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Puerperal Breast Abscess due to *Salmonella* Typhi from a Tertiary Care Hospital

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Abstract: Breast abscess in full term pregnancy is challenging due to the changed anatomy and physiology of the breast. Management of these abscesses would require critical clinical evaluation especially if the infecting organism is *Salmonella typhi*. Since there is a potential risk of *Salmonella* Typhi being excreted in milk, the babies may require weaning because *Salmonella* Typhi can behave dangerously in new borns. In geographical locations of endemic Typhi infections, establishing causal relationship would be absolutely essential and *Salmonella* Typhi included in the list of differential causes. Breast abscess investigation protocol would require re-look to incorporate culture of expressed milk sample along with conventional samples.
Keywords: Puerperal, Breast abscess, Typhoid, Antenatal, *Salmonella typhi*

INTRODUCTION

Breast abscess is a localized collection of pus within breast and abscess developing during pregnancy, lactation or weaning is called puerperal abscess or puerperal mastitis [1]. This is relatively frequent during lactation but uncommon during pregnancy. Breast abscesses are usually caused by organisms colonizing the breast skin. *Staphylocoocus aureus* remains by far the most common infecting agent. Other organisms commonly isolated include *Coagulase negative Staphylococus*, S*treptococcus spp, Enterobacteriaceae, Corynebacteria,* anaerobes etc. Upto 40 % of the abscesses could be polymicrobial [2]. *Salmonella* Typhi infection localized to breast is a rare occurrence and there are only a couple of reports in literature [3, 4]. Localized *Salmonella* Typhi infections at various sites and organs usually follows bacteremic illness of enteric fever but localized involvements without any clinical episode of enteric insult is unusual in respect of its occurrence and behavior of the organism. Role of pregnancy in evolution of localized Typhi infections needs to be debated.

CASE REPORT

A 26 year old full term antenatal female was admitted with complains of low grade fever of one month duration and discomfort in her right breast for the previous two days. Patient was non-diabetic, non-hypertensive and there was no history tuberculosis. There was history of exploratory laprotomy for ileal perforation four years back. On examination, she was febrile (100°F), had pulse rate of 110/min and blood pressure of 90/60 mm Hg. Her right breast was tender but no erythema or palpable mass and left breast appeared normal. Her hemoglobin was 11.2gm%, total leucocyte count (TLC) 12800 (N76%, L24%) and platelet count was 2,50,000/cu mm. ESR, liver function test and renal function test profiles were within reference ranges. Her widal test showed titers of TO >1: 480 and TH > 1:480. Blood and urine cultures were sterile. She was started paracetamol 500mg SOS while her pyrexia was worked up. She would become afebrile with paracetamol but discomfort in the breast persisted. Just two days after admission, she delivered a healthy baby vaginally. The obstetric process was uneventful except that on the day of delivery itself she developed pain, erythema and induration in her breast. The inflammatory lesion developed into an abscess over the next three to four days. Repeat examination of breast revealed a tender swelling of about 4-5cm in size, fluctuant and non adherent to the overlying skin. After the delivery, the mother didn't breast feed and baby had to be put on weaning.

Ultrasonography of the breast indicated an abscess of about 5cm size and under sonographic guidance, about 15ml of pus was taken out through needle aspiration. The pus sample was processed as per standard microbiological techniques. Gram negative bacilli along with pus cells were seen on Gram stain. A pure culture of non lactose fermenting organism was obtained on Mac-Conkey agar. The isolate was provisionally identified as *Salmonella* Typhi on the basis of biochemical reactions and species Typhi was

confirmed using Salmonella specific antisera. The isolate was sensitive to chloramphenicol, ciprofloxacin, ofloxacin, cefotaxime and ceftriaxone and resistant to Nalidixic acid. The patient was started on ceftriaxone and breast abscess started regressing immediately after instituting the antibiotic treatment. Repeat culture of the abscess was sterile. Repeated stool and urine cultures were didn't grow any pathogen. Expressed breast milk was also investigated for any evidence of *Salmonella* Typhi involvement. There was no *Salmonella* Typhi in breast milk.

DISCUSSION

Breast infections commonly develop 1-3 months after delivery and the responsible organism may be derived from mother's skin or infant's mouth and entering through cracks or fissures in the nipple or areola [5]. There is also a possibility that organism are delivered in the abscess area through hematogenous route. In this particular case, the features of impending abscesses appeared immediately after delivery signaling the fact that the infection was evolving a couple of days before the delivery itself. Patient also had history of on and off fever also indicating that the organism was active during the last month of pregnancy taking advantage of the pool of hormones and the immune compromised condition trying to make its entry back into blood stream. Retrospective history of ileal perforation and reactive titres in Widal's reaction suggest that patient might have been a carrier of typhoid bacilli. Increased levels of hormones during pregnancy are associated with increased vascularity of the breast tissue and also there is associated induced growth of ducts and lobules [6]. Increased vascularity could have resulted in some minor blood leak and delivered typhoid bacilli from the carrier site and developed into an abscess.

Since there was a history of ileal perforation four years back and *Salmonella* Typhi was isolated from the abscess, repeated stool and urine cultures were undertaken to rule out carrier state but both the samples didn't grow any pathogen. It suggests that the bacilli would probably have been lying in a state of latency and waiting for an opportune moment to mount an attack. Expressed breast milk was also investigated for any evidence of *Salmonella* Typhi involvement because it could have proved fatal in the new born. Reports have been published in the literature where organism causing abscess were secreted in the breast milk and may act as a source of infection for new born increasing neonatal morbidity and mortality [7]. In our case, there was no *Salmonella* Typhi in breast milk indicating that the abscess was not communicating with any lactiferous duct.

Since Typhi infections are endemic to our country and there are documented reports of isolating Typhi not only from unilateral but also from bilateral breast abscesses, it becomes imperative on the part of all treating clinician to include organisms like Typhi in differential diagnosis and mandatory refer all the aspirations for microbiological investigations to establish the causal relation [3, 8, 9]. Essentiality of identifying organism like *Salmonella* Typhi also lies in the fact that this organism has all the potential to inflict significant morbidity and in the background of puerperal abscess, transmission of infection to the baby can prove fatal. Emergence of multi-drug resistance further underscores the need for catching the organism to plan therapeutic intervention. Educating pregnant mothers in the area of breast care and breast feeding including the eventualities of breast abscess pathologies should be a part of protocol of antenatal treatment.

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