ARTICLE ORIGINAL

Factors associated with acute and recurrent erysipelas in a young population: a retrospective study of 147 cases

Facteurs associés à l'érysipèle et à sa récidive dans une population jeune: une étude rétrospective de 147 cas

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RÉSUMÉ

Introduction: L'érysipèle est une dermohypodermite bactérienne non nécrosante souvent d'origine streptococcique. Elle est fréquente chez le sujet âgé et souvent favorisée par les comorbidités associées. Sa survenue chez le sujet jeune en bonne santé est rare.

But : L'objectif de notre étude était d'identifier les facteurs associés à la récidive de l'érysipèle dans une population jeune.

Méthodes : Il s'agissait d'une étude rétrospective, descriptive et monocentrique effectuée au service de dermatologie de l'hôpital militaire de Tunis entre janvier 2000 et décembre 2017. Nous avons colligé 147 patients âgés de moins de 35 ans.

Résultats: Nous avons colligés 147 patients. L'âge médian était de 25 ans avec un sex ratio H/F de 6,35. Il y avait 125 militaires et 22 patients non militaires. La prévalence de l'érysipèle était de 2,23%. L'âge médian était de 25 ans. Les principaux facteurs favorables étaient: l'obésité (9%), l'alcoolisme (8%), l'insuffisance veineuse chronique (6,5%), le lymphoedème chronique (3%), la fracture de la jambe (2%) et le diabète sucré (1%). La localisation de l'érysipèle était les membres inférieurs dans 94,9%. En analyse multivariée, il avait une association entre la récidive et le diabète (p = 0,02), le sexe féminin (p = 0,004), l'onychomycose (p = 0,004) et l'eczéma dyshidrotique plantaire (p <0,005).

Conclusion: L'identification des facteurs associés et des facteurs prédictifs de récidive de l'érysipèle dans une population jeune demeure indispensable pour proposer des mesures de prévention primaires et secondaires.

Mots clés : érysipèle, récidive, facteurs associés

SUMMARY

Background: erysipelas is a common infection of the superficial layer of the skin, predominantly caused by groups A β-hemolytic streptococci. It is an acute infection of the skin and frequently affects the legs. It is common in the elderly and favoured by the associated comorbidities. Its occurrence in young healthy people is rare.

Aim: The present study aimed to elucidate factors associated with acute and recurrent erysipelas in a young population.

Methods: We retrospectively analyzed 147 cases of erysipelas admitted to the dermatology department of the Military Hospital of Tunis, Tunisia, over 18 years, identifying factors associated with recurrence. All patients were aged less than 35 years.

Results: During the study period, 147 patients were registered with the diagnosis of erysipelas. There were 125 military soldiers and 22 non-military patients. The prevalence of erysipelas was 2.23%. The median age was 25 years. Almost 86.2% of patients were male. The main favorable factors were: obesity (9%), alcoholism (8%), chronic venous insufficiency (6.5%), chronic lymphedema (3%), leg fracture (2%), and diabetes mellitus (1%). The lesions were mostly located in the lower limbs in 94.9%. According to our multivariate analysis, there was an association between recurrence and diabetes mellitus (p=0.02), female sex (p=0.004), onychomycosis (p=0.004), and plantar dyshidrotic eczema (p<0.005).

Conclusion: Identifying factors associated with recurrent erysipelas in a young population remains essential for proposing primary and secondary prevention measures.

Keywords: erysipelas, recurrence, associated factors

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INTRODUCTION

Acute bacterial non necrotizing erysipelas is a common infection of the superficial layer of the skin, predominantly caused by groups A β-hemolytic streptococci. It is an acute infection of the skin and frequently affects the legs (1). Previous studies showed an increase in the incidence of erysipelas (2). Clinically, this condition is characterized by the acute onset of a well-demarcated erythematous plaque, edema, local hardening, and pain. Systemic manifestations such as fever, regional lymphadenopathy, may also be present. Erysipelas usually affects elderly patients or patients with predisposing factors. The most distressing complication is recurrence. For initial episodes, risk factors have been well documented. The disease is associated with chronic lymphedema and venous insufficiency, obesity, cardiovascular diseases, diabetes mellitus, and alcohol abuse (3,4). Although risk factors for the initial episode and recurrence have been well defined, factors associated with recurrence in a young population have not been evaluated to date. The present study aimed to elucidate factors associated with acute and recurrent erysipelas in a young population.

