

# Eruptive pseudoangiomatosis: An epidemiological and clinical study

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## ABSTRACT

**Background:** Eruptive pseudoangiomatosis is an acute-onset illness presenting with a characteristic rash mainly on the exposed parts of the body. It is mostly symptomless and resolves spontaneously without sequels. Numerous agents are suspected to trigger the disease. **Materials and Methods:** Forty-five patients affected with eruptive pseudoangiomatosis were examined at the Dermatology and Venereology Department of Al-Ramadi Teaching Hospital during the period from January 1, 2018, to January 1, 2020. History taking and physical examination in addition to laboratory investigations were done for all patients. **Results:** Forty-five patients, 27 females and 18 males, were examined. Their mean age was fifteen years and the female-to-male ratio was 1.5:1. The younger age group was the most involved and a family history was detected in 5%. Prodromal symptoms were found in 63.8% and pruritus was a complaint in 35.5% of the patients. The extremities and face were the most affected and the disease was more common during the spring season. **Conclusion:** Eruptive pseudoangiomatosis is a spontaneously-resolving illness without complications, yet one must be aware of it and keep it in mind when facing a viral rash to avoid unnecessary investigations and treatments and to provide reassurance to the patient and their family.

**Key words:** angioma; pseudoangioma; viral infection; pruritus; URTI

## INTRODUCTION

Eruptive pseudoangiomatosis (EPA) is a sudden-onset disease that affects children mainly [1]. Previously, a disease with an acute onset of reddish and blanchable papules associated with elevated body temperature was described in a number of children to resolve spontaneously; later on, the same disease was observed in adults [2]. Clinically, the disorder is manifested as small papules surrounded by a pale halo mostly on the exposed surfaces of the body, yet the covered areas may also be affected [3]. On microscopical examination of the affected skin, there is no inflammation or increased number of blood vessels, thus it is known as pseudoangioma [1,4]. The illness resembles a common disease that occurs in Japan caused by an insect bite [5]. It appears that mosquito bites, flea bites and bites by other arthropods, viral infections, an enhanced insect bite reaction, immunocompromised diseases, and drugs

are the possible pathogenic causes of the disease [6]. Herein, we report forty-five patients with this condition and attempt to explore their epidemiological and clinical manifestations.

## MATERIALS AND METHODS

Forty-five patients presented with clinical manifestations of suspected EPA to the Dermatology and Venereology Department of Al-Ramadi Teaching Hospital during the period from January 1, 2018, to January 1, 2020. A history was taken from those affected and from their parents regarding their age, sex, duration of the illness, and any preceding symptoms of infections. Also, they were inquired about other affected family members and any associated pruritus. A history of medical diseases and drug ingestion was inquired about. Clinical examination was performed regarding

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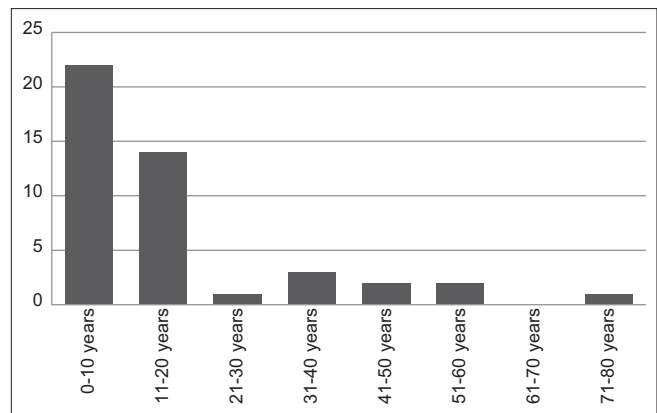
the skin and other body systems. The types, numbers, and sites of lesions were noted and the examination of the hair, nails, and mucus membrane of the mouth was performed. Complete blood, liver, renal function and other tests were done when indicated. Informed consent was obtained from all patients or their parents. The study was approved by the institutional ethics committee.

