

ERYSIPELAS OF UPPER LIMB: A COMPLICATION OF BREAST CANCER SURGERY

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(ABSTRACT): Erysipelas of upper limb is a well-known complication following breast cancer therapy, but few cases are reported in the literature. We undertook a 5-year retrospective study at the Department I of Infectious Diseases. For each patient we recorded the age, past medical history, clinical findings, laboratory parameters, treatment, outcome and recommended prophylaxis. From 145 erysipelas identified, 12 cases were erysipelas of upper limb. All patients had a breast surgery and lymphadectomy. The erysipelas appeared with an average of 5.5 years after cancer treatment. Associated pathology: obesity (5 cases), diabetes (6 cases) and thrombophlebitis (1 case). Lymphedema was noticed in 9 patients and the site of involvement was the homolateral upper limb of the treated breast. The diagnosis of erysipelas was essentially clinical. The clinical aspect was an inflammatory plaque with raised edges in 7 cases, blisters, cellulitis and purpura in one case, respectively. The portal of entry was not found in 6 cases. Laboratory parameters: increased leucocytes with predominance of neutrophils (4); normal white count (5) and leucopenia (3); the erythrocyte sedimentation rate and fibrinogen elevated in 5 cases; CRP levels elevated in 8 cases. The most commonly used antibiotic was penicillin G intravenous route of administration. The outcome was favorable for all the patients. At discharge, prophylactic treatment was recommended for all the patients. In three of our patient, despite the prophylaxis, recurrences occurred with a frequency of 3-6 episodes in 5 years. All these patients displayed an immune suppressive status with decreased CD4⁺.

KEY WORDS: ERYSIPELAS OF UPPER LIMB, GROUP A STREPTOCOCCI, HYPODERMAL INFECTION, BREAST CANCER

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INTRODUCTION

Breast cancer is the most common malignancy in women worldwide and it is estimated that one woman in nine will develop a breast cancer during her period of life. It accounts for about 25 per cent of all female malignancies and the proportion is higher in women in developed countries [1]. Erysipelas of upper limb is a well-known complication following breast cancer therapy, but few cases are reported in the literature. Erysipelas is a bacterial hypodermal bacterial infection, usually associated with group A streptococci, that affects the dermis and dermal lymphatics. Malignancy and local impairment of venous and lymphatic circulation are reported to be predisposing factors [2].

In this context, in order to contribute to the improvement of the life quality of these women treated for breast cancer, we attempted to underline the major risk factors

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together with the epidemiological, clinical and evolutive characteristics of erysipelas of the upper limb, using a retrospective analysis.

PATIENTS AND METHODS

We undertook a 5-year retrospective study, between January 1999 until December 2004 at the Department I of Infectious Diseases at “Victor Babes” Hospital of Timisoara. The clinical data were collected from the files of the hospitalized patients. The informed consent was obtained from each patient and only the patients that were found and agreed with the study were included.

For each patient we recorded the age, past medical history, clinical findings, laboratory parameters, treatment and duration of hospitalization, outcome and recommended prophylaxis.

RESULTS

From a total of 145 erysipelas identified in these 5-years retrospective study, 13 cases were erysipelas of upper limb, and with one exception, one man of 48 years old that suffered an infected posttraumatic lesion of the forehead, all the rest of 12 cases were erysipelas of upper limb following treatment for breast cancer. We will refer at these 12 cases.

The age of our patients ranged between 54 and 72 years with a mean age of 63. All patients had a breast surgery and lymphadectomy. Seven patients had chemotherapy and 10 had radiotherapy. The erysipelas appeared with an average of 5.5 years after cancer treatment (three years to twenty) and was recurrent despite prophylaxis in 3 (25%) cases.

History of obesity was found in 5 cases (41%), diabetes and arterial hypertension in 6 patients (50%). Lymphedema was noticed in 9 patients (75%).

The site of involvement was the homolateral upper limb of the treated breast with involvement of forearm in 5 cases (41%), forearm and hand in one case (8%), arm in five cases (41%), arm and axilla in one case (8%).

The duration of erysipelas at the time of presentation was 1 to 5 days with an average of two days.

The diagnosis of erysipelas was essentially clinical: a fever of acute onset with a sharply demarcated, warm, indurate and painful erythema. The first sign were fever and shivering in 9 patients (75%). The clinical aspect was an inflammatory plaque complicated with raised edge in 7 cases (58%), blisters in one case (8%), cellulitis in one case (8%) and purpura in one case (8%).

The portal of entry was not known or found in 6 cases (50%). It was present in the rest of six cases: interdigital tinea, paronychia, fungal infections of the nails (two cases), infected eczema and posttraumatic wound.

Laboratory abnormalities included: increased *blood cell count* with predominance of segmented neutrophils in 4 cases (33%), ranged 11000 – 16000/ml; normal white count, ranged between 5000 – 7000/ml in 5 cases (42%) and leucopenia in 3 cases (25%); the erythrocyte sedimentation rate was elevated (40 – 140 mm/h) in 5 cases (42%). C-reactive protein levels (CRP) was elevated in 8 cases (66%), and fibrinogen was elevated (6-11 g/l) in 5 cases (42%).

The mean duration of hospitalization was 7 days, ranged between 5 to 15 days and the outcome was favorable for all the patients.

