednisolone)	21 (47.7)
Antibiotics (minocycline, clindamycin, rifampicin and dapsone)	11 (25.0)
Retinoids (isotretinoin or acitretin)	9 (20.5)
Hydroxychloroquine	6 (13.6)
Antifungal agents (terbinafine)	2 (4.5)
Methotrexate	1 (2.3)
Physical removal	5 (11.4)

Values are presented as mean ± standard deviation (range) or number (%).



**Fig. 1.** Clinical findings of pityriasis amiantacea associated with various underlying skin diseases (A) seborrheic dermatitis, (B) psoriasis, (C) pemphigus vulgaris, (D) lichen planopilaris, (E) folliculitis decalvans, and (F) tinea capitis.

patients who visited Chonbuk National University Hospital from March 2008 to May 2017. Diagnosis was made by physical examination, dermoscopy, bacterial and fungal culture, and histopathology. This study was approved by the institutional review board of Chonbuk National University Hospital (No. CUH 2018-03-047). We received the patient's consent about publishing all photographic materials.

The demographic profile and clinical characteristics of the PA patients in this study are summarized in Table 1. The mean age of the patients was  $42.4 \pm 23.4$  years (3 months~85 years) with a female predominance (male:female=1:1.6). PA was localized in 21 patients (47.7%), widespread in 16 patients (36.4%), and involved the whole scalp in 7 patients (16.0%). Erythema and alopecia were present on the scalp in 14 patients (31.8%) and 21 patients (47.7%), respectively. Permanent scarring alopecia was detected in 11 patients (25.0%). The underlying skin diseases were seborrheic dermatitis (n=16, 36.4%), psoriasis (n=5, 11.4%), pemphigus (n=5, 11.4%), folliculitis decalvans (n=4, 9.1%), lichen planopilaris (n=3, 6.8%), tinea capitis (n=2, 4.5%), and 1 case of discoid lupus erythematosus, central centrifugal cicatricial alopecia, dissecting cellulitis, folliculitis keloidalis, unclassified primary cicatricial alopecia, atopic dermatitis and drug-related skin dermatosis (afatinib) (2.3%), respectively (Fig. 1). Three patients (6.8%) displayed

isolated PA that was not associated with other skin diseases. Bacterial culture revealed positive growth in 16 patients (72.7%) and fungal culture was identified in the two tinea capitis patients; the identified isolates were listed in Table 1. All patients were primarily treated with a potent topical corticosteroid and antifungal (ciclopirox olamine or 2% keratoconazole) shampoo. In moderate to severe cases (n=31, 70.5%), systemic agents were added depending on the underlying disease; corticosteroids (n=21, 47.7%), antibiotics (n=11, 25.0%), retinoids (n=9, 20.5%), hydroxychloroquine (n=6, 13.6%), antifungal agents (n=2, 4.5%), and methotrexate (n=1, 2.3%). Most patients responded well to medical treatment without any serious adverse effects; however, in severe cases who showed minimal improvement and had asbestos-like adherent scales after 2 weeks of the systemic treatment, the hairs with scales were additionally removed above of the scalp by surgical scissor (n=5, 11.4%).

Although the etiopathogenesis of PA is still unknown, it is considered as a particular reaction pattern of the scalp to various inflammatory skin conditions, including psoriasis, seborrheic or atopic eczema, lichen planus, pityriasis rubra pilaris, lichen simplex chronicus, as well as pyogenic or fungal infections<sup>2-4</sup>. Seborrheic dermatitis and psoriasis have been reported as the two most common diseases accompanying PA, and some authors suggest that PA is ei-

ther a clinical manifestation of psoriasis or a localized form of seborrheic dermatitis<sup>5,6</sup>. However, the nature and shape of the PA scales are clearly distinct from the silvery-white or yellow scaling of typical psoriasis and seborrheic dermatitis. Additionally, some cases of PA occur with no associated dermatitis<sup>4,7</sup>. For these reasons, PA has been referred to as an isolated clinical entity of unknown cause in the literature<sup>7</sup>. In this study, 41 patients (93.2%) had an accompanying underlying skin condition and only three cases (6.8%) were not compatible with any diagnostic criteria of primary skin disease. Although PA was commonly associated with seborrheic dermatitis and psoriasis, it was also associated with other skin conditions such as primary cicatricial alopecia or pemphigus, which primarily involves perifollicular dermis or Malpighian layer, but not keratin layer. Interestingly, one case was induced by a drug modulating epidermal growth factor receptor. Drug-related PA from a BRAF inhibitor and, paradoxically, tumor necrosis factor- $\alpha$  blocker have been reported<sup>8,9</sup>.