## RESULTS

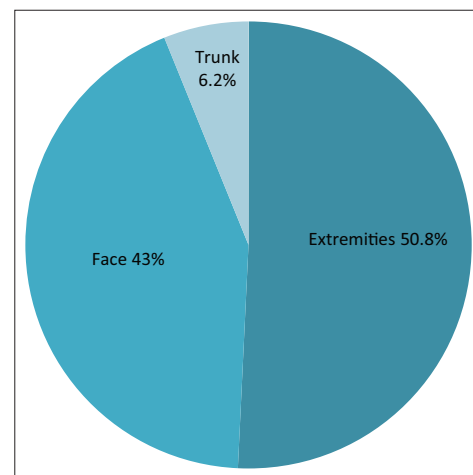
Forty-five patients, twenty-seven females and eighteen males, were seen, with their age ranging from four months to seventy years, with a mean age of fifteen years. The female-to-male ratio was 1.5:1. The most commonly affected patients were those younger than ten years of age (48.9%), followed by those 11-20-year-old (31%) (Fig. 1). The patients presented with preceding symptoms of the upper respiratory tract or gastrointestinal infections or with a history of insect bites or associated diseases in 66.7% (Table 1). Other affected members of the family were found in 5%. The disease was associated with mild pruritus in 35.5%. The most commonly affected sites were the extremities and face (Fig. 2). The disease was manifested by the abrupt appearance of small, red macules and papules surrounded by a pale halo distributed mainly on the exposed part of the body, especially the face and extremities (Fig. 3). There was a seasonal variation of the disease with a peak incidence in the spring (Fig. 4). Histopathological examination of the affected skin revealed a normal epidermis with slight perivascular lymphocytic infiltrates in the papillary dermis and dilated capillaries with prominent endothelial cells (Fig. 5).

## DISCUSSION

Eruptive pseudoangiomatosis is a spontaneously-resolving illness without sequels, with its first reported cases in children and, later on, in adults as well [2]. In the present study, the most affected patients were in the first decade of life, followed by those in the second decade. Thus, the disease usually affects those in the lower spectrum of life, as described by González et al. [6] and others [7,8]. This may potentiate the viral etiology in the pathogenesis of the disease because children and young age groups are more susceptible to viral infections because their immunity remains not built well enough against these particles. Females were affected more than males, at a ratio of 1.5:1. There is



**Figure 1:** Age distribution among the forty-five patients with eruptive pseudoangiomatosis.



**Figure 2:** Body sites affected by eruptive pseudoangiomatosis.

**Table 1:** Associated illnesses among the patients with eruptive pseudoangiomatosis

	No. of patients	%
No associations	15	33.3
With associations	30	66.7
Associated illness		
Multiple boils	1	3.33
Upper respiratory tract infection	20	66.67
Common warts	1	3.33
Insect bite	3	10
Cholinergic urticaria	1	3.33
Gastrointestinal tract infection	2	6.67
Scabies	1	3.33
Diabetes mellitus	1	3.33

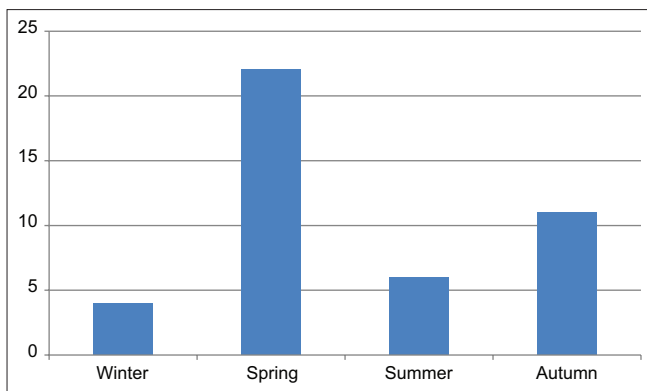
variation in the literature regarding sex involvement. Some noticed no difference in sex involvement [9], others described the female-to-male ratio as 3:1 [10], while in other studies, when considering adult patients, females constituted a ratio of 2:1 [3]. Most cases of EPA were associated with prodromal symptoms before the appearance of the rash. In the studied cases, 42.6% had symptoms of an upper respiratory infection, such as

cough, fever, runny nose, sore throat, malaise, tiredness, and gastro-intestinal tract symptoms such as diarrhea in 4.3%. These were described in a study by Chaniotakis et al. [8] and by most reports [1-3,5]. These features of prodromal symptoms may explain the suspected viral cause of the illness. Another association with EPA was insect bites (6.4%); the rash could have been a result of the bites because a similar rash was induced by a *Culex pipiens pallens* bite in Japan [11,12]. In Middle Eastern countries, a similar illness that attacks children, known as *purpura pulicosa*, has been linked to flea bites, thus arthropod bites may be the etiological agent

