A RETROSPECTIVE STUDY OF SOME CLINICAL AND EPIDEMIOLOGICAL FEATURES OF IMPETIGO PATIENTS SEEN IN DERMATOLOGY CLINIC IN THE EASTERN PROVINCE OF SAUDI ARABIA

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Background: Impetigo is a common contagious superficial skin infection, most frequently seen in children.

Objectives: To determine the clinical and epidemiological features of impetigo patients seen in the dermatology clinic of King Fahd Hospital of the University (KFHU).

Methods: This is a retrospective study of impetigo patients seen in the dermatology clinic at KFHU, Al-Khobar, Saudi Arabia, during the period January 1990 to December 2001. Data collected from patients' records included demographic features, clinical features, investigations and treatment. Only patients with positive skin culture were included in the study.

Results: The total number of patients included in this study was 65 and constituted 0.08% of all the cases presenting with dermatology problems in that period. Males were affected by impetigo more than the females, giving a ratio of 1.7:1. The majority of the cases occurred in children less than 10 years of age, and the bullous form of impetigo was the predominant type. The sites affected by impetigo were mainly the extremities and the face. The highest number of patients was seen during summer and Staphylococcus was the most common causative agent.

Conclusion: The incidence and prevalence of impetigo in Saudi Arabia is unknown and can be best defined by prospective community-based study. The diagnosis and management of impetigo is best achieved by microbiological cultures and sensitivities laboratory investigations.

Key Words: Bullous impetigo, non-bullous impetigo, positive skin culture, staphylococcus aureus.

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INTRODUCTION

Impetigo is one of the most common skin infections in children accounting for approximately one tenth of all cutaneous problems presenting to pediatric clinics.1–3 In the USA, 9 – 10% of all children presenting with skin complaints had impetigo.4 A prospective survey of a pediatric dermatology clinic to determine the spectrum and pattern of skin diseases of children in Kuwait determined that impetigo was the fifth most common dermatoses constituting about 7.6% of dermatological cases.5

Impetigo is superficial skin infection mainly caused by staphylococcus aureus or group A beta haemolytic streptococcus (GAβHS). It is characterized clinically by the appearance of small, erythematous lesions which quickly develop into vesicles and pustules. Later, the vesicles and pustules become crusted and weepy, and new vesicles or blisters develop in the same place or other body sites.5–8 It commonly occurs in the preschool age with equal sex distribution. It involves the face and extremities, and is seen mainly during the summer and early fall and is, therefore, more common in warm climates.2–4,9,10

Few studies of impetigo have been done in the Middle East and this preliminary retrospective study was done to review the epidemiological characteristic and clinical features of impetigo among patients at KFHU, Al-Khobar, Saudi Arabia.

METHODS

Medical records of patients with impetigo from January 1990 to December 2001 were retrieved and only patients with positive skin culture were included in the study.

A data collection sheet was prepared to summarize the information obtained from each patient record, including the demographic features (age, gender and nationality), clinical features, investigations and the treatment prescribed.

During the period of study, January 1990 to December 2001, the total number of new patients seen in the dermatology clinic was 77068. Among these, 203 (0.26%) patients were diagnosed on clinical basis as impetigo, and only 65 (0.08%) were confirmed by culture study.

The data was analyzed using a personal computer and statistical package for social sciences (SPSS). Statistical analysis was performed for qualitative variables with chi-square test and for quantitative variables by students' T-test. Significance level was set to be less than 0.05%, throughout the study analysis.

RESULTS

The Epidemiological Characteristics of Impetigo Patients

The number of Saudi and non-Saudi patients with impetigo and their sex distribution is shown in Table 1. There was no significant difference between Saudi and non-Saudi patients and the male to female ratio was 1.7:1.

| Nationality | Number of patients |  |  |
|-------------|--------------------|---|---|
|             | Males (%) | Females (%) | Total |
| Saudi       | 33 (68.7)  | 15 (31.3)   | 48    |
| Non-Saudi   | 8 (47.1)   | 9 (52.9)    | 17    |
| Total       | 41 (63.1)  | 24 (36.9)   | 65    |

The age at presentation with impetigo varied from 0.063 to 44.0 years, and the median age was 4.0 years. In males, the age at presentation ranged from 0.420 to 33.0 years (median 4.0 years), and in females from 0.063 to 44 years (median 4.0 years). The gender difference between different age groups in Saudi and non-Saudi patients at presentation was not statistically significant.

The duration of impetigo on the day of presentation in the dermatology clinic ranged from 1 to 15 days with a median of 7 days and the differences in duration between males and females was not statistically significant.

