

# Imaging findings of Neonatal Mastitis

YATHAM RAMA RAO<sup>1</sup>, DEEPTHI ARUN KUMAR<sup>2</sup>, LINNET PRABAKARAN<sup>3</sup>,  
SENTHIL KUMAR AIYAPPAN<sup>4</sup>, ASHOK RANJAN<sup>5</sup>



**Keywords:** Breast inflammation, Massage, Ultrasound

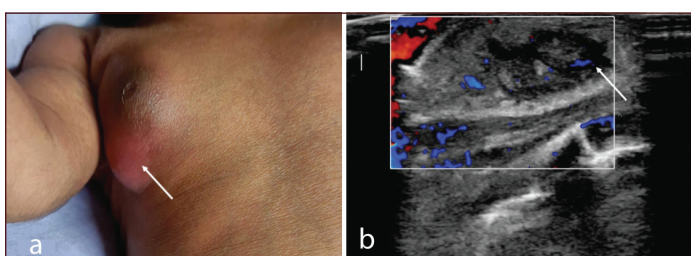
A 13-day-old female neonate with an unremarkable antenatal history presented to the Paediatric Outpatient Department (OPD) with complaints of inconsolable crying and a painful swelling involving the right breast. The swelling had increased in size over three days. There was a history of massaging the breast by the parents to express milky nipple discharge one week prior. Systemic examination was unremarkable, and the baby was awake, alert, and irritable. Local examination revealed a fluctuant, tender swelling in the right breast's retroareolar and lower outer quadrant, associated with warmth, erythema, and increased breast volume [Table/Fig-1a]. Blood investigations showed an increased white blood cell count of 16,720/cu.mm, with 37.3% neutrophils, 55.1% lymphocytes, 2.7% eosinophils, 0.4% basophils, and 4.5% monocytes. Following a provisional diagnosis of neonatal mastitis, the patient underwent an Ultrasound (USG) examination. The USG of the right breast revealed an ill-defined heteroechoic area measuring approximately 3.7×3.1×1.3 cm in the right retroareolar region, showing peripheral vascularity with an anechoic area within it, suggestive of mastitis with abscess formation [Table/Fig-1b]. Fluid aspiration confirmed pus, which was sent for culture. The culture revealed Methicillin-resistant *Staphylococcus aureus*, and the patient was treated with syrup linezolid at a dosage of 10 mg/kg/day in two divided doses for 14 days. The patient is currently under follow-up and doing well.

triggering the newborn's release of prolactin [2]. Physiological hypertrophy typically resolves spontaneously within six months of life, and in some cases, the production of 'witch's milk' may be noted. The condition is usually unilateral, and its pathogenesis is related to bacteria in the skin colonising the breast parenchyma through the milk ducts. Manipulation or massaging of the breasts to evacuate the witch's milk is a common risk factor for breast abscesses [3], which is the cause of abscess formation in present case.

The most common aetiological agent is *Staphylococcus aureus*, with other less common causative organisms including Gram negative enteric organisms like *Escherichia coli*, *Salmonella*, group B *Streptococcus*, and anaerobes [4]. In present case, the cause was notably Methicillin-resistant *Staphylococcus aureus*. Although usually localised, untreated cases may progress to sepsis, warranting immediate diagnosis and treatment. Other complications include osteomyelitis, fistualisation, thoracic extension, necrotising fasciitis, and brain abscess [5,6].

Ultrasound (USG) is the modality of choice for cases of neonatal mastitis, as it is radiation-free, effective in detecting abscess formation, and useful for guided aspirations. Treatment involves antibiotic therapy and aspiration, withholding open incision and drainage for refractory cases to prevent damage to the breast bud or long-term parenchymal changes [7].

In conclusion, massaging or manipulating neonatal breasts, or expressing 'witch's milk,' although uncommon, remains an unhealthy cultural practice that can lead to cultural gynaecomastia or pose a significant risk for abscess formation. Sonographic evaluation of neonatal mastitis is valuable in these cases, as it can differentiate between normal breast tissue and abscess formation and aid clinicians in treatment planning.



