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PROFESSIONAL PAPER

Cellulitis – Epidemiological and Clinical Characteristics

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Introduction: Cellulitis is acute skin infection and/or infection of subcutaneous tissue, mostly caused by Streptococcus pyogenes and Staphylococcus aureus. Clinical preview is usually obvious and enough for diagnosis. Tretment is antimicrobial therapy. In recurrent cases a prophylaxis is very often needed. **Objectives:** Analysis some of the epidemiological and clinical characteristics of cellulitis. **Patients and methods:** Retrospective analysis of medical documentation of patients with clinical preview of cellulitis who were hospitalized in Clinic for infective diseases of Clinical Center of University of Sarajevo in last three years. **Results:** In period of three years 123 patients were hospitalized with clinical preview of cellulitis in the broadest sense of the word. In 123 of cellulitises, 35/123 (28.45 %) were erisipelases-superficial type and 88/123 (71,55 %) were deep cellulitises. Men were more affected 56,09 %, average of age was 50.22 years. Before hospitalization patients had ambulance treatment in average of 5.12 days, and hospitalization was long in average of 13.33 days. Risk factors wich contributes to the disease were found in 71.54 % of cases. Due to localisation, skin disorders on lower limb were the most frequent 71.56 %, cellulitis of upper limb were found in 12.19 % , head and/or neck in 13.08 %, trunk in 3.25 %. Repetition of disease were found in 4.8 % in patients wtih risk factors. Bacteremic isolats were confirmed in 27.64 % of cases. In all patients empirical antibiotic treatment were started, in the 62.60 % the first choice of medicine was antibiotic from the group of lincosamides. **Conclusion:** Cellulitis is very serious disease that can be prevented. Key words: cellulitis, risk factors, clinical preview.

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1. INTRODUCTION

Cellulitis is an acute infection of the skin and/or subcutaneous tissue associated with conditions that predispose to the onset and duration of cellulitis in the broadest sense of the word (1). In relation to the depth of inflammation varies superficial cellulitis named erysipelas, when it is only the skin affected, and deep type of cellulitis involving the subcutaneous tissue.

1.1. ERYSIPELAS

Red Wind (Gr. erysipelas, red skin) is clearly defined type of superficial cellulitis, which affects only skin. It is caused by β-hemolytic streptococcus of group A. Streptococcus of group B causes erysipelas in infants. The source of infection is the person who carries a streptococcus, symptomatic or asymptomatic. The infection is transmitted by direct contact. Point of entry may be the skin ulcers, trauma or abrasion of the skin, the current changes in the skin regarding various skin diseases, but as well in many cases the affected skin region is intact. For infants, place of pathogens can be infected umbilical cord. Today, the distribution of erysipelas has changed: in 70% - 80% cases the lower limbs are affected, and in 5%–20% the face (2). Erysipelas is a painful skin lesions, bright red, indurated and edematous ("peau d'orange") as an orange peel, with raised and clearly limited border to the healthy skin. Erysipelas always accompanies fever and leukocytosis. Treatment of erysipelas is symptomatic and causal. The drug of choice is penicillin.

Figure 1. Erysipelas of lower limb

1.2. CELLULITIS

In general sense cellulitis includes superficial (erysipelas) and deep cellulitis, and in the specific sense it includes only a deep cellulitis which will be discussed in this section. It is characterized by localized pain, erythema, swelling and fever. Staphylococcus aureus

Figure 2. Cellulitis of the lower limbs

is the most common etiologic agent of its own flora as a result of colonization of the skin but does not exclude other exogenous bacteria. Unlike erysipelas, cellulitis limits are not raised and clearly delimited from the rest of the skin, making it possible to find cellulitis with areas of healthy skin. Regional limphadenopathia is common, bacteremia can occur. Cellulitis is a very dangerous disease because of its tendency to spread infection through blood or lymph and deeper penetration into the structure causing severe forms of necrotizing fasciitis. β–lactam antibiotics resistant for pencilasa of Staphylococcus aureus are the drug of choice for initial therapy in case of cellulitis, if we take into consideration that a large number of cellulitis is caused by Staphylococcus aureus.

