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COMPLICATED FORMS OF MASTITIS AS A TYPE OF NECROTISING INFECTIONS

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Abstract
Acute lactational mastitis is a formidable complication of the postpartum period. The development of the disease is influenced by two leading factors - lactostasis and microbial factor. Staphylococcus aureus remains the dominant microbial pathogen. Expressed local and general symptoms of purulent inflammation of the mammary gland allow in most cases to make a correct diagnosis, however, a high proportion of patients with advanced forms remains, there are cases of non-lactational mastitis that occur against the background of concomitant diseases, with an atypical clinical picture. The paper analyzes the experience of treating patients who developed acute damage to the parenchyma of the mammary gland against the background of microbial invasion and advanced diagnostics.

Keywords: Acute lactation mastitis, clinical picture, diagnostics, conservative treatment, surgical treatment, minimally invasive methods

Introduction

Acute mastitis is an inflammation of the mammary gland, more common in breastfeeding women, called lactational mastitis. Lactational mastitis, typically caused by milk stasis and bacterial infection through broken skin, typically occurs within the first 6 weeks postpartum. [1-3] In recent years, there has been an increasing number of patients with non-lactational mastitis, which includes conditions such as periductal mastitis (PDM) and idiopathic granulomatous mastitis (IGM), both of which are chronic inflammatory diseases. [4] These non-lactational forms can be difficult to diagnose due to similar symptoms, but they differ in treatment needs, making accurate diagnosis critical to prevent complications. [5-7]

Both lactational and non-lactational mastitis, with timely and inadequate therapy, can lead to various complications, from the side of surgical infection of soft tissues, in particular necrotizing infection. This complication is more common in patients with various forms of concomitant diseases, in particular diabetes mellitus. [8]

Necrotizing fasciitis of the mammary gland is a very rare disease and is often confused with cellulitis or mastitis. Risk factors include various surgical infections, diabetes mellitus and other immunodeficiency states [9].

Nizami and authors reported the first case of necrotizing fasciitis of the mammary gland in 2006, and this was a patient who had a number of concomitant diseases, in particular bronchial asthma and hormone-dependent arthritis [10]. Another case was described by Konik in a 53-year-old woman who suffered from hypertension, obesity, asthma. In addition, the patient was initially diagnosed with an abscess, which was treated by incision and drainage. The author notes that the patient was hospitalized three days after the abscess was incised, with clinical manifestations of necrotizing fasciitis [11].

Objective

To study the main causes of development of necrotizing infections of the mammary gland.

Material and Methods

This work is based on the analysis of the treatment results of 68 patients with acute purulent mastitis who were hospitalized in the Department of Purulent Surgery and Surgical Complications of Diabetes Mellitus, a multidisciplinary clinic of the Tashkent Medical Academy, for the period from 2022 to 2024.

The age of the patients varied widely. Women of working age dominated, while there were 54 patients (79.4%) under 41 years of age (diagram No. 1).

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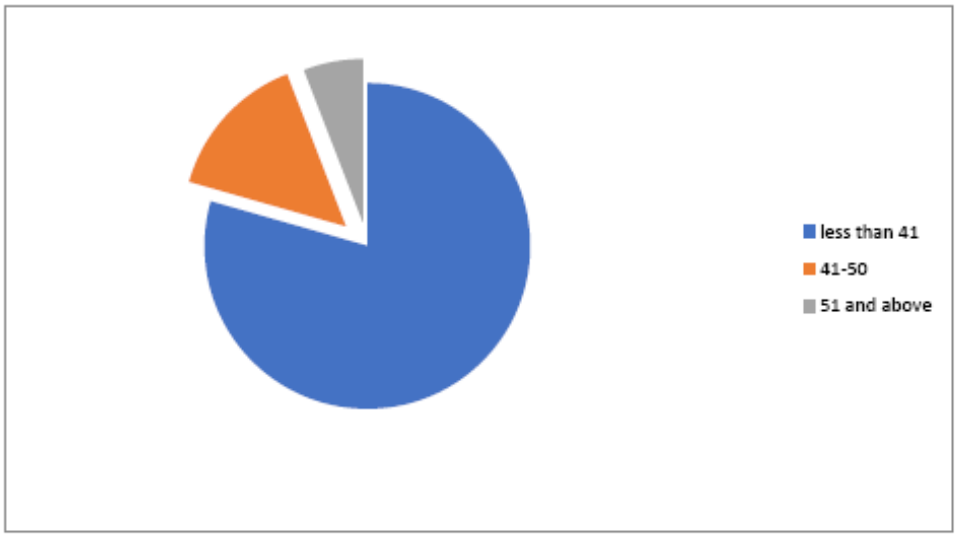

Diagram No. 1. Distribution of patients by age.