METHODS

We enrolled a retrospective study in the dermatology department of the Military Hospital of Tunis, Tunisia, between January 2000 and December 2017. In total, 147 patients, less than 35 years and hospitalized for erysipelas, were included. Erysipelas was defined as a skin infection of sudden onset with a well-demarcated erythematous plaque which can be associated with fever or a satellite node lymphadenopathy. Obesity was defined as body mass index (BMI) ≥30. The following parameters of each hospitalization were analyzed: gender, age, BMI, length of hospital stay, the period of the year, and the main comorbidities (cardiovascular diseases, diabetes mellitus, chronic venous insufficiency, chronic lymphedema, local operation, radiation therapy, and wound surgical interventions at the area affected by erysipelas), alcohol abuse, local factors (defined as a disruption of the cutaneous barrier), localization, recurrent episodes, treatment, complications, and prophylactic measures taken. The Fisher exact test, chi-squared tests, and logistic regression were used for statistical analysis. A P value <0.05 was considered statistically significant. All analysis was performed with SPSS (version 23 for windows).

RESULTS

Patient demographics

During the study period, 147 patients were registered with the diagnosis of erysipelas. There were 125 military soldiers and 22 non-military patients. The prevalence of erysipelas was 2.23%. The median age was 25 years. Almost 86.2% of patients were male. The mean body mass index (BMI) was 25.4 ± 7.33 kg/m^2. The main favorable factors were: obesity (9%), alcoholism (8%), chronic venous insufficiency (6.5%), chronic lymphedema (3%), leg fracture (2%), and diabetes mellitus (1%). The lesions were mostly located in the lower limbs in 94.9%, in the upper limbs in 4.3%, and on the buttocks in 0.7%. A summer-autumn recrudescence was noted, 58.5% of patients consulted from July to October. Recurrent erysipelas was diagnosed in 13.6% of patients.

Clinical presentation and severity

Erysipelas was associated with fever in 38.4% of cases, satellite lymphadenopathy in 31.15%, and lymphangitis in 4.3%. The most frequent portal entries were: toe-web intertrigo in 47.8% and neglected traumatic wound in 19.5%. Local signs of severity as bullae and purpura were found in 12.3% of cases. Complications were: abscess 7.2% of patients and thrombosis in 0.7% of patients. Nonsteroidal anti-inflammatory drug-taking was significantly associated with severe erysipelas in univariate and multivariate analysis. The first-line therapy was intravenous Penicillin G in 68.1% of cases. The mean hospital stay was 14±3 days. Prophylactic treatment was prescribed in 5.8% of patients.

Associated factors for recurrent erysipelas

Table 1 shows the results of univariate analysis of patient demographics, and general and local factors studied. According to our multivariate analysis, there was an association between recurrence and diabetes mellitus (p=0.02), female sex (p=0.004), onychomycosis (p=0.004), and plantar dyshidrotic eczema (p<0.005) (table 2).

