

## Bullous Impetigo Case Series: An Updated Review

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### Abstract

Impetigo also known as pyoderma is a common paediatric skin infection presenting to clinics and hospitals in summer season. The illness is acquired from close skin contact with the victim and is highly contagious. The lesions are fluid filled vesicles that leave crust after rupture and usually heal without treatment. The infection is classified as bullous and non-bullous impetigo, the latter one having the least occurrence and is most commonly associated with complications, therefore prompt treatment is necessary.

The case series holds a brief literature review of bullous impetigo, its clinical course, treatment options and complications. The author reports two cases presenting with bullous impetigo in the month of June. A five-year old boy and fifteen months old girl; both presenting with similar rashes involving limbs, trunk and neck with slight differences in the clinical symptoms. Both were treated with fluids, oral and topical antibiotics. The climatic conditions of Karachi favours the incidence of impetigo. Also, poor sanitation and overcrowded areas have further more increased the incidence of the disease. Families are unaware of these types of skin infections and hence do not isolate the victim which, in case of highly contagious illnesses like impetigo, is of great importance. Furthermore, not getting prompt treatment is another factor that cannot be ignored and results in complications in case of bullous impetigo. The most important conclusions which can be drawn from our case series are the lack of paediatric centres that treat dermatological conditions promptly and effectively. Lack of proper guidance convinces families to switch to self-medication and sometimes neglect. The role of a paediatrician is vital when creating understanding with the patient's attendant by explaining them the clinical features and course of treatment of bullous impetigo to avoid self-medication while dealing with skin diseases in children.

**Keywords:** Impetigo, skin diseases, paediatric, sanitation, *Staphylococcus aureus*.

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### Introduction

Impetigo is a bacterial skin infection frequently reported in the dermatology clinic<sup>1</sup>, with a high prevalence among infants and children between 2 to 5 years of age<sup>1-3</sup>. This cutaneous condition ranks third after eczema and viral warts<sup>3</sup> with the incidence of more than 75% in school going children and 12% in infants<sup>4</sup>. Approximately 10% of

the paediatric population in the United States visits physicians with this dermatological illness<sup>5</sup>.

Impetigo, on the whole, is highly communicable disease with more prevalence in schools, day-care centres, and within siblings<sup>2,6-9</sup>. The outbreaks are common in the summer season in places of warm climates where temperatures are usually high and weather is more humid<sup>3</sup>.

The skin infection is characterised by inflammation in the superficial layers of the epidermis and can occur either as a primary infection or secondary to another condition, such as atopic dermatitis or scabies, which disrupts the skin barrier. It most commonly spreads through direct skin contact with the victim or can either be transmitted via fo-

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mites<sup>1,5,6,8</sup>. It is a gram-positive bacterial infection. The most common pathogens involved are *Staphylococcus aureus* and *Streptococcus pyogenes* (group A beta-haemolytic streptococcus (GABHS), either infecting alone or in combination. The bacteria colonises the skin of healthy individual developing illness in areas of broken skin<sup>5</sup>. Impetigo is broadly identified as bullous and non-bullous impetigo<sup>1,6,8</sup>. The incidence of bullous to non-bullous variety is 30:70<sup>2</sup>. Nevertheless, the non-bullous variety occurs more commonly. The rare form i.e. bullous impetigo is an invasive but localised infection characterised by fluid-filled blisters on the skin<sup>4,6</sup>. The classic lesion is bulla, which is a cystic elevated skin lesion of 0.5 to 2 cm in diameter<sup>1,10</sup> and is invariably frail and flaccid, leaving golden-brown crust after rupturing<sup>6</sup>. The lesions are often painful and are associated with systemic manifestations like fever accompanied minimally with weakness, diarrhoea and lymphadenopathy<sup>6</sup>. Bullous impetigo is a staphylococcal infection inevitably caused by exfoliative toxins acting as super-antigens produced by the pathological strains of *Staphylococcus aureus*<sup>1,11</sup>. Impetigo is a self-limiting disease with healing occurring within two weeks if left untreated, often without scarring. Diagnosis of the illness is usually made on clinical grounds. In cases of resistant lesions or when the patient is unresponsive to medications, culture is strongly suggested to identify MRSA (methicillin-resistant *Staphylococcus aureus*) species<sup>7,12</sup>. The month of June is when the weather of the city is extremely hot with humidity prevailing in the air. In accordance with the meteorological data collected from 1992 to 2012, Karachi in the month of June has a hot desert climate. The temperatures are as high as 95 °F, sometimes reaching the 100 °F mark and other times temperatures drop below 91 °F. The weather is usually dry over the course of the month, with relative humidity ranging from 89% (very humid) to 51% (mildly humid), rarely increasing to 100%<sup>13</sup>. All these climatic factors favour the incidence of bullous impetigo.