Regardless of the underlying skin diseases, Abdel-Hamid et al.<sup>4</sup> suggested that concomitant *Staphylococcus aureus* could also contribute to the development of PA by inhibiting keratinocyte differentiation. However, PA may also occur as a secondary infection or from excessive growth of normal skin flora as suggested by Knight<sup>6</sup> or McGinley et al.<sup>10</sup>. In this study, bacteria were isolated in 16 of the 22 cases (72.7%), the majority of which was *S. aureus*; however, some patients with bacterial colonization were successfully treated without the use of antibiotics. Further studies are necessary to elucidate the role of microorganisms in the development of PA.

Although PA can occur at any age, it has been predominantly reported in adolescents and young females<sup>4,7</sup>. In this study, variable age of onset and a female predominance was observed. This distribution appears to be related to epidemiologic characteristics of the underlying condition. PA often accompanies alopecia, which is usually temporary. In this study, 25% of patients had scarring alopecia, all of which was related to primary cicatricial alopecia; this could also be attributed to the long duration until diagnosis.

Diagnosis of PA is usually straightforward by clinical appearance. Simple, noninvasive dermoscopy is useful to confirm the characteristic scales and also to differentiate underlying scalp conditions of PA<sup>2</sup>. Additional microbiological and histopathological examination is required to identify the underlying causes in clinically ambiguous cases. Yet, there is no established treatment guideline for PA. Antifungal shampoo, olive oil, salicylic acid, and potent topical corticosteroids with anti-inflammatory or keratino-

lytic properties have been commonly used. Systemic corticosteroid, retinoid, and tumor necrosis factor- $\alpha$  blocker are also considered in severe cases<sup>9</sup>. In the present study, the majority of patients were adequately treated with topical agents in combination with variable systemic agents targeting specific underlying conditions. In recalcitrant cases, physical removal by surgical scissors achieved a rapid and satisfactory clinical outcome.

In conclusion, PA appears to be a distinct clinical manifestation reflecting excessive epidermal hyperplasia around the hair follicles, secondary to a wide spectrum of scalp dermatitis or medication in susceptible individuals. Individualized treatment depending on the underlying conditions is necessary, and additional removal of the hairs can be a useful therapeutic option in recalcitrant cases.

## ACKNOWLEDGMENT

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This paper was supported by research funds of Chonbuk National University in 2019.

## CONFLICTS OF INTEREST

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The authors have nothing to disclose.

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<https://doi.org/10.5021/ad.2020.32.1.87>



## Dermatologic Diagnosis in the Emergency Department in Korea: An 11-Year Descriptive Study

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Dear Editor:

Dermatologic complaints account for 3.3% of patients visiting the emergency department (ED)<sup>1</sup>. Although most dermatologic problems are not life-threatening, specialized differential diagnosis is important because dermatologic diseases can interfere with normal daily activities. However, in most hospitals, dermatologists cannot reside in the ED for 24 hours. Consequently, most patients did not receive specific diagnosis and medical care. Thus, analysis of dermatologic diagnosis in the ED could be useful data for emergency physicians.

There are three published papers from Korea regarding patients with skin problems visiting the ED. Among them, one was published in 1997 and, therefore, does not reflect the current situation<sup>2</sup>. Another paper addresses eight years of progress, but the diagnosis was made by emergency

medicine physicians only<sup>3</sup>. In the last paper, grasping the overall trends is difficult owing to the limited time period covered by the report<sup>4</sup>. In the current paper, patients treated over a period 11-years in a single secondary hospital providing a referral to dermatologists were analyzed. Although numerous international studies have provided information on emergency dermatoses, only a few published studies have attempted to characterize emergency dermatology referrals. To the best of our knowledge, this study includes the largest series of prospectively obtained data on the ratio of dermatology referrals from the ED. The aims of this study were to twofold: first, to determine clinical characteristics of patients with a dermatological problem in ED using a large population data; second, to identify skin conditions that required referrals to the dermatologists. This study included patients who received a dermatology diagnosis code in the ED of Dongguk University Hospital, Korea, between January 1, 2006, and December 31, 2016. The hospital is a 700-bed secondary care hospital, with emergent medical services being provided by emergency physicians; a dermatology on-call system is available 24 h/d. The hospital uses an electronic medical record (EMR) system, and a diagnosis code is required prior to discharge from the ED. Therefore, the EMR system provides a good source of accurate data. The International Statistical Classification of Diseases, 10th Revision (ICD10) codes were first extracted from patients visiting our dermatology outpatient clinic. Then, a list of patients given these ICD codes in the ED was collected. Based on the collected medical records,

Received February 7, 2019, Revised June 13, 2019, Accepted for publication June 27, 2019

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