**[Table/Fig-1]:** a) Photograph of the neonate showing a swelling in the lower outer quadrant of right breast associated with erythema and increased breast volume (white arrow). b) Grey scale ultrasound image with colour Doppler showing focal heterogeneity of the breast parenchyma with anechoic areas within, along with peripheral vascularity, suggesting mastitis with abscess formation (white arrow).

Inflammation of the breast tissue, regardless of the presence of infection, that occurs within the first two months of life is referred to as neonatal mastitis [1]. It is seen in term infants, with a peak incidence occurring around the third to fourth week of life, and it has a predilection for females. This condition is often attributed to the physiological hypertrophy of neonatal breast tissue, which results from a drop in maternal oestrogen at the end of pregnancy,

## REFERENCES

- [1] Walsh M, McIntosh K. Neonatal mastitis. *Clin Pediatr (Phila)*. 1986;25(8):395-99.
- [2] Masoodi T, Mufti GN, Bhat JI, Lone R, Arshi S, Ahmad SK. Neonatal mastitis: A clinico-microbiological study. *J Neonatal Surg*. 2014;3(1):2. PMID: 26023473; PMCID: PMC4420425.
- [3] Jean Bertrand KA, Rose NK, Franck LG, Célestin BA, Ibrahim T, N'gouan Constance BU. Mastitis and breast abscess in newborns and infants. *Afr J Paediatr Surg*. 2022;19(4):238-40. Doi: 10.4103/ajps.ajps\_92\_21. PMID: 36018205; PMCID: PMC9615954.
- [4] Campuzano MAG, Reyes LMCS, Sánchez VM, Arteaga AD, Jimenez MEDJR, Aquino FL, et al. Unilateral neonatal infectious mastitis: Case report. *Int J Pregn & Chi Birth*. 2018;4(5):157-58.
- [5] Hsieh WS, Yang PH, Chao HC, Lai JY. Neonatal necrotizing fasciitis: A report of three cases and review of the literature. *Pediatrics*. 1999;103:53-53.

- [6] Ashok KM, Sanjay JP, Rewati RS, Santosh DL. Brain abscess due to Staphylococcus aureus following neonatal breast abscess: Case report and a brief review of the literature. *Ann Saudi Med.* 2001;21:80-83.
- [7] Panteli C, Arvaniti M, Zavitsanakis A. Long-term consequences of neonatal mastitis. *Arch Dis Child.* 2012;97(7):673-74.

**PARTICULARS OF CONTRIBUTORS:**

1. Junior Resident, Department of Radiodiagnosis, SRM Medical College Hospital and Research Centre, Kattankulathur, SRMIST, Chengalpattu, Tamil Nadu, India.
2. Junior Resident, Department of Radiodiagnosis, SRM Medical College Hospital and Research Centre, Kattankulathur, SRMIST, Chengalpattu, Tamil Nadu, India.
3. Junior Resident, Department of Radiodiagnosis, SRM Medical College Hospital and Research Centre, Kattankulathur, SRMIST, Chengalpattu, Tamil Nadu, India.
4. Professor and Head, Department of Radiodiagnosis, SRM Medical College Hospital and Research Centre, Kattankulathur, SRMIST, Chengalpattu, Tamil Nadu, India.
5. Junior Resident, Department of Radiodiagnosis, SRM Medical College Hospital and Research Centre, Kattankulathur, SRMIST, Chengalpattu, Tamil Nadu, India.

**NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:**

Dr. Senthil Kumar Aiyappan,  
Professor and Head, Department of Radiodiagnosis, SRM Medical College Hospital  
and Research Centre, Kattankulathur, Chengalpattu-603203, Tamil Nadu, India.  
E-mail: asenthilkumarpgi@gmail.com

**PLAGIARISM CHECKING METHODS:** <sup>[Jain H et al.]</sup>

- Plagiarism X-checker: Aug 01, 2024
- Manual Googling: Sep 16, 2024
- iThenticate Software: Sep 24, 2024 (4%)

**ETYMOLOGY:** Author Origin**EMENDATIONS:** 5**AUTHOR DECLARATION:**

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Aug 01, 2024**Date of Peer Review: **Sep 12, 2024**Date of Acceptance: **Sep 25, 2024**Date of Publishing: **Mar 31, 2025**