The case series holds the discussion of two cases of bullous impetigo reported in paediatrics

department in Abbasi Shaheed Hospital, Karachi within a week in June 2014.

### Case Series

A 5 year old female child previously healthy weighing 15 kg was brought to paediatric emergency on 14th June 2014 with complains of rashes all over the body since 10 days and fever since 12 days. The history of illness was reported by her mother stating that no such no sign of illness had been reported previously. Twelve days prior to the presentation the child developed high grade fever, documented up to 102 °F, which was not associated with chills and rigors and was relieved temporarily by taking antipyretics. Fever was accompanied by rashes on the face and then involved trunk and upper limbs. Rashes over abdomen and lower limbs appeared later on (Fig. 1). Initially, rashes were macular and then became vesicular and few crusted and healing lesions, around 0.5 to 1 cm in diameter, associated with itching and discharge of serous fluid from some lesions. All mucous membranes including oral cavity and genitalia were spared. For the above complaints, parents took her to local general physician who advised Panadol syrup and cotrimoxazole. Her condition was not relieved so the parents took her to Sindh Government Hospital from where they were referred back here for further management and admission. There was no history of arthralgia, altered level of consciousness, sore throat, cough, fits or burning micturition. There was no past history of prior admission or any blood transfusion or any known drug allergy. Her mother and father had no known co-morbids and had no history of previously contracted skin disease. The patient has three siblings; one elder sister, another elder brother and one younger brother, all healthy. However, her younger brother had measles 3 weeks back for which he received proper medications and treatment and was not isolated from his siblings during the course of illness. Birth history was unremarkable and Bacillus Calmette-Guerin (BCG) vaccine scar was present. Growth milestones were achieved at the appropriate age. Sleep was disturbed due to

pain and itching. On examination, the lesions were papulovesicular and bullous, and few crusted honey coloured lesions on face, neck, trunk, abdomen and back, around 0.5 to 1.5 cm in diameter. The largest one was on the sacrum around 3 cm in diameter with oozing of serous fluid and sloughing of overlying skin; surrounding skin was healthy and non-erythematous. Few healed lesions were present on both legs involving thigh, knee, shin and foot. Mucous membranes were not involved and other systemic examination was unremarkable.

The lesions were diagnosed as bullous impetigo clinically and the patient was given maintenance intravenous fluid, antipyretic and injection ceftriaxone. Steroid and mupirocin cream were also applied locally. The child was discharged on the 5<sup>th</sup> post-admission day on oral and local antibiotic and antipyretic.



**Fig 1.** Papulovesicular, bullous and few crusted honey-coloured lesions on lower limb, trunk and back around 0.5 to 1.5 cm in diameter. The largest one can be seen on sacrum around 3 cm in diameter.

A 15 months old female patient with a weight of 6.8 kg admitted through emergency on 19<sup>th</sup> June 2014 with complains of fever, cough, runny nose and rashes over arms and trunk. Fever was high grade, intermittently associated with a cough and runny nose which was followed by rashes over her arms and trunk. Rashes were initially small but gradually they increased in size and started oozing fluid along with crust formation. There was surrounding erythema around the rashes. The lesions involved her neck and both upper limbs and was more prominent over the extensor surfaces. Rashes were itchy and painful (Fig. 2). Her birth history was unremarkable. She did not receive any vaccination up to that age. Milestones were achieved at the proper age. Her parents and other two elder siblings were healthy, but her cousin had similar rashes one week ago for which she was admitted in hospital for four days (they live in a joint family system). On examination, the patient was febrile and pale. No signs of lymphadenopathy and jaundice were found. Rashes were vesicular in nature, which were spread all over her arms and neck with



**Fig 2.** Vesicular rashes with no surrounding redness involving left arm were with crust formation.

no surrounding redness. The size of the lesions varied from 1 to 2 cm, with the largest one on her left forearm, around 3.5 cm, with crust formation. Mucous membranes and genitalia were spared. Rest of the systemic examination was found to be normal. Lab reports showed leucocytosis with predominant neutrophils.

The diagnosis of bullous impetigo was made on visual observation and fluid was given with injectable antibiotics along with antipyretic syrup. She was discharged from hospital after the 5<sup>th</sup> day of admission on oral antibiotics.

## Discussion

Impetigo is one of the most common skin infections in children accounting for approximately one-tenth of all cutaneous problems presenting to paediatric clinics<sup>3</sup>. The condition affects older infants of 2 to 5 years of age or more, however, bullous impetigo is most common in neonates<sup>1,3</sup>.