2. AIM OF THE WORK

To analyze the clinical forms of cellulitis (superficial type - erysipelas, deep cellulitis). Explore some demographic characteristics of patients with cellulitis with analysis of the clinical-epidemiological characteristics. Determine the number and classification of microbial isolates with selection of initial antibiotic therapy.

3. PATIENTS AND METHODS

We have retrospectively analyzed the available histories of patients with clinical signs of cellulitis hospitalized at the Clinic for Infectious Diseases of Clinical Center University of Sarajevo in the period from 1. 1. 2009. to 01. 03. 2012. The study included the total number of patients with cellulitis divided into two groups, deep cellulitis and erysipelas, on the basis of clinical manifestations. We have analysed the basic demographic data (gender, age, risk factors and the localization of infection), available microbiological isolates, the initial antibiotic therapy and length of treatment with reference to the complications and the need of surgical intervention. The collected data were analyzed by statistical analysis of the relevant tests.

4. RESULTS

This retrospective analysis included 123 patients hospitalized at the Clinic for Infectious Diseases of Clinical Center University of Sarajevo in the period from 1. 1. 2009. to 01. 03. 2012. with clinical picture of cellulitis in the broadest sense. Of the total number, 35/123 patientsor 28.45% had the clinical picture of superficial cellulitis, erysipelas, and 88/123 (71.55%) with deep cellulitis. The gender representation was over 56% of male. The average age of patients was 50.22 years.

In prehospital conditions patients are treated on average of 5.12 days. Risk factors for cellulitis were found in 71.54%, for the rest we did not have anamnestic data of the similar, and we noted clinically intact skin.

In 7 patients (4.8%), was recorded recurrent cellulitis that required repeated treatment. Dominant localization was observed in the lower extremities (71.56%). Positive microbiological isolates were found in 27.64%, although it did not completely correlate to the clinical picture.

In most patients, initial antibiotic selection was from a group of lincosamides. Length of treatment was varied but the average days of hospitalizations are 13:33. 7% of the patients was complicated with the clinical picture of necrotizing fasciitis, which required prompt surgical intervention.

5. DISCUSSION

We have noticed a trend of growth of patients with cellulitis, comparing the incidence of past hospitalizations, we conclude that in 2005th there were only 6 hospitalizations (0.38%), in 2006th. 24 (2.33%) with constant growth from year to year. A possible explanation of this incidence growth of affected with cellulitis is in the latency of recognizing the first signs of