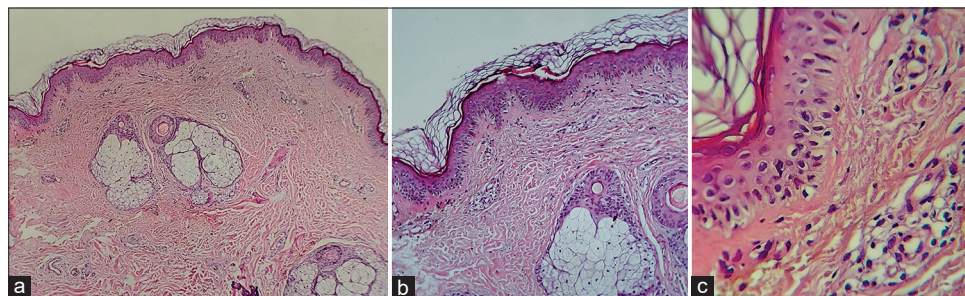
of EPA [13]. This may explain the associated scabies in 2.1% of the cases. EPA usually arises in healthy patients yet has been reported in immunocompromised patients and those on chemotherapy [5,8,14,15]. Hence, the association of skin infections manifested as boils, common warts, or diabetes mellitus, each in 2.1%, may explain the suppressed immune status or may be merely incidentally present. The most involved body regions in EPA are the exposed sites, as mentioned by Rivas-Calderón et al. [16] and Oka et al. [17]. In the present study, the extremities were the most commonly affected (50.8%), followed by the face (43%), and trunk (6.2%). Affections with EPA may follow variable seasonal variations with different reports from different parts of the world. In a study by Cheng et al, it mostly occurred during the summer season [3,7,8,18], and in a study by Chuh et al., it was in the spring and summer seasons [2,9,10]. In the present study, 51.2% of the cases occurred during spring and 25.6% during autumn. These seasonal variations in various regions of the world may explain the regional availability of the causative agents such as viral infections, insects, and so forth. The etiology of EPA is unknown yet could be a reactive process to different initiating agents [7]. These inciting agents may include viruses such as enteric cytopathic human orphan (ECHO) viruses, cytomegalovirus (CMV), Epstein-Barr virus, adenovirus, coxsackie B [1,2,9,15], and parvovirus B19 [7,10]. The hypothesis of the viral cause depends, in most cases, on the presence of prodromal symptoms, spontaneous resolution, the appearance of more than one case within the family, and the recurrence of the disease [7,12,19]. The outbreak occurrence of EPA in European countries [20,21] potentiates this opinion. Other causes that may initiate the illness are arthropod insults such as insects and fleas bite, particularly when the exposed sites are affected [11]. When the rash affects the covered parts of the body, other causes should be suspected, such as drugs, herbal medicines, and foods [7,19].



**Figure 3:** Rash of eruptive pseudoangiomatosis on the (a) hands and forearms and (b) face.



**Figure 4:** Distribution of the cases of eruptive pseudoangiomatosis according to the season of the year.



**Figure 5:** Histopathological examination of a lesion of eruptive pseudoangiomatosis revealing a normal epidermis with mild perivascular lymphocytic infiltrates in the papillary dermis and dilated capillaries with prominent endothelial cells (H&E; a) 10x, b-c) 40x).



Immunosuppression, whether by disease or drugs, may trigger the illness [7,8]. The diagnosis of EPA mainly depends on its characteristic clinical features. Histopathological examination is not pathognomonic yet may exclude other diseases resembling it [6]. The histopathological features consist of dermal blood vessel dilatation with plump endothelial lining with perivascular infiltration of lymphocytes [22]. Numerous hypotheses have attempted to explain the character of the rash. The central erythema may result from the dilatation of the capillaries induced by different agents, while the associated perivascular edema gives rise to the papule and the vasoconstriction around the vasodilatation of the papules results in a pale ring around the lesion [12]. The differential diagnosis of EPA is bacillary angiomatosis, spider telangiectasia, pyogenic granuloma, papular urticaria, and other viral exanthems [7,22].

## CONCLUSIONS

Eruptive pseudoangiomatosis is an illness of unknown etiology, yet numerous factors may be suspected. In most cases preceded by the prodromal symptoms of upper respiratory or gastrointestinal tract infections, a viral etiology is considered a triggering agent. In other cases not associated with prodromal symptoms, other triggering factors may be suspected such, as an arthropod's bite, drugs, foods, and underlying diseases.

## Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

## Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

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