The most commonly used antibiotic was penicillin G in intravenous route of administration. The dose ranged between 6 to 8 millions UI. Once the patients became afebrile and had a marked improvement the route of administration was changed to oral (phenoxymethylpenicillin). Anticoagulant treatment (heparin or fraxiparine followed by acenocumarol) was associated in 5 cases (41%), cases complicated with thrombophlebitis or obese patients with modified coagulation parameters. Other used antibiotics were penicillin G associated with gentamycin, ceftriaxone (2g/d, i.v.), Claforan (2g/d, i.v.), amoxicillin-clavulanic acid (oral route), claritromicin (oral route). At discharge for all the patients prophylactic treatment was recommended. The prophylaxis included especially benzathin-benzylpenicillin or phenoxymethylpenicillin.

In three of our patient, despite the prophylaxis, recurrences occurred with a frequency of 5 episodes in 4 years in one patient, 4 episodes in 5 years and respectively 3 episodes in 4 years in another patient. All these patients were immune suppressed – they had leucopenia ranged between 1800 – 2300 leukocytes/ml and CD4⁺ between 400 and 650/mm³. In one of these patients was associated pyelonephritis, another one had polyarthritis reumatoida treated with corticosteroids and one was diabetic, obese, hypertensive and had thrombophlebitis.

DISCUSSIONS AND CONCLUSIONS

Erysipelas is a well-known complication following mastectomy and radiotherapy for breast cancer, however, few cases are reported in literature. The lymphatic circulation is affected by radiotherapy, mastectomy and lymph-node dissection for invasive breast cancer favoring the obstruction and the progressive destruction of lymphatic communications. The lymphedema appeared to play an important role in the occurrence of erysipelas in our patients [3,4].

This lymphedema occurs several years after mastectomy or radiotherapy in 14-28% of cases and is sometimes revealed by the occurrence of erysipelas, such as the case of one patient in our study. The risk of lymphedema correlates with the use of postoperative radiotherapy and the number of lymph nodes removed [5].

Lymphostasis results in edema associated with the retention of high-molecular weight protein in the interstitial compartment. Tissue involved in lymphostasis appears susceptible to infections, which in turn can worsen the lymphatic dysfunction [6]. Lymphedema following lymph-node dissection for invasive breast cancers is common and its impact on long-term quality of life in survivors of early-stage breast cancer should not be underestimated. Once lymphedema is established, the affected arm is subject to erysipelas developing from minor infections such as paronychia, folliculitis, interdigital space infections, infected posttraumatic wounds, etc. Such infections would not be significant in the normal arm [7]. In our study the portal of entry was not identified at the time of examination in 6 cases (50% of cases).

Many studies have defined risk factors of lymphedema. Number of axillary nodes removed and radiotherapy especially on axillary nodes are the main risk factors. Others factors have been described such as type of surgery (mastectomy/tumorectomy), overweight at time of cancer, weight gain after surgery, skin puncture, reduction of physical activity. Risk of lymphedema and its complications (cellulitis, psychological and aesthetic discomfort) may be reduce by improvement in radiotherapy methods, sentinel lymph node biopsy, weight control, maintain of level physical activity after treatment and avoidance of skin puncture on ipsilateral arm [8].

Other factors that may play a role in developing infection in area of lymphedema include venous stasis, diabetes, obesity, treatment with corticosteroids and immune suppression [9,10].

The diagnosis of erysipelas is essentially clinical: fever of acute onset with an inflammatory plaque, sharply demarcated, indurate and painful. Our cases presented raised edge in 58% of cases and some cases were complicated with blisters, purpura and thrombophlebitis.

Penicillin G is the treatment of choice because group A beta-hemolytic *Streptococcus* is sensitive; intravenous injection is advised for the acute phase of the disease. Following the acute phase, penicillin may be given by oral route. Other antibiotics that can be used are cephalosporin, amoxicillin-clavulanic acid, claritromicin (in patients allergic at penicillin) or combinations of antibiotics (for example, penicillin or cephalosporin + fluoroquinolone or aminoglycoside) when cellulitis or a plurietiology is suspected. For patients with associated thrombophlebitis, obese patients or patients with altered coagulation parameters, the anticoagulant treatment should be recommended. The outcome is generally favorable [11,12].

In addition to antibiotics, scrupulous personal hygiene may be beneficial because group-A *Streptococci* may colonize unbroken skin. Local fungal infection of the skin or nails which may serve as a portal of entry should be eradicated.

Prevention of lymphedema is often possible; unnecessary irradiation should be avoided. Postoperative early arm motion, isometric exercises, measured compression sleeves, diuretic therapy and frequent massage would be helpful to improve patient's life conditions [6,13].

The major late complication of this erysipelas is more lymphedema, which favors recurrence of infection with further damage to lymphatic channels and thus perpetuate a vicious circle. For these reasons antibiotic prophylaxis is recommended for each patient. Despite the prophylaxis frequent recurrences occur especially in immune suppressed patients [14,15].

In conclusion, in 5-years study in the First Department of Infectious Diseases at "Dr.Victor Babes" Hospital in Timisoara in all the patients, with one exception, the upper limb erysipelas was a complication following the treatment for breast cancer. Under antibiotic therapy, the outcome was favorable in all our patients. The major risk factors were lymphedema, venous stasis, diabetes, obesity, treatment with corticosteroids and immune suppression. All the patients that had recurrent erysipelas despite the prophylaxis had an immune suppressive status demonstrated by leucopenia and the decreased number of CD4⁺ lymphocytes.

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