Impetigo which is classified as bullous and non-bullous has different areas of involvement. Bullous impetigo favours moist, intertriginous areas like armpits, diaper areas, and neck folds, however, it can affect any area of skin on the body<sup>1,7</sup>.

Our first case demonstrated blisters on face followed by the trunk, upper extremities and abdomen with some lesions becoming crusted after rupture and were intensely pruritic. Also, our second case showed similar rashes as the first one over arms and the trunk. These findings are suggestive of non-bullous variety however in both the cases the lesions had no surrounding erythema but showed scalded skin appearance with a thin collarette of scale that is pathognomic of bullous impetigo<sup>1</sup>. Moreover, the size of blisters (up to 2 cm) and absence of enlarged regional lymph nodes fits the lesions into the category of bullous impetigo<sup>1</sup>. Furthermore, negative history of burns, sparing of oral mucosa and genitalia, the absence of grouped vesicles on erythematous base on skin of face and absence of thin-walled vesicles on an erythematous base excluded the diagnosis of thermal burns,

Stevens-Johnson syndrome, herpes simplex virus and varicella respectively. Therefore, under the umbrella of above clinical features, the diagnosis of bullous impetigo was made on the basis of history and clinical examination in both the cases after consultation with dermatology department.

The incidence of impetigo is of great importance regardless of the type as the infection occurs more commonly during summer months or in areas where humidity is high; also, areas with poor sanitation and low socio-economic backgrounds i.e. in crowded living conditions as impetigo is highly contagious<sup>1-3</sup>. Interestingly both of our cases were reported in the month of June when temperatures are constantly high in Karachi. Simultaneously both of the patients had a positive family history where one of the members of the family of their age got similar rashes before.

Considering the management, there is no definite treatment of impetigo as the lesions normally heal spontaneously within two to three weeks with no scarring<sup>2</sup>, although pharmacological therapy is prescribed to prevent symptoms causing discomfort, to restore the cosmetic appearance of the patient and to prevent the spread of infection. Rarely bullous impetigo complicates to Staphylococcal scalded skin syndrome (SSSS) or toxic shock syndrome (TSS) if not treated effectively resulting in the formation of bullae all over the body with a wide range of symptoms<sup>6</sup>.

Topical antibiotics like mupirocin and fusidic acid are used in majority cases of impetigo<sup>1</sup>. As a general care, the affected area should be cleaned with soap and water before application<sup>1,6</sup>. However, systemic antibiotics are used to alleviate fever, or in the case of complicated infections or infection accompanied by other systemic involvement<sup>1</sup>. In this regard, penicillins that are sensitive to penicillinase are contraindicated; however, cephalosporins can be used. Erythromycin is a good choice for poverty-stricken populations. Augmentin provides a better coverage as an effective combination of penicillin with a beta-lactamase inhibitor. If MRSA infection is suspected, clindamycin, sulfamethoxazole/



trimethoprim, minocycline, tetracycline and fluoroquinolones become the antibiotics of choice<sup>1</sup>. In the case of bullous impetigo, if the patient is reported to emergency department, intravenous fluid restoration becomes the first line management to prevent the infant from dehydration due to skin loss. Both of our patients came through emergency and were immediately given fluids in accordance with the amount of fluid transferred per kg of body weight in the case of burns. Furthermore, injection of ceftriaxone was given with Panadol syrup to reduce fever. Also, antimicrobial cream and steroids were prescribed for local topical application. The lesions of both children started to resolve uneventfully without any complications and the patients were discharged after 5 days from the hospital on oral and topical antibiotics for 5 days.

For this infectious skin disease, the patient's parents sought care from multiple providers at multiple hospitals. So it is important to discuss the clinical features and course of treatment of bullous impetigo with parents and reassure them to avoid self-medication while dealing with skin diseases in children. The concept of paediatric dermatology is not yet established in Pakistan causing delayed referral to tertiary care centres. For this reason, patient's parents usually seek care from multiple providers at multiple hospitals and clinics and mostly switch to self-medication which leads to the worsening of symptoms. Therefore, it is important for paediatricians to discuss the clinical features and course of treatment of bullous impetigo with parents and reassure them to avoid self-medication while dealing with skin diseases in children. Also, in this regard, the need for paediatric dermatology clinics cannot be neglected.

## Conclusion

Skin diseases are quite common in paediatric population but the ability to diagnose and manage skin diseases with a rare presentation such as bullous impetigo in children remains a challenging task for practicing paediatricians.

## Conflict of Interest

Authors have no conflict of interests and no grant/ funding from any organization for this study

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