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Case Series

A case series on necrotising fasciitis of breast: a rare but debilitating disease

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ABSTRACT

Necrotising fasciitis of breast being a rare disease has only a meagre number of cases being reported and most commonly seen following trauma or surgical procedure to the breast. The reported cases have shown a predilection for lactating mothers with a history of surgical intervention to breast. This case series included 3 cases of necrotising fasciitis with varied etiologies in various age groups including a lactating mother, an immunocompromised patient and another patient with no other risk factor such as trauma or surgical intervention to breast and the subsequent difference in extent of surgical intervention and management in these patients. Extensive surgical debridement at the earliest was the mainstay of treatment in all three cases.

Keywords: Necrotising fasciitis, Breast, Lactating, Non-lactating, Immunocompromised

INTRODUCTION

Necrotising fasciitis is defined as a dreadful rapidly spreading infection of subcutaneous tissue and usually affects extremities, perineum and abdomen and is characterised by necrosis of the overlying skin due to thrombosis of the vessels in subcutaneous tissue.[1] Patients generally present with septicemia with or without septic shock and are associated with higher mortality rates due to concomitant multiorgan dysfunction syndrome and organ failure. However necrotising fasciitis involving breast is a rare occurrence and this case series involved 3 such cases with varied onset, presentation, etiology, course of disease.

CASE SERIES

Case 1

A 46 year old thin built female with no known comorbidities presented with a history of *Herpes zoster* infection involving T4 dermatome on the right side which was managed with antiviral drugs (oral acyclovir) and the patient presented 1 week later with complaints of pain and discoloration over the whole of the right breast within a period of 5 days. Diagnosis of necrotising fasciitis with complete destruction of right breast and nipple areolar complex was made and urgent surgical debridement was planned (Figure 1 and 2). Her initial laboratory investigations showed total counts of 10×10^3 cells/cumm with predominant neutrophils and normal liver and renal parameters. She was diagnosed to be seropositive for HIV infection. Surgical management proceeded with a partial mastectomy and the wound was left open and allowed to granulate by secondary intention. She was initiated with antiretroviral treatment and her CD4 counts were 250 cells/cumm. Her tissue cultures yielded *Klebsiella oxytoca* and antibiotics were titrated accordingly and the patient's general condition improved, hence discharged on POD (postoperative day) 7. Reconstructive procedures were planned but were

deferred by the patient. Hence the wound was allowed to heal by secondary intention (Figure 4).

Figure 1: Necrotising fasciitis of right breast with destruction of NAC.

Figure 2: Resolving *Herpes zoster* with involvement of T4 dermatome.

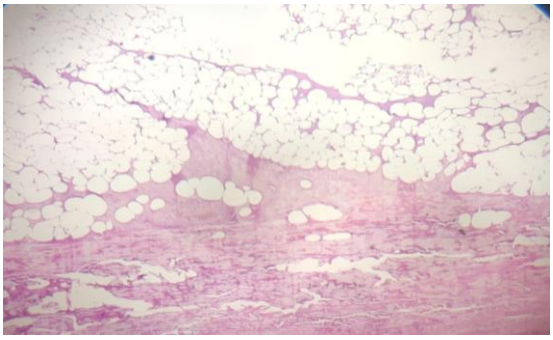

Figure 3: HPE showing inflammatory infiltrates.

Figure 4: Wound healed by secondary intention.

Case 2

A 42 year old morbidly obese (BMI 60.24) chronically bedridden female presented in shock with history of pain and discoloration over left breast for 5 days with high grade fever and decreased urine output. Her laboratory investigations revealed marked leukocytosis with predominant neutrophils. Her liver and renal parameters were deranged with sepsis induced AKI (acute kidney injury). A diagnosis of necrotising fasciitis of left breast with MODS in septic shock was made and the patient was resuscitated and started on broad spectrum antibiotics and was taken up for emergency wound debridement (Figure 5 a and b). Patient's general condition improved in 3 days and definitive surgical management was proceeded with nipple sparing partial mastectomy. The wound was left open and allowed to heal by secondary intention. Her tissue and blood cultures yielded *Klebsiella pneumonia* sp. and antibiotics were titrated accordingly. Patient required postoperative ICU care and was discharged on POD 9 in a hemodynamically stable state. Patient was lost to follow up hence reconstruction procedures could not be performed.

Figure 5 (a and b): Necrotising fasciitis of left breast with relative sparing of NAC (nipple areolar complex).

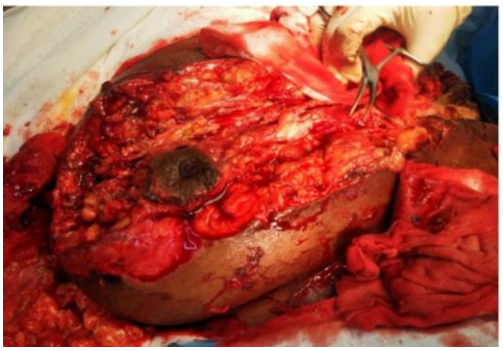

Figure 6: Intraoperative picture post debridement.

