Diagnosis and Management of Candida of the Nipple and Breast

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Diagnosis and treatment of ductal and/or nipple candidiasis in breastfeeding women is complicated by the variety of symptoms women experience. The differential diagnosis includes candidiasis of the nipple, candidiasis of the breast, bacterial infection of either nipple or breast, and other less common problems such as Raynaud’s syndrome. Diagnosis and treatment are based on history, physical examination, and presenting symptomatology because cultures of breast milk are often inconclusive. Differential diagnoses and treatment options are reviewed. J Midwifery Womens Health 2006;51:125–128 © 2006 by the American College of Nurse-Midwives.

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Case Presentation

Jane,* a 35-year-old gravida 2, para 2, had a low forceps delivery 10 weeks ago. She returned to see her midwife for bilateral nipple pain during and after breastfeeding, a problem that was constant for the past 4 days. The pain was described as a burning sensation, which was sometimes so uncomfortable, she could not put anything on her nipples. She was teary-eyed and thinking of discontinuing breastfeeding. She denied itching, stabbing breast pain, or nipple pain with cold stimuli. Prior to the visit with her midwife, Jane was referred to a lactation consultant to evaluate latch assessment and breastfeeding problems. She was told the baby was sucking correctly, and she was advised to return to her clinician for a possible yeast infection.

The midwife took a comprehensive history. Jane’s labor was complicated by the presence of moderate meconium, for which she received an amnioinfusion. She was group B strep positive and received three doses of penicillin during labor. Fetal heart rate monitoring revealed persistent deep variable decelerations in the second stage, which was the reason she had a vaginal operative delivery. Pediatricians were present at the birth, and the baby received deep suctioning for meconium. The Apgar scores were 7 and 8 at 1 and 5 minutes, respectively.

Jane’s baby stayed in the hospital an extra day because her baby had a weight loss of more than 10%. Jane started pumping her breasts on her second day postpartum because her baby had a poor suck and needed supplemental feedings. Jane’s milk came in on the third day after birth. By the time she was discharged from the hospital, her baby was nursing well. Presently, her baby is feeding on demand, has gained appropriate weight, and is thriving.

Jane’s obstetric history was unremarkable except for one episode of mastitis at 3 months postpartum, 2 years ago, which was treated with antibiotics.

On physical examination, Jane was found to be afebrile. She had inflamed nipples bilaterally. The areolae were red with flaky, shiny skin. No cracks were found. The breasts were normal without erythema, lumps, or tenderness. Immediately after Jane removed her bra, the midwife observed the nipples for color changes. She also applied a cold water application on the nipples to test for vasoconstriction, and cyanosis was not detected. The baby’s mouth had no signs of thrush. Jane’s midwife diagnosed her with presumptive candida of the nipple.

Jane was given a prescription of miconazole (Monistat-Derm) cream 2% and directed to apply the cream after every feeding. She was advised to wash her hands well before feedings, wash all her bras and clothing, keep her nipples dry, change nipple pads frequently, and clean all pacifiers, pumps, nipple shields, and shells if she uses them. Her baby was referred to her pediatrician for treatment, and the baby received oral nystatin (Mycostatin).

Jane returned to the office 3 weeks later and reported she found relief for about 2 weeks. Subsequently, she has developed deep, stabbing pain radiating toward her back during and after each feeding and burning of the nipples has returned. She denied fever, chills, lumps, or malaise. She was very frustrated and she wanted to stop nursing.

On examination, Jane was afebrile. Her nipples were red, inflamed, and tender to touch. Her breasts appeared normal without erythema, tenderness, or lumps. She was diagnosed with presumptive nipple and ductal candida. Jane received a prescription for fluconazole (Diflucan)

*Jane is a composite patient.
CANDIDIASIS OF THE BREAST: DIFFERENTIAL DIAGNOSIS

Candida of the nipple and/or the breast (ductal) can cause severe discomfort and pain. Pain during breastfeeding is one of the most frequently cited reasons that women stop nursing. It is imperative that health care providers diagnose mammary candida early to prevent complications of mild nipple candidiasis. Adequate treatment and support can prevent breastfeeding termination.

Differential Diagnosis of Nipple Pain

Sore nipples are the most common breastfeeding problem in the first few days after birth. This is usually transient and resolves with proper positioning and latch on of the baby to the nipple. However, persistent pain without improvement needs to be evaluated. Sore, burning, tender nipples are symptoms of several conditions, including eczema of the nipple/areola and Raynaud’s syndrome of the nipple. Eczema of the areola and nipple often presents with an acute onset of vesicular eruptions and crusting. Sometimes it appears as a dry scaling dermatitis. It is usually found on the areola far from the base of the nipple and does not often affect the nipple. Many women with eczema of the areola have had a prior history of eczema. Subsequent development of contact dermatitis from exposure to the infant’s mouth has also been reported in breastfeeding mothers who have introduced solid foods in their baby’s diet. Raynaud’s syndrome of the nipples causes vasospasm of the nipple, leading to severe, throbbing, burning pain. It is characterized by blanching of the nipples, followed by cyanosis and/or erythema after exposure to cold temperatures. A third diagnosis may be bacterial infection of the nipple, which presents with red, inflamed, cracked nipples with or without exudates or fever. On occasion, nipples with any one of these syndromes can also appear normal, which makes diagnosis challenging. Correct and early diagnosis of these conditions will prevent women from receiving unnecessary or incorrect medications while nursing.

