

Impetigo a Bacteriological Study in Baquba City Diyala Province - Iraq

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Abstract

Impetigo is a contagious superficial pyogenic infection of the skin it is of two types non-bullous and bullous , caused by *Staphylococcus aureus* and or *Streptococcus pyogenes* predominantly seen in preschool and school children of both sex . The aim of the present study is to evaluate the types of bacteria that cause impetigo . 46 children were seen and examined in Baquba teaching hospital for the period 30 of April to the 31 of July 2010 , they were 28 males and 18 females , their ages ranged from 2-6 years with a mean age of 3.56 years . they complained of skin rash , which was diagnosed clinically as impetigo , and sterile cotton swabs were taken from the lesions under full aseptic condition , and cultured on a Blood agar and MacConkey agar for bacteriological studies . The study shows (diagram) that the *Staphylococcus aureus* was the most common bacteria that cause impetigo (34.8 %) than the *streptococcus pyogenes* (17.4 %) . *Proteus mirabilis* and *Staphylococcus epidermidis* were a new report as a causative bacteria of impetigo . Like other studies we concluded that the *Staph aureus* was the most common bacteria that cause impetigo , and *Proteus mirabilis* may be a causative bacteria.

Key words : Impetigo , *Staphylococcus* , *Streptococcus* , *Proteus*

Introduction

Impetigo is a contagious superficial pyogenic infection of the skin , it is of two main clinical forms : non – bullous impetigo (Impetigo Contagiosa of Tilbury Fox) and bullous impetigo [1] .

Contagiosa Bullous impetigo is accepted as a *Staphylococcal* disease , although *Streptococcal* bullous impetigo has been reported [2] .

The non – bullous form may be caused by *Staphylococcal aureus* , by *Streptococci* , or by both organisms together it accounts for more than 70 % of all cases [1,3] .

Bacteriology :- Non – bullous impetigo may be caused by both *Staphylococcal aureus* , and *Streptococcal pyogenes* but there has been controversy as to the relative importance of the two genera , this may partly depend on geographical variations , the *Streptococcal* form being more

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prevalent in warmer climates , [4,5] . *Staphylococcus aureus* may be a secondary invader in *Streptococcal impetigo* and in some such cases , it may be the predominant or the only isolate , and the evidence for *Streptococcal* involvement may rest on serology [6] . Red lake Indian Reservation in northern Minnesota detected both *Saureus* and *Streptococci* , each alone in a sizeable minority , but both together in 58 % of cultures , he concluded that in many of the mixed – culture cases , the disease was primarily *Streptococcal* with *S. aureus* as a secondary colonizer [7] .

Recent Uropain publications suggest that the *Staphylococci* may be the predominant infectious agent in most cases [8] . the preponderance of group II phage type seen in bullous impetigo seems also to apply to the non – bullous *Staphylococcal* disease [5] . In *Streptococcal* impetigo lance field group A is by far the commonest , but there are occasional infections with group G and group C organisms [7 , 9] .

Bullous impetigo is accepted as a *Staphylococcal* disease predominantly phage group II , which produce epidermolytic toxin locally , and induce epidermal splitting and blister formation in bullous impetigo , while in generalized *Staphylococcal* scalded skin syndrome the toxin is disseminated haematogenously [2,10.11]

Histopathology :- of non – bullous impetigo is vesicopustule arises in the upper layer of epidermis , a above , within or below the granular layer , it contains numerous neutrophils , a few a cantholytic cells , occasionally gram – positive coccai can also be found with in the vesicopustule both with in neutrophils and extracellularly .The upper dermis contains a moderately sever inflammatory infiltrate of neutrophils and lymphoid cells .

In bullous impetigo , the picture is the same , but the upper dermis may show a polymorphous infiltrate with absence of inflammatory cells within the bulla cavity [1,3,12] .

Clinical features :- non – bullous impetigo occurs more commonly in preschool age children , the initial lesion is a very thin – walled vesicle or pustule on an erythematous base , that ruptures quickly and evolving to yellowish brown (honey – comp) crusted plaque , which show gradual irregular peripheral extension , without central healing up to (2 cm) and multiple lesion was coalesce usually there is no constitutional symptom excepted in severe cases but regional lymphadenopathy may be present in up to 90% of patients with severe prolonged untreated infection . The crust dry and separate to leave erythema , which Fads and complete spontaneous healing can occur within 2-3 weeks without scarring . The face , especially around the nose and mouth and the limbs are the sites most commonly affected , and lesions may occur anywhere on the

body especially in children with a topic dermatitis or scabies : and rarely the mucous membranes may be involved [1,3,8] .

Bullous impetigo occur more commonly in the new born and in older infants , and is characterized by the rapid progression of vesicles to Scoccid bulla , which are less rapidly ruptured and become much larger , up to 1-2 cm in diameter and may persist for 2 or 3 days the contents are at first clear , later become cloudy , and after rupture thin , flat , light brownish to golden – yellow crusts are formed central healing and peripheral extension may give rise to circinate lesions . Although the face is often affected the lesions may occur anywhere on the skin , and buccal mucous membrane may be involved , but commonly , rather few lesions are present and regional adenitis is rare [1,3,8,13]

Methods

Forty six patients were seen and examined in the outpatient clinic of Baquba Teaching Hospital for the period thirty of April to the thirty one of July 2010 . They were 28 males and 18 females their age ranged from 2-6 years, with a mean age of 3.56 years , they complained of rash on the skin , which was diagnosed clinically as impetigo . They were fully interrogated regarding the age, sex , address , occupation , chief complain , previous and present history of any associated disease . Sterile cotton swabs were taken from the lesions , under full aseptic condition , and the samples were cultured on Blood and MacConkey agar for 24 hours at 37c for bacteriological studies . The samples were cultured under aerobic condition , the isolation and diagnosis of types of bacteria was done according to the ideal methods [14] .