We divided the patients into two groups: patients with lactation mastitis and women without lactation mastitis (Table 1). As can be seen from the table, women with non-lactation mastitis prevailed, which indicates the absence of a connection with lactostasis. It should be noted that complicated forms of mastitis, in the form of necrotizing infection, were found in this group.

Table №1. Type of mastitis

Lactational mastitis		Non-lactational mastitis	
n	%	n	%
27	39.7	41	60.3

Necrotizing infection as a complication of mastitis may involve the following layers: the dermis and subcutaneous tissue in necrotizing cellulitis, the fascia in necrotizing fasciitis, and the muscular layer with intact overlying skin for necrotizing myositis [12].

This disease does not have a specific trend related to season, location, and patient population.

Diagnosis of these conditions is difficult, as studies show a high rate of misdiagnosis at admission [13], mainly because the initial clinical manifestations may be underestimated and the treatment strategy chosen accordingly. This is confirmed by the example below.

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Clinical case

Patient D., born in 1992, was admitted to the Department of Purulent Surgery and Surgical Complications of Diabetes Mellitus of the Multidisciplinary Clinic of the Tashkent Medical Academy. Upon admission, the patient complained of pain in the left breast, the presence of a painful lump and cyanosis in the left breast, with the lump extending to the lateral surface of the neck and sternum, an increase in body temperature to 380C, loss of appetite, and weakness.

In the anamnesis, ten days before admission, the patient received a blunt injury to the left breast (falling down the stairs). After receiving the injury, the patient goes to a medical facility, where the patient is examined and a post-traumatic hematoma is detected. The patient undergoes a diagnostic puncture, during which a small amount of blood is aspirated and conservative therapy in the form of compresses is prescribed. In dynamics, over the course of four days the patient's condition showed no positive dynamics and the patient turned to traditional healers, who performed punctures followed by the administration of drugs (she does not remember the name of the drugs).

There is no history of diabetes, hypertension, HIV infection, smoking or any other chronic diseases.

On examination: the patient's condition is moderate. Body temperature is 37.8°C, blood pressure is 120/70 mm Hg, tachycardia with a pulse rate of 118/min. Locally: on examination, a slight asymmetry of the mammary glands is noted, due to an increase in the left mammary gland.

Pic.1. Patient's appearance on the day of admission.

In this case, cyanosis of the skin is determined in the left mammary gland, starting from the areola with the transition to the inner-upper quadrant. Foci of cyanosis are also detected in the projection of the lower third of the sternum. Palpation revealed tissue compaction, with moderate pain, while the boundaries of the compaction extended beyond the visible changed part (Figure 1). The boundaries of the compaction capture the tissues of the sternum and go to the lateral surface of the neck on the left. At the same time, the tissues are visually unchanged. Characteristic signs

of inflammation were not detected. An increase in the cervical and axillary lymph nodes on the left was noted. The right breast is normal.

Upon admission, laboratory tests revealed leukocytosis (12 * 109 / l) with a shift to the left (78% neutrophils) and anemia (91 g / l). In the biochemical blood test: glucose 7.2 mmol / l; bilirubin 19.2 mmol/l, direct 0.8, indirect 1.9; ALT 0.3; AST 0.6; total protein 63 g/l; fibrinogen 6 g/l; CRP 2.1 mg/l.

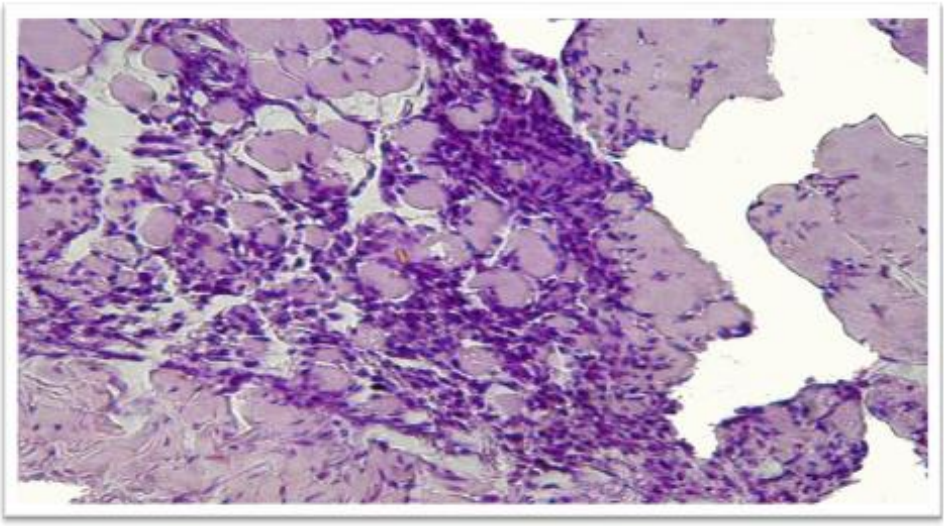
Ultrasound of the mammary glands showed a diffusely swollen and enlarged mammary gland with a twisted echogenic fat component and a hypoechoic edematous glandular component, without cystic formations and a normal contralateral mammary gland. There is a fluid layer in the sternum and neck area.