Differential Diagnosis of Breast Pain

The most common causes of breast pain during lactation are plugged ducts, mastitis, and breast abscess. Plugged ducts are localized blockages of milk resulting from milk stasis. They are not associated with signs of systemic infection. However, they can be very tender and bother-some. In contrast, lactation mastitis is a localized inflammatory condition, usually unilateral, which appears with redness, tenderness, and a hot swollen area of the breast. The reported incidence of mastitis varies from 2.5% to 24%. Mastitis most commonly occurs after the first 10 days postpartum and may be seen any time throughout the breastfeeding period. The current definition for making the diagnosis of mastitis of the breast includes the presence of fever, malaise, and flulike symptoms. Mastitis can be noninfectious or involve a bacterial organism. Inadequate removal of milk can breed conditions that favor bacterial growth. The most common cause of bacterial mastitis is Staphylococcus aureus, which occurs in about 40% of the cases. There is evidence that the organism enters the breast tissue through a cracked, damaged nipple. About 3% to 11% of mastitis infections are complicated by abscess formation. Breast abscesses are usually the result of inadequate or delayed antibiotic treatment. They can be difficult to detect clinically, and ultrasonography is often required to make the diagnosis.

DIAGNOSIS AND MANAGEMENT

The diagnosis and management of candida in the breastfeeding dyad are difficult because diagnosis is most often based on subjective signs and symptoms. Although there are many published articles about candida of the nipple and breast in medical and lay literature, most of the reports are anecdotal. A few studies have attempted to confirm diagnosis with microbiological testing. Only one study has quantified signs and symptoms with sensitivity, specificity, and positive predictive values. This prospective study by Francis-Morrill et al. cultured both the nipple and milk with a specific laboratory media from 100 healthy breastfeeding women at 2 weeks postpartum. The participants were examined for shiny or flaky skin of the nipple/areola and questioned about four symptoms of candida (burning pain of the nipple/areola, sore nipples, stabbing pain of the breast, and nonstopping pain of the breast) at the time of culture and then again at 9 weeks postpartum. The signs and symptoms were correlated with culture results to determine the sensitivity, specificity, and negative and positive predictive values for each symptom. The positive predictive value was highest in women who had three or more signs or symptoms at the same time or when flaky shiny skin of the nipple/areola was seen in women who reported pain of the breast (Table 1).

Detection of Candida albicans in human milk is difficult to obtain because lactoferrin, which is present in human milk, has an inhibitory effect on the growth of candida. The addition of iron to milk specimens significantly improves the yield of C. albicans on culture. This method of culturing is selective and not...
History and Physical Examination

In addition to the physical examination, it is recommended that the breastfeeding mother have an examination by a lactation specialist or a practitioner knowledgeable about breastfeeding to evaluate her breastfeeding technique.

A complete history of pain, labor, delivery, and breastfeeding is essential, including the use of antibiotics in labor or postpartum, prior history of cracked nipples, and the infant’s use of pacifiers and bottles. Several studies suggest that vaginal yeast infections at the time of delivery, antibiotic therapy during labor or postpartum, and the use of bottles, pacifiers, and breast pumps are associated with mammary candidiasis. However, these risk factors, except for bottle use, have been identified in studies that used clinical data or patient self-reports to diagnose mammary candida. In a study that confirmed diagnosis with laboratory findings, only a history of bottle use in the first 2 weeks postpartum was significantly associated with subsequent development of mammary candidosis (OR 6.4; CI 2.8–7.1; P < .001). In a study that confirmed diagnosis with laboratory findings, only a history of bottle use in the first 2 weeks postpartum was significantly associated with subsequent development of mammary candidosis (OR 6.4; CI 2.8–7.1; P < .001).

A medical history to rule out risk factors for eczema of the nipple/areola and Raynaud’s syndrome of the nipple should be included in the history. Observation of the nipple for signs of cyanosis is diagnostic for Raynaud’s syndrome. Breastfeeding mothers have often been mis-diagnosed and treated for candida when Raynaud’s syndrome was the cause of nipple pain.