Results

Forty six patients were seen and examined in Baquba teaching hospital for the period 30 April – 31 of July 2010 , they were 28 males (60.9%) and 18 females (39.1%) with mean age of 3.56 years . The study shows (table) that out of 46 children suffering from impetigo , 44 cases were non – bullous and two cases were bullous type .

Out of 46 samples taken from the patients , 16 (34.8%) samples were positive for *Saph. aureus* , 8 (17.4%) samples were positive for *Strep. pyogenes* , 4 (8.7%) samples were positive for both *Staph aureus and Strep. pyogenes* , 4 (8.7%) samples were positive for *Staph aureus and Proteus mirabilis* (picture) , 6 (13.04 %) samples were positive for *Staph epidermidis* , two samples (4.3%) were positive for *strep . pyogenes and Staph epidermidis* , 6 samples (13.04%) were negative i.e . no growth of bacteria was seen .

Table(1) clinical criteria of patients with impetigo .

Type	Male	%	female	%	Total
Non-bullous	26	56.6	18	39.1	44
Bullous	2	4.3	0	0	2
Total	28	60.9	18	39.1	46

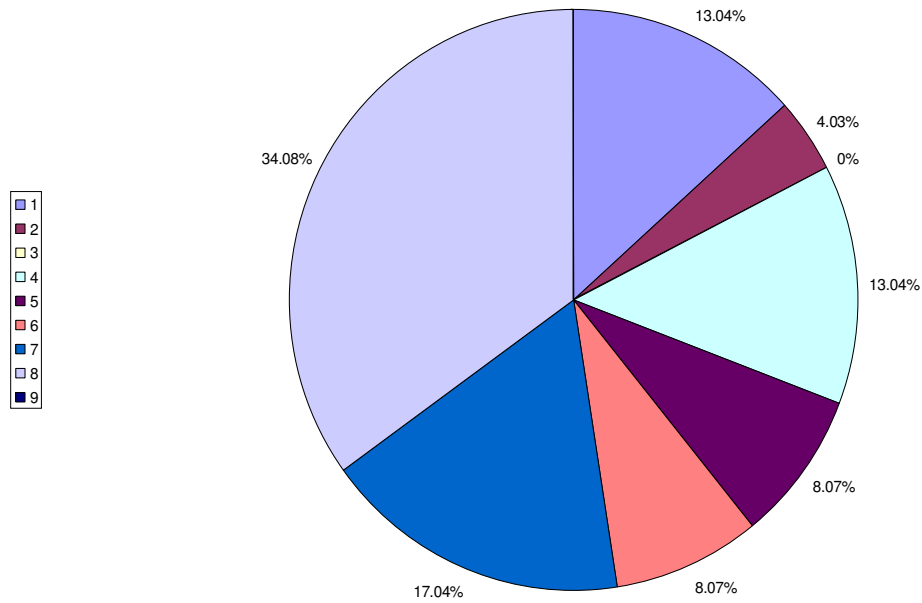


Figure (1):

1 – *Staph epidermidis*.

2- *Strep. pyogenes* and *Staph. epidermidis*.

4- Negative .

5- *Staph. aureus* and *Strep. pyogenes*.

6- *Staph aureus* and *Proteus mirabilis*.

7. *Strep. pyogenes*.

8- *Staph aureus*.



Discussion

Regarding the age the patients, the study is concordant with other literatures. i.e. it is disease of preschool age .

Regarding the gender, the result was differ from other studies .i.e. the disease was more prevalent in males than females.

Regarding types of bacteria which cause the impetigo (diagram) the *Staphylococcus aureus* is the most prevalent bacteria (34.8 %) , which is concordant with Urobain studies and differ from Indian studies in which the mixed infection is the predominant [7,8] . *Streptococcus pyogenes* is the second most prevalent bacteria (17.04%) . 13.04% of samples shows growth of *Staph .epidermidis* and (4.3%) shows mixture both *Staph . epidermidis* and *Strep . pyogen* , this results was not reported in literatures as the *Staph . epidermidis* is a normal skin flora ,so it may invades a preceding skin abrasion or injuries and become pathogenic and cause impetigo .

The results appeared that (8.7 %) of samples shows mixture of both *Staph . aureus* and *Proteus mirabilis* which is also not reported previously , this was most probably , that the *Proteus mirabilis*

can cause deep infection of the skin (Cellulites) [1] , so it may possible to invade superficial skin and cause impetigo , (13 %) of samples shows no growth of any type of bacteria , and this is most probably due to use of antibiotic and antiseptic by the patients , and resulting in sterilization of the lesions .

We concluded that the *Staphylococcus aureus* was the most common cause of impetigo , than *Streptococcus pyogenes* , and the *Staphylococcus epidermidis* as well as *Proteus mirabilis* were a new causative bacteria of impetigo .

We recommended to do another study with a large number of samples to prove that the *Staph . epidermidis* and *Proteus mirabilis* may be a cause of impetigo .

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