To diagnose surgical soft tissue infection, we used an early diagnostic scale that allows us to identify areas of altered tissue. According to this scale, there are certain clinical signs of the development of surgical soft tissue infection, which together allow us to quite accurately determine the purulent process in the soft tissues, with the determination of indications for surgical intervention.

The patient was started on empirical antibacterial therapy with intravenous administration of piperacillin + tazabactam 4.5*3 times, clindamycin 600 mg * 2 times, amikacin sulfate 500 mg * 2 times. A mandatory component was the inclusion of fluconazole 200 mg * 1 time. Infusion therapy included the introduction of rheosorbilact 200.0 * 1 time, glucose 5% 400.0 * 1 time, infusol 500.0 * 1 time. Against this background, the patient was taken for surgery, during which material was taken for bacteriological examination. The operation was performed under intravenous anesthesia. The patient underwent opening of foci in the area of the sternum, mammary gland, left supraclavicular region and neck (Pic. 2). Incision showed that the tissue contained turbid discharge and that the necrotic process was dominant, loosely extending to the supraclavicular region and neck. During the operation, necrotic tissue was excised within the relatively healthy tissue, the wound was thoroughly washed with hydrogen peroxide and Decasan, a sample was taken for culture and sensitivity, and histopathological analysis was performed. The wound was left open for subsequent daily sanitation.

Pic. 2. Necrosis of the superficial fascia with thrombosis of the mammary gland tissue and subcutaneous fat.

Histological examination of the sample using hematoxylin and eosin staining showed the presence of diffuse inflammatory infiltration by segmented neutrophilic leukocytes and lobular destruction (Pic. 3).



Pic. 3. Diffuse inflammatory infiltration by segmented neutrophilic leukocytes.

The microbial landscape showed the preservation of the polymorphism of the identified pathogens. Thus, from aerobes, Staphylococcus spp. were isolated - 12%, E. coli - 18%, Proteus spp. - 15%, Streptococcus pyogenus - 12%, Staphilococcus fecalis spp. - 3%. Anaerobic microflora was represented by Peptostreptococcus spp. - 6%. Fungal flora was detected on the first day of treatment in 3% and was represented by Candida fungi.

Against the background of conservative therapy, local sanitation with FarGALS.

Pic 4. Delimitation of the process with preservation of the necrotic process.

The necrotic process in the wound persisted in dynamics, the tissues were ischemic. There was no active purulent discharge, the process was delimited. The patient underwent staged necrectomy, with excision of all altered tissues (Pic. 4). Local sanitation continued with the use of Oflomelid ointment, twice a day. On the 10th day, the patient was discharged for outpatient treatment in a satisfactory condition, with a sluggishly granulating wound and recommendations for further management of the wound process. On the 30th day, during the next examination, the wound was completely epithelialized, but there was a rough postoperative scar (Pic. 5).

Pic. 5. View of the wound process on the 30th day, there is a postoperative scar.

Discussion

Necrotizing fasciitis is an aggressive, rapidly spreading infection of the skin and subcutaneous tissue. Its occurrence in the breast is extremely rare, especially after routine procedures. Its occurrence in the breast is uncommon in patients without risk factors, and so far only seven cases have been reported in the literature in non-lactating women. In cases of necrotizing fasciitis of the breast, cutaneous manifestations may not be noticeable due to the thicker tissue between the deep fascia

and the skin. By the time cutaneous manifestations are noticed, the damage is extensive and may require mastectomy.

The diagnosis of necrotizing soft tissue infection still remains primarily clinical and is based on clinical examination showing signs of inflammation with skin discoloration and pain out of proportion to local manifestations, along with systemic toxicity and subcutaneous crepitus. However, due to the paucity of cutaneous manifestations in the early stages of the disease, diagnosis can be extremely difficult and requires a high index of suspicion. Sometimes a definitive diagnosis can only be made intraoperatively when characteristic signs of inflammation are not detected.

A delay in diagnosis can lead to sepsis, septic shock and death.

Conclusion

The presented clinical case clearly demonstrates the features of the clinical picture of necrotic soft tissue infections and, accordingly, the complexity of their diagnosis. They tend to progress, are accompanied by severe intoxication and high mortality. The results of treatment are largely determined by timely clinical diagnostics, which allows one to suspect the presence of necrotic lesions at early stages and, accordingly, correctly and promptly carry out surgical tactics, supplemented by an adequate set of conservative treatment measures.

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