### Treatment of Nipple Candida

The pharmacologic treatment of candida of the nipple and ductal system is also problematic because of a lack of clinical trials. Several medications are used to treat candida of the nipples and breast, but none have been studied for the effect on mammary candida. The most common treatment for localized candida of the nipple is an antifungal, topical medication such as Nystatin (Mycostatin). However, because more than 40% of yeasts are resistant to nystatin, it is recommended that miconazole (Monistat-Derm) or clotrimazole (Lotrimin or Mycelex) creams be used to treat the mother. The treatment plan often includes a topical antibiotic ointment because nipple fissures can concurrently present with candida of the nipples, and *S. aureus* is significantly associated with nipple fissures. Either mupirocin (Bactroban) or a triple antibiotic ointment, such as Neosporin ointment, can be prescribed. For nipples that are very red and inflamed, a mid- or low-potency topical steroid cream can be used to facilitate healing.

Every treatment regimen must include the simultaneous treatment of the mother and baby dyad. Oral nystatin (Mycostatin Suspension) is the most common treatment for the baby, followed by oral fluconazole (Diflucan).

### Treatment of Ductal Candida

Persistent cases of nipple yeast or presumptive ductal yeast are frequently treated with oral fluconazole (Diflucan). However, without clinical trials that document the efficacy and safety of fluconazole for mammary candidosis, it is especially important to have a very high suspicion prior to treatment. Fluconazole is not approved by the Food and Drug Administration for mammary candidosis. The doses that are used, a 200- to 400-mg loading dose and then 100 to 200 mg once a day for 14 to 21 days, are doses that have been used to treat candidiasis infections in other organs (e.g., the bladder, esophagus, and liver) in immunocompromised persons. In randomized controlled studies, the side effects from fluconazole at the aforementioned doses were minimal. Fluconazole is often prescribed to continue for 1 to 2 weeks after symptoms have resolved to ensure cure and prevent recurrence.

It is recommended that breastfeeding continue while taking fluconazole. However, the nursing mother should be informed about the lack of data prior to prescribing this medication and weigh the benefits and risks of breastfeeding and weaning when using this medication. Fluconazole is contraindicated in pregnancy (category C) secondary to reports of teratogenicity in animal studies that used high concentrations of the drug. This medication does have drug-drug interactions and will increase...

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### Table 1. Positive Predictive Value of Signs and Symptoms of Candida of the Breast in Lactating Women Between 2 and 9 Weeks Postpartum

<table>
<thead>
<tr>
<th>Sign/Symptom</th>
<th>Positive Predictive Value (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sore + Burning + Pain + Stabbing + Skin changes*</td>
<td>100</td>
</tr>
<tr>
<td>Burning + Pain + Stabbing + Skin changes</td>
<td>100</td>
</tr>
<tr>
<td>Pain + Stabbing + Skin changes</td>
<td>100</td>
</tr>
<tr>
<td>Sore + Burning + Pain + Skin changes</td>
<td>80–91</td>
</tr>
<tr>
<td>Burning + Pain + Skin changes</td>
<td>80–85</td>
</tr>
<tr>
<td>Sore + Burning + Pain + Stabbing</td>
<td>74</td>
</tr>
<tr>
<td>Burning + Pain + Stabbing</td>
<td>63</td>
</tr>
<tr>
<td>Pain + Stabbing</td>
<td>57</td>
</tr>
</tbody>
</table>

Sore = sore but not burning nipple; Burning = burning pain on nipple/areola; Pain = nonstabbing pain of the breast; Stabbing = stabbing pain in the breast; Skin changes = shiny and flaky skin of the nipple/areola

*Skin changes can be further subdivided into shiny skin of the nipple or flaky skin on the nipple-areola

Adapted from: Francis-Morrill et al.11
plasma concentrations of phenytoin (Dilantin), warfarin (Coumadin), cisapride (Propulsid), and some sulfonylureas. Consultation is recommended before prescribing fluconazole to women who are on other medications. It is excreted into breast milk in small amounts, approximately 1% of the maternal dose and less than 5% of the dose recommended for pediatric use. The medication is considered safe for a nursing infant.

CONCLUSION

Early recognition and treatment for candida of the nipple and/or breast is essential to supporting successful long-term breastfeeding. Despite the National Breastfeeding Awareness Campaign to promote exclusive breastfeeding for 6 months, the majority of women in the United States stop breastfeeding early because of pain. Without microbiologic testing to confirm a diagnosis of mammary candida, we must use excellent systematic clinical skills to make the presumptive diagnosis. A team approach, including a lactation consultant and a clinician, is ideal. Prospective research studies and clinical trials are needed to improve our diagnosis and management of mammary candida. In the absence of medical protocols and guidelines, a conservative approach to prescribing medications is recommended. The use of fluconazole (Diflucan) for long-term therapy needs to be considered only after a thorough history is taken and physical examination is completed.

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REFERENCES