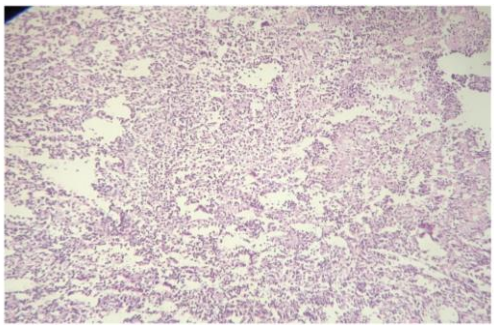

Figure 7: HPE of the specimen showing dense Inflammatory infiltrates.

Case 3

A 27 year old lactating mother (postnatal day 7) with congenital retraction of nipples was referred with history of blackish discoloration of left breast over a period of 5 days following incision and drainage for breast abscess. Her blood investigations showed leukocytosis with predominant neutrophils. All other blood parameters were within normal limits. A diagnosis of necrotising fasciitis of left breast was made and the patient was taken up for emergency wound debridement (Figure 8). Nipple areolar complex was found to be uninvolved and hence spared. Her tissue culture turned out to be polymicrobial (MRSA and *Klebsiella sp*) and antibiotics were titrated accordingly. Patient's general condition improved and was discharged on POD 5.

Figure 8: Necrotising fasciitis of left breast in a lactating mother following incision and drainage for breast abscess.

Figure 9: Post debridement with preservation of nipple areolar complex.

DISCUSSION

Necrotising fasciitis of breast is a rare entity which can be classified based on the etiology as primary with no preceding history of trauma/surgical intervention to breast and secondary with preceding history of trauma/surgical intervention to breast.

It can further be classified as presenting in a lactating/non-lactating mother. Secondary necrotising fasciitis of breast had a slightly higher incidence than primary necrotising fasciitis and surgical intervention to breast being one of the significant risk factor such as surgery to breast, core needle biopsy, incision and biopsy with other comorbidities such as diabetes mellitus, immunosuppression, peripheral vascular disease, alcoholic liver disease, chronic kidney disease.[1,2,4-6]

The 3 cases in this case series presented with varied etiology and a myriad of risk factors. The case with preceding *H. zoster* infection and the other with history of incision and drainage to breast for breast abscess fall under secondary necrotising fasciitis and the case with no preceding trauma or surgical intervention fall under primary necrotising fasciitis. The onset of symptoms to presentation to hospital remained an average of 5 days in all three cases. The duration for presentation to hospital for surgical intervention in any form remained the same in all three cases. The patient with primary necrotising fasciitis presented to hospital in a moribund state while the other 2 cases with primary necrotising fasciitis presented in a stable state. The patient with primary necrotising fasciitis required ICU care with supplemental oxygen, continuous renal monitoring and prolonged antibiotics while the other 2 patients had a smooth postoperative period. The patient with HIV infection recovered well post-surgical debridement despite being immunocompromised.

Necrotising fasciitis was generally polymicrobial. The most common organisms evoked in the disease process are *Staphylococcus sp.*, *Streptococcus sp.*, coliforms.[1]

Based on the organisms involved necrotising fasciitis can be classified as type I: mixed infection (both aerobic and anaerobic bacteria); type II: monomicrobial and is generally group A *Streptococcus* or beta hemolytic streptococci.[1]

Necrotising fasciitis generally responded to penicillins/cephalosporins in combination with aminoglycosides. Fayman et al, Ward et al and Shah et al had suggested a six point management protocol for treatment which included early surgical referral, resuscitation and antibiotic coverage, diagnostic incision, radical pseudotumour excision, re exploration of wound 24 hours later, delayed skin closure several months after recovery. Hence once the diagnosis was confirmed irrespective of the etiology patients should be taken up for emergency surgical debridement under broad spectrum antibiotic coverage.[6]

The impact of comorbidities such as diabetes mellitus in disease process could not be confronted as none of the patients were diabetic. Contrary to the common organisms related to necrotising fasciitis of breast these 3 cases had predominance of gram negative coccobacilli belonging to *Klebsiella* species.

Types of surgical management

Surgical management was patient tailored and can ranged from wound debridement, partial mastectomy to simple mastectomy with or without sparing of nipple areolar complex.[4] The wound was generally left open and reconstructive procedures such as skin grafting, flap cover were done as a delayed procedure.

CONCLUSION

Necrotizing fasciitis of the breast is a rare disease which carries significant morbidity to the patients. Early surgical debridement prevails to be the mainstay of treatment and patients generally respond well with adequate debridement. However the risk factors indicating severity of disease, predictors of mortality and morbidity in a case of necrotising fasciitis of the breast need further studies for improved patient outcomes. Though reconstructive procedures were not done for our patients, these patients can undergo breast reconstructive procedures such as flap cover or split skin grafting once wound condition improves and tissue cultures are negative.

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