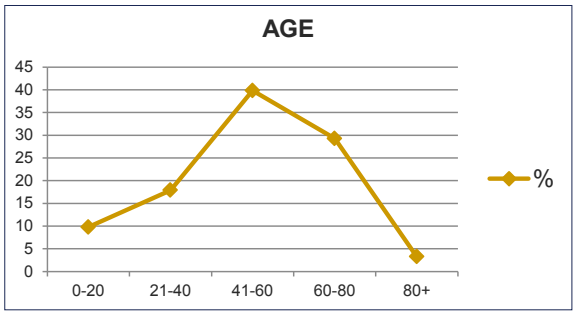

Figure 3. Age distribution of patients with cellulitis

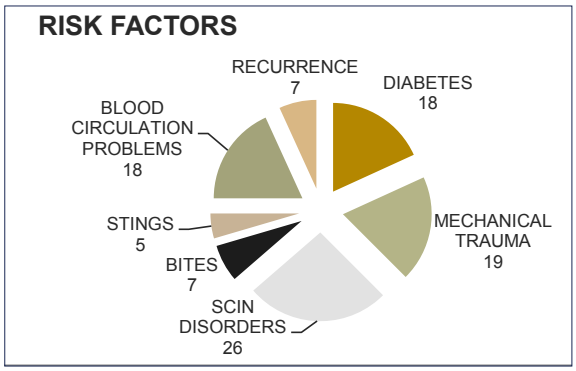

Figure 4. Risk factors for acquiring cellulitis

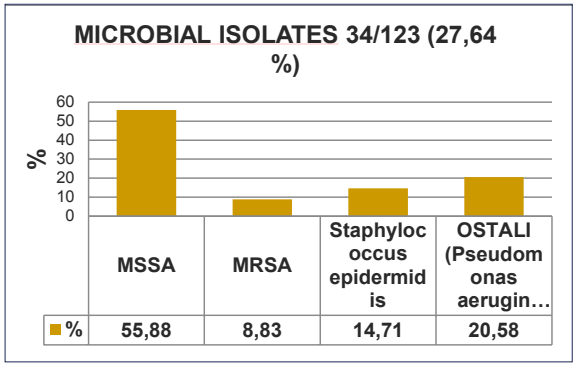

Figure 5. Microbial isolates from the skin lesion

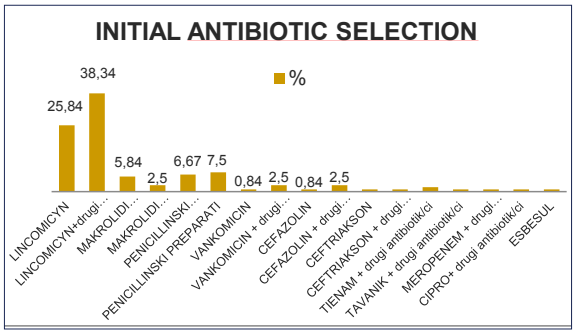

Figure 6. Initial antibiotic selection for the treatment of cellulitis

disease and inadequate therapy, which has Multi-link contributes to increasing bacterial resistance to antibiotics, so that a wrong antibiotic therapy, has no effect (3, 4). Generally, cellulitis can occur on any part of the body, according to a new literal data it is most commonly localized in the lower extremities that match our study - over 70%, then the head (20.56%) (5). Risk factors play a great importance in the development of cellulitis, even in the literature states that the cellulitis developed on previously damaged or changed skin (6). Among the leading risk/predisposing factors of developing cellulitis, one of the first is mechanical trauma what this study did not confirmed, this study showed that the majority of patients had 26 different primary skin changes that are preceded infection (blain, limphastasis, etc), and mechanical trauma and diabetes have been equally represented as another risk factor prevalence (3, 6). Interestingly, only 27.64% had positive microbial isolates what can be explained by two facts. First is the frequent prehospital initiation of antibiotics, second may be inadequately taking swabs and administrative difficulties in obtaining results (7). It was shown that Staphylococcus aureus is leading in the etiology, so in monomcrobial isolates Staphylococcus aureus was found in more than 50% of the total. Staphylococcus aureus is very difficult to treat because it is multiresistant bacteria, so that real, effective drug may represent a very small selection of medicines, so it is necessary to go beyond by typing Staphilococcus, ie, to determine if it is MRSA or MSSA type. Looking only monomicrobial isolates it has been showen that in 8.83% cases were MRSA, and in 55.88% cases of MSSA staphylococcal species. Blood cultures were positive in 8% of patients,it do not correlate with the literature where it is stated that the positive blood culture for 2-4% of patients who developed cellulitis (8). The initial choice of antibiotic therapy in hospital conditions is predominantly a group of lincosamides. Interestingly, in 38.34% dual antimicrobial therapy were started in group of etiologically undifferentiated cellulitis due to the assumption that it may be polymicrobial flora because of predisposing factors. Length of treatment was variable but in comparison with the literal data in any case prolongated what is the main reason of length of hospital treatment (average length of hospitalisation is 13 days) (9, 10).

6. CONCLUSION

Deep cellulitis were found in 71.5% of total number of 123 patients. Average of age was 50.22 what feets into the world statistics. Recurrence of disease was in 4.8% patients what has been explained with predisposing factors. Initially antibiotics treatment from the group of lincosamides was in 62.6% cases. The average length of hospitalization was 13.33 days what open futher discussion of hospital cost benefit. Cellulitis is very serious disease what can be prevented.

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