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Neonatal mastitis-clinical profile and outcome: a hospital based study

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ABSTRACT

Background: Neonatal mastitis may occur de novo due to infection by various organisms, most notably *Staphylococcus aureus*. This condition usually responds well to treatment, but may sometimes progress to breast abscess formation.

Methods: This was a retrospective study. All the patients who were admitted in hospital with admission diagnosis of neonatal mastitis or breast abscess were included in this study. Various demographic, clinical and lab data were recorded and analyzed.

Results: Total 11 patients fulfilled the inclusion criteria and were included in the study. (7 females: 4 males). Swollen and red breast area was the most common presenting complaint, seen in 10 patients. One patient came with complaint of pus draining from the swollen breast. 2 patients were febrile. The age at presentation varied from 7 days to 30 days (median age 14 days). 7 patients had undergone breast massage at hands of their family members to express the witch's milk. Pus culture from the 6 cases of breast abscesses grew *Staphylococcus aureus* in 3 cases and Coagulase negative staph (CONS) in 1 patient. Blood culture was sterile in 8 cases, grew CONS in two cases and MRSA in 1 patient. In all the cases where blood culture grew an organism, a lumbar puncture was also done but CSF analysis was normal in all the cases. Drainage of abscess and IV antibiotics led to resolution of disease in all patients and none of the patients developed any complications.

Conclusions: Neonatal mastitis and breast abscess is not an uncommon condition. Complications are very rare and the condition responds well to IV antibiotics. People should be made aware about the ill effects of cultural practice of breast massage to express witch's milk in neonates. Early treatment of mastitis leads to better outcome and lesser chances of abscess formation.

Keywords: Breast abscess, Neonatal mastitis

INTRODUCTION

By 34 weeks of gestation, the breast bud becomes palpable.¹ This occurs due to stimulation by maternal estrogen. The effect of maternal estrogen wanes off after the baby is born and the breast bud regresses. In some neonates, the breast enlarges beyond the usual size. This condition is called neonatal breast hypertrophy. This occurs due to higher levels of circulating maternal hormones.¹ This condition may occur in males as well as females, with a higher incidence in females.^{2,3} It occurs more commonly in term babies as compared to preterm babies.⁴

These enlarged neonatal breasts may even produce a nipple discharge, which may be clear to cloudy or milk like. It is also called as witch's milk and may be produced in males as well as females.⁵

Cultural practices in some regions to express this secretion by manual manipulation may exacerbate neonatal breast hypertrophy and may even result in mastitis. A Neonatal mastitis may occur de novo due to infection by various organisms, most notably Staphylococcus aureus. This condition usually responds well to treatment, but may sometimes progress to breast abscess formation, which may need surgical drainage.

Authors conducted this study to see the clinical profile, presenting features and outcome of babies with neonatal mastitis admitted in our unit.

METHODS

This was a retrospective study carried out in the Department of Pediatrics of a tertiary care teaching hospital in North India. Medical records of all the pediatric patients admitted during previous one year were accessed and examined. Period of study was from January to December 2019

Inclusion criteria

 All the patients who were admitted in hospital with admission diagnosis of neonatal mastitis or breast abscess were included in this study.

Exclusion criteria

 Babies with chromosomal anomalies, congenital deformities and those with nosocomial sepsis with involvement of chest wall secondarily were excluded from the study.

Various demographic, clinical and lab data like age at admission, birth order, sex, residential address, presenting complaints, CBC, CRP levels, USG report, pus culture reports, blood culture reports, presence of abscess formation, need for surgical drainage and the final outcome were recorded in a Microsoft Excel sheet. A detailed analysis of the common presenting clinical features, predisposing risk factors, culture sensitivity, need for surgical intervention, mode of treatment, outcome and complications if any was undertaken, Statistical analysis was done using Graph Pad instat software.

RESULTS

Over a period of one year, a total of 2586 patients were admitted in our Pediatric unit. Out of these, 653 patients were neonates and 1933 were post neonatal pediatric patients. Out of these 653 neonatal patients, 11 patients fulfilled the inclusion criteria and were included in the study. These formed 0.168% of yearly neonatal admissions and 0.00425% of annual total pediatric patient admissions. These included 7 female and 4 male babies, a male:female ratio of 1:1.75. Beyond 2 weeks age, the ratio of male:female patients was 1:2. Out of these 11 babies, 6 (54.54%) were first in birth order, 3 were second in birth order and 2 were 3rd in birth order. Nine of these babies (81.8%) were from rural areas and two (18.2%) were from urban areas. Swollen and red breast area was the most common presenting complaint, seen in 10 patients. One patient came with complaint of pus draining from the swollen breast. Two patients (18.18%) were febrile at admission and none of the patients had hemodynamic instability or systemic toxicity features.

