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Erysipelas in Tunisian Patients: Epidemiological, Clinical Features and Risk Factors in Internal Medicine

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Abstract

Background: The purpose of our work was to study the epidemiological, clinical features and risk factors of erysipelas in Internal Medicine.

Methods: Retrospective study including 86 patients with erysipelas collected at our department of internal medicine between 2005 and 2016.

Results: There were 44 men and 42 women. The average age of our patients was 57.77. Erysipelas mainly affected the lower limbs in 95.3% of cases. Fever was present in 47.67% of cases. General underlying conditions were dominated by diabetes (55.8%), obesity (37.2%) and overweight (31.4%). Loco-regional favoring factors were essentially represented by lymphedema (18.6%), venous insufficiency (12.8%) and arteritis of the lower limbs (12.8%). A local site of entry was identified in 83.7% of the cases. The average number of total favorable factors was 3.12. Laboratory findings revealed leukocytosis in 66.3% of cases and CRP elevation in 77.6% of the cases. Bacteriological investigations identified gram negative bacilli in 3 patients: on blood cultures (*Klebsiella Pneumoniae*) and samples from needle aspirate (*Enterobacter Cloacae and Serratia Marcescens*). Erysipelas was recurrent in 45.34% of cases. Risk factors for recurrence were mycosis and lymphedema.

Conclusion: Prevention of erysipelas is essentially based on the treatment of local and general factors. Clinicians must be aware to the possibility of other causative microorganisms like GNB in front of erysipelas.

Keywords: Erysipelas; Risk Factor; Microbiology; Gram Negative Bacilli; Recurrence

Introduction

Erysipelas is known to be an acute non-necrotizing bacterial dermohypodermitis mainly due to group A *beta hemolytic streptococci*. In Internal Medicine, the main difficulty is to identify patients at risk of getting worse because many of our patients are immunocompromised. Another challenge in our practice is to identify the causative organisms in case of non-response to classic treatment. The purpose of our work was to study the epidemiological, clinical and risk factors of erysipelas.

Patients

We conduct a retrospective study including 86 patients with erysipelas collected at Tunisian department of internal medicine between 2005 and 2016. We included in our study the files of hospitalized patients for erysipelas admitted by the emergencies or the external consultation. The diagnosis of erysipelas was made in the presence of an erysipelatoid edematous placard, well limited, surrounded or not by a peripheral bead associated or not with general signs. We excluded from our study all erythematous rashes that did not relate to erysipelas and complications such as cellulitis and necrotizing fasciitis.

Methods

Epidemiological and clinical parameters collected included age, sex, hospital stay, relapses, cases with outpatient and inpatient treatment respectively, localization of erysipelas, antibiotic treatment and duration, the criteria of sepsis, C - reactive protein (CRP), white blood count (WBC), creatinine, and platelet levels on admission [1]. Underlying disease were collected records. Contributing factors were classified in general and loco regional predisposing factors. The sites of entry have been specified. Microbiological results from blood cultures and local samples were collected from our Laboratory for Medical Microbiology in our hospital. We have studied the risk factors for recurrence among our patients based on socio-demographic, general, locoregional factors and the sites of entry. For that we compared those with recurrent erysipelas to those without recurrence.
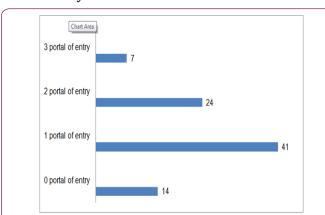
Statistical Analysis

The data were analyzed using SPSS version 19 software. For the descriptive study, simple frequencies were calculated for the qualitative variables. Averages, medians and standard deviations were calculated for the quantitative variables. The comparison of 2 averages was done using Student's t-test. The comparison of the percentages on independent series was carried out by the Pearson Chi2 test and in case of non-validity by the exact test of Fischer. The threshold of significance was set at 0.05.

Results

Epidemiological characteristics

There were 44 men and 42 women (sex ratio: 1.04). The average age of our patients was 57.77 ± 15.65 years (23 - 87 years). Comorbidities in our patients were dominated by diabetes (55.8%), hypertension (52.3%) and chronic renal failure with renal clearance of creatinine less than 60 ml/mn (44.2%). Hypersensitivity to penicillin and autoimmune disease was observed in respectively 8.1%. Erysipelas occurred during the autumn-summer period in 63.9% of cases.

Clinical Study

Figure 1: distribution of patients according to portal of entry.

The average of diagnostic delay was 9.94 days. Erysipelas affected the lower limbs in 82 cases (95.3%) and was bilateral in 9.3%. Upper limbs were involved in the other 4 cases. At the time of admission, fever was present in 41 patients (47.67%). Loco regional manifestations observed in our study were: inguinal lymphadenopathy (24.4%), phlyctena (15.1%), bubbles (8.1%), peripheral bead (3.5%), vesicles (3.5%), purpura (2.3%) and pustules (1.2%). A history of erysipelas was found in 43% of cases with an average number of episodes of 0.97 ± 1.6 (0-10). General underlying conditions were diabetes (55.8%), obesity (37.2%), overweight (31.4%), ethylism (16.3%), not decompensated heart failure (9.3%), long-term oral corticosteroids (4.7%), immunosuppressive therapy with azathioprine (1.2%) and post-alcoholic cirrhosis (1.2%). Loco-regional favoring factors were: lymphedema (18.6%), venous insufficiency (12.8%), arteritis of the lower limbs (12.8%) and erysipelas on irradiated area (1.2%). A local site of entry was identified in 83.7% of the cases. It was essentially represented by mycosis (74.4%) and toe web intertrigo
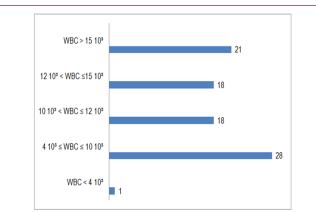
(72.1%). The others were: onychomycosis (18.6%), traumatic skin wound (10.4%), plantar hyperkeratosis (10.4%), diabetic foot ulcer (7%), leg ulcer (4.7%), eczema (4.7%), wet gangrene (2.3%) and sting by foreign body (1.2%). At least one site of entry was found in 72 patients (83.7%) (Figure 1). The average number of total favorable factors was 3.12 ± 1.5 (0-8) (Table 1).