The distribution of impetigo patients throughout the year is shown in Figure 1. The highest number of patients was seen during the summer months, peaking in the months of June and July. The lowest number of patients was seen during the winter months (December to March).
The Clinical features of Impetigo

The most frequent clinical feature of impetigo was erythema and yellowish crusted lesions. Yellowish crusts occurred in 43 patients (66.2%) and erythema occurred in 35 patients (53.8%). Regional adenopathy was found in 31 (50.8%) out of a total of 61 patients examined.

Non–bullous impetigo was the predominant clinical type seen in 43 (66.2%) patients, 30 (69.8%) of whom were males and 13 (30.2%) females. The Bullous type impetigo was present in 16 (24.6%) patients, 10 of whom were males and 6 females; the majority (87.5%) of these cases were <5 years of age. The site distribution of impetigo according to morphological types is shown in Table 2.

| Site      | Non-bullous (% of patients) | Bullous (% of patients) |
|-----------|-----------------------------|-------------------------|
| Extremities | 46.5                        | 43.8                    |
| Face      | 39.5                        | 31.3                    |
| Scalp     | 27.9                        | 6.3                     |
| Trunk     | 14.0                        | 25.0                    |
| Perianal  | 4.7                         | 18.8                    |
| Buttocks  | 4.7                         | 6.3                     |

*Total percent is not equal to sample size since a patient may have more than one site.

Precipitating factors for impetigo were reported in 28 (43.1%) patients, and included itchy skin, wounds, insect bites, cuts and burns. Eczema was the most common pre-existing skin disease found in 11 (16.9%) patients, Tinea Capitis was observed in 5 (7.7%) patients, and varicella found in one patient (1.5%).

Laboratory Results

Results of swab cultures from impetigo patients revealed that Staphylococcus aureus was positive in 43 cases (66.2%) and group A β Hemolytic streptococci were positive in 8 cases (12.3%). Mixed infection by both organisms was positive in 12 cases (18.5%) and in 2 cases, Klebsiella and Streptococcus Group C were also reported. All cases caused by S. Aureus were resistant to penicillin, but all cases caused by GAβHS were sensitive to it. The distribution of the causatives organisms according to the type of impetigo is shown in Figure 2.

**DISCUSSION**

The total number of patients with impetigo in this study was 65, constituting 0.08% of the dermatological cases seen during the period of the study. The low incidence of impetigo in the present study compared to other studies can be explained by the fact that most of the impetigo cases are managed at primary health care centers. Only a few complicated cases are referred to the university hospital. Besides, all cases without reported cultures had been excluded in this study.

The sex distribution of impetigo patients in this study was similar to that found in other studies. The age of presentation of impetigo of patients in the present study showed a high frequency in the younger age groups and is in agreement with reports in the literature.

The present study showed that 67.7% of the patients had had impetigo for up to 7 days, and 24.6% between one and two weeks. In 7.7% of the patients, duration of the disease was not documented. This finding is similar to the reported duration of impetigo in a study done in Western Sweden and another in the USA.

In this study, the predominant form of impetigo was the non-bullous type which together with the specific sites involved are in accord with other studies. The seasonal distribution of impetigo in our patients showed an increase during the summer months as found in other similar studies.

Staphylococcus aureus isolated in 55 cases (84.7%), 43 in pure culture and 12 in mixed cultures with GAβHS, was the commonest cause of impetigo in this study as in other studies. The importance of impetigo caused by A-β hemolytic streptococci strains is the fact that its nephritogenic M-strains can be followed by acute glomerulonephritis and therefore, urinalysis should always be performed in endemic areas. The risk of developing acute post streptococcal glomerulonephritis (APSGN) is not altered by the treatment of Impetigo.
18-21 days after infection, and children aged 3-7 years are most commonly affected.\textsuperscript{10,12}

All cultures that yielded S. aureus were resistant to penicillin, and in the majority of cases (87.7%). S. aureus was sensitive to erythromycin, cloxacillin and augmentin as expected from reports in the literature.\textsuperscript{8,14,18}

**CONCLUSION AND RECOMMENDATIONS**

The majority (83.1%) of cases of Impetigo patients who attended the dermatology clinic at KFHU were below 10 years of age, and the male to female ratio was 1.7:1.

The predominant type of impetigo was non-bullous, and the major sites affected were the extremities and the face. The impetigo patients were mostly seen during hot humid summer months.

Staphylococcus aureus was the most common cause of impetigo in this study and was sensitive to erythromycin, cloxacillin and augmentin oral antibiotics.

A community-based study should be performed to establish the incidence or the prevalence of impetigo in the general population and to identify the nephroitogenic strains of group A-\textbeta- hemolytic streptococci.

Culture and sensitivity investigations are recommended for all patients with clinical diagnosis of impetigo. To avoid the development of resistance because of its role in systemic infections, fusidic acid should not be used as first line of topical therapy.

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