Table 1: Univariate analysis of favorable factors for recurrent erysipelas

Favorable factors	with recur-rence (n=6)	Without recur-rence (n=141)	Odds Ratio	IC 95%	P value
sex (Male/ Female)	3/3	124/17	**7,29**	**1,36-39,08**	**0,033**
Diabetes mellitus	1 (16,7%)	1 (0,8%)	28	1,52-514,92	NS
BMI	30 Kg/ m2	25 Kg/ m2	7,33	24-26,8	NS
lymphedema	1 (16,7%)	4 (3,1%)	6,87	0,64-72,98	NS
venous insufficiency	1 (16,7%)	6 (4,3%)	4,5	0,45-44,7	NS
Alcoholism	1 (16,7%)	9 (6,9%)	2,71	0,28-25,75	NS
Local signs of severity	1 (25%)	6 (42,9%)	0,44	0,03-5,4	NS
-Toe-web intretrigo	3 (50%)	63 (44,7%)	1,23	0,24-6,34	NS
-Traumatic wound	0	30 (21,3%)			NS
Cutaneous leishma-niasis	0	12 (8,5%)			NS
Plantar dyshidrosis eczema	2 (33,3%)	4 (2,8%)	**17,12**	**2,39-122,44**	**0,019**
Insect bite	0	7 (5%)			NS
Onychomy-cosis	1 (16,7%)	2 (1,4%)	13,9	1,07-179,96	NS

Percents are given in parentheses, NS: non significant

Table 2: Multivariate analysis of favorable factors for recurrent erysipelas

Factors associated with of recurrent erysipelas	P value
Female	0,042
Plantar dyshidrosis eczema	$<10^{-3}$
Diabetes mellitus	0,002
Onychomycosis	0,004

DISCUSSION

Factors associated with recurrent erysipelas in the youth have not been determinate in the literature. We analyzed 147 cases of erysipelas admitted to our dermatology department over 18 years, identifying factors associated with recurrence in a military hospital. All patients were aged less than 35 years. Erysipelas is not a rare infection in a young healthy population, the prevalence in our study was 2.23%. The main favorable factors were both local and general: obesity, alcoholism, chronic venous insufficiency, chronic lymphedema, leg fracture, and diabetes mellitus. Besides, we found that onychomycosis, diabetes mellitus, female sex, and plantar dyshidrosis eczema were significantly associated with recurrence. The use of anti-inflammatory agents was frequent and significantly associated with severe signs.

As in previous case-control studies, general factors do not represent major risk factors in erysipelas. Local factors are potential risks for erysipelas. It is known that lymphedema, venous insufficiency, and toe-web intertrigo are risk factors for erysipelas (3,5). In the literature, the most frequently reported favorable factors for recurrence are: age, female sex, diabetes mellitus, lymphedema, and venous insufficiency (6–8). It has been suggested that lymphedema is strongly associated with recurrence (6,9–11). In our patients, lymphedema was a very important factor for recurrence but not significantly different than patients without recurrence. The results in our series were different from the literature given the difference in the studied population. In fact, the most prominent associate factors for recurrence in our study were plantar dyshidrotic eczema, followed by diabetes mellitus, onychomycosis and female sex. In fact, 85% of our patients were soldiers. Indeed, this population presents particular favorable factors as wearing occlusive shoes for a long time, long-standing, care access, and activities exposing to repeated trauma neglected by soldiers can be also incriminated (12). Then, they can develop plantar dyshidrosis eczema, toe-web intertrigo, and venous insufficiency.

Although recurrent erysipelas is not a rare infection in a young population, factors associated with recurrence have not been elucidated in the literature. Moreover, favorable factors for recurrence are not the same in the elderly than the youth. Therefore, they must be studied separately. Our population is particular because the majority of patients were soldiers and associate factors were related to their activities. And the hospitalization for erysipelas may

affect their activities and training. Hence, it is important to identify favorable factors to prevent recurrence and other complications.

There are also some limitations to this study. The retrospective design did not allow extracting risk factors. Only available information restricted to medical records was extracted. Factors are difficult to assess retrospectively such as obesity, foot dermatosis, alcoholism, and were probably underrepresented. A case-control study could further give a better level of evidence.

CONCLUSION

The results of this study confirm the major role of local factors as onychomycosis and plantar dyshidrosis eczema; and general factors as diabetes mellitus and female sex in the recurrence of erysipelas in the young population. This study has some limitations, the retrospective design of our study and the heterogeneity of the population. However, the originality of this study consists of identifying factors associated with recurrence in erysipelas in a young population.

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