

CLINICAL CASE REPORTS

Bloody nipple discharge in an infant – a stressful presentation with a benign cause

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ABSTRACT

Bloody nipple discharge (BND) in infancy is rare, most commonly associated with mammary duct ectasia. The occurrence of BND can be particularly distressing, for both parents and pediatricians, due to its association with breast carcinoma in adults. We report a case of a ten-month-old girl who exhibited intermittent left-sided BND for a duration of six weeks. Coagulation and hormonal tests were within the age-appropriate reference ranges, and ultrasound imaging was normal. The discharge resolved spontaneously. In such cases, it is crucial to avoid unnecessary invasive procedures or treatments, while providing reassurance to parents and addressing any misconceptions associated with this condition.

Keywords: bloody nipple discharge; infant; mammary ductal ectasia

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INTRODUCTION

Physiological milky nipple discharge, sometimes accompanied by transient breast enlargement, is common in early infancy. This phenomenon, attributed to maternal and fetal hormones, is self-limiting.⁽¹⁾ In contrast, bloody nipple discharge (BND) is exceedingly rare, with fewer than 30 cases reported in children worldwide.⁽²⁾

Mammary duct ectasia is recognized as the leading cause of BND in infants, although its pathogenesis remains unclear.⁽²⁾ Possible contributing factors include hormonal and environmental factors, such as inflammation and obstruction, combined with a predisposition to ductal dilation, suggesting a multifactorial and complex pathogenesis.⁽³⁾ Some reports describe an association with bacterial infections, but findings are inconsistent.⁽¹⁾ Ductal ectasia is more frequently reported in males, with a male-to-female ratio of 10:4 and may occur between two months and 13 years.⁽⁴⁾ This differs from the female sex predilection reported in the adult population.⁽⁵⁾ Other reported causes of BND include intraductal papilloma, intraductal cyst, ductal hyperplasia, prolactinoma, inflammatory breast pathologies and gynecomastia.⁽²⁾

CASE REPORT

A ten-month-old girl presented with a six-week history of intermittent left-sided BND, noticed as stains on her clothing (**Figure 1**). The BND was not spontaneous, occurring only upon breast stimulation, particularly after being held. There was no prior history of breast discharge, fever, trauma, manipulation, or maternal medication exposure during pregnancy or breastfeeding.



Figure 1 – Bloody nipple discharge stain on the clothing

Her medical history was relevant for recurrent urinary tract infections, for which she was on prophylactic trimethoprim/sulfamethoxazole. She was exclusively breast-fed until the age of 6 months. Growth parameters showed a weight at the 85th percentile and head circumference above the 97th percentile, consistent with familial macrocephaly, with normal neurodevelopment and cranial ultrasound. Family history was negative for bleeding disorders, breast carcinoma, or endocrine disorders.

Physical examination revealed no breast enlargement, masses, tenderness, inflammatory signs, or spontaneous discharge (**Figure 2**). Further physical examination was unremarkable, with normal female genitalia.



Figure 2 – Nipple discharge with no signs of infection or hypertrophy

Laboratory investigations, including blood cell count, coagulation tests, and hormonal profile (prolactin, oestradiol, thyrotropin, thyroxine, follicle-stimulating hormone, and luteinizing hormone) were within age-appropriate reference ranges (**Table 1**).

Cytology and culture were not performed due to the intermittent nature of the discharge. Bilateral breast ultrasonography was unremarkable, with normal breast bud structure, no asymmetries, masses, cysts, or ductal ectasia.

A presumptive diagnosis of mammary duct ectasia was made. A conservative approach was adopted, with gradual resolution of the discharge within three months. Follow-up until the age of 36 months was uneventful, with no recurrence of BND.

Table 1 - Laboratory test results and reference ranges

Laboratory test