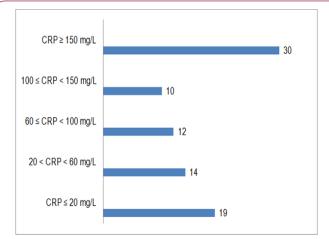**Table 1:** Distribution of patients according to the number of contributing factors to erysipelas.

Number of Favorable Factors	Number of Patients/86	Percentage (%)
0	4	4.7%
1	7	8.1%
2	19	22.1%
3	25	29.1%
4	16	18.6%
5	8	9.3%
6	6	7%
8	1	1,2%

Laboratory Data

Laboratory findings revealed leukocytosis in 66.3% (Figure 2) and CRP elevation in 77.6% (Figure 3).

Figure 2: Distribution of patients according to the value of white blood count (WBC).

Figure 3: Distribution of patients according to the value of CRP.

Microbiology

Blood cultures were made in patients with fever. Samples from needles aspirate was made in cases who didn't respond to empiric antibiotic. Bacteriological investigations identified gram negative bacilli (GNB) in 3 diabetic patients: on blood cultures (Klebsiella Pneumoniae) and samples from needle aspirate (Enterobacter Cloacae and Serratia Marcescens). Staphylococcus was not isolated in our study. But, it was suspected in patients with cutaneous effraction, pustules or abscess.

Treatment

In 17 cases (19.7%), empirical treatment was initiated with pristinamycin (10.5%), benzyl penicillin (6.9%) and amoxicillin with clavulanic acid (2.3%). In the others 69 patients who received antibiotherapy prior to admission, 43 received amoxicillin and clavulanic acid, 17 benzyl penicillin and 9 pristinamycin. The treatment was readjusted according to antibiogram in the GNB infections. The median duration of antibiotherapy was 15 days.

Evolution and Complications

The delay in obtaining apyrexia was 1.55 days ± 2.1 (0 to 9 days). Local improvement of erythema was obtained after an average delay of 4.9 ± 2.6 days (1 - 12 days). Erysipelas was complicated by deep vein thrombosis (n=8), diabetic ketosis (n=5), abscess (n=2) and severe sepsis (n=1). Erysipelas was recurrent in 45.34% of cases. The average number of recurrence was 1.98 ± 1.58 (1 - 11).

Risk Factors for Recurrence

Risk factors for recurrence were mycosis and lymphedema (p < 0.05). The mean number of total contributing factors was significantly more common in recurrent erysipelas compared to those without recurrence (3.67/2.66) (p < 0.05).

Discussion

This is a monocentric Tunisian retrospective study that has investigated epidemiological, clinical and etiological features of erysipelas as well as the peculiarities of therapeutic management. This study allowed a retrospective evaluation of our practices in case of erysipelas in internal medicine. It showed a great variability in predisposing factors, sites of entry and complications of erysipelas. In our study as in the literature, the general contributing factors were dominated by diabetes, obesity and alcoholism and the main local predisposing factors were lymphedema and venous insufficiency [2-6]. In front of erysipelas, looking for sites of entry must be systematic. In our study, the most common site of entry was mycosis. As reported by Mokni et al, any disruption of cutaneous barrier was the most significant risk factor followed by leg edema [7]. Acting on contributing factors may be an interesting alternative to avoid recurrences.

Although erysipelas is a common pathology, identifying a causative agent is rare. Despite beta-hemolytic streptococci is the most common causative agent, it was isolated rarely [8,9]. In addition to streptococcus, the second causative agent responsible of erysipelas was staphylococcus aureus [9]. In our study, it was not identified directly but it was suspected when there was a cutaneous abrasion or abscess. In our patients, blood cultures and samples from needle aspirate identified 3 GNB. As reported by several authors, cultures from needle aspirates or punch biopsies of the inflamed skin identify pathogenic bacteria in a minority of cases [8,9]. GNB have been reported rarely in erysipelas in comparison with complications due to the whole soft tissue infections [9-15]. It is therefore important to multiply the bacteriological samples to find the causal agent especially when we expect no improvement under classic treatment. In our study, benzyl penicillin was not the most used treatment because of the risk of heart failure in hypertensive patients and in those with chronic renal failure and the risk of cardiac decompensation in patients with a history of heart failure.

We have studied the risk factors for recurrence among our patients based on socio-demographic, general, locoregional factors and the sites of entry. We found, that the presence lymphedema and mycosis were risk factors of recurrence in our patients. We also found that the mean number of total contributing factors was significantly more common in recurrent erysipelas compared to those without recurrence (3.67/2.66). Our study joins data from the literature concerning lymphoedema and mycoses. While for other risk factors advanced in the literature as the antecedent of erysipelas, ethylism, obesity, overweight, heart failure, venous insufficiency, arteritis of the lower limbs, post-traumatic wounds, they were not significant in our study probably because of the small size in our study [16-18]. Finally, the retrospective nature of our study remains the main limiting factor.

Conclusion

Erysipelas is a common pathology. Prevention is essentially based on the treatment of local and general factors. Other causative agents may be suspected in cases with systemic or local complications.

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