Three patients had associated skin pustulosis and all of them had breast abscesses on ultrasonography. Two patients had bilateral breast involvement. The age at presentation in these babies varied from 7 days to 30 days, with a median age of 14 days. 7 patients (6 males, 1 female) had undergone breast massage at hands of their family members to express the witch's milk, a cultural practice prevalent in this part of world. The baseline investigations showed neutropenia in 7 babies and thrombocytopenia in 3 babies. CRP was positive in 7 patients. Pus culture from the 6 cases of breast abscesses grew Staphylococcus aureus in 3 cases and Coagulase negative staph (CONS) in 1 patient. Blood culture was sterile in 8 cases, grew CONS in two cases and Methicillin resistant Staphylococcus aureus (MRSA) in 1 patient. In all the cases where blood culture grew an organism, a lumbar puncture was also done but CSF analysis was normal in all the cases. Drainage of abscess and IV antibiotics led to resolution of disease in all patients and none of the patients developed any complications.

DISCUSSION

Neonatal mastitis is not an uncommon condition and is encountered in Pediatric units of hospitals frequently. The condition is usually mild in nature, responding to antibiotics, though surgical drainage may be needed if there is abscess formation in the breast. In our study, we saw that 11 patients with neonatal mastitis were admitted over a period of 1 year. The overall male to female ratio was 1:1.17 and this ratio in babies admitted beyond second week of life was 1:2. It is a well-known fact that neonatal mastitis is more common in females and this ratio skews more towards females after 2nd week of life. Similar results have been seen in studies by Stricker et al, Brett et al, Masoodi et al, and Ruwaii et al.^{2-4,9} Females have a prolonged physiological neonatal breast hypertrophy. This probably explains the higher incidence of neonatal mastitis as well as breast abscess in female neonates. The median age for neonatal mastitis in our patients was 14 days. It is a known fact that neonatal breast hypertrophy occurs during the first week of life but neonatal mastitis usually occurs beyond 1st week of life.²⁻

Only 7 babies (6 males and 1 female) had been subjected to breast massage by their care providers at home. These patients subsequently developed neonatal mastitis. This is an unscientific, cultural practice based on some folk tales. Based on their cultural beliefs, parents in parts of India express the witch's milk from neonate's breasts manually.^{7,10,11} This has been implicated in leading to infected breasts in children.¹²

Swollen, red breasts, noticed by the parents was the most common presenting complaint. None of the patients had any hemodynamic instability. Since this condition is not a serious illness, most of the patients will be asymptomatic and only have localized signs and symptoms.¹³

About 6 patients (54.54%) in our study had breast abscess on USG. Similar percentage of patients with breast abscess was seen by Ruwaili et al, and Bret et al, but a higher percentage of patients (67%) with breast abscess was seen by Masoodi et al.^{3,4,9} Earlier referrals for treatment probably lead to a lower number of breast abscesses in our patients. Similar trend was seen by Masoodi et al, where the incidence of breast abscess was higher in the patients who presented late to seek medical attention.⁴

Systemic features, in form of fever, were present in 2 (18.18%) patients. Systemic features may not be present in majority of the patients. Neonatal mastitis is usually a localized illness. This may be one reason why Ruwaili et al, suggested that there may be no need for extensive investigations like blood culture and lumbar puncture in these patients. 9

Staph aureus was the most common organism isolated in pus cultures from our patients. This is in sync with other studies.^{3,4,14} Coagulase negative staph (CONS) was isolated from pus in 1 patient. Blood culture was sterile in 8 cases, grew CONS in two cases and Methicillin resistant staph aureus (MRSA) in 1 patient. Though blood cultures are very important in managing infections in neonates, some studies like Ruwaili et al, do not recommend routine blood culture in breast abscesses in neonates.⁹ Authors perform blood cultures in all neonates with breast abscesses as our unit policy. This is especially important where a resistant pathogen may be causing the infection or where the response to initial first line agents is poor or the condition recurs.

These patients were treated with injectable antibiotics. The duration of treatment was decided on the basis of the results of blood culture and sensitivity. Drainage of abscess and IV antibiotics led to resolution of disease in all patients and none of the patients developed any complications.

CONCLUSION

Neonatal mastitis and breast abscess is not an uncommon condition. Complications are very rare and the condition responds well to IV antibiotics. People should be made aware about the ill effects of cultural practice of breast massage to express witch's milk in neonates. Early treatment of mastitis leads to better outcome and lesser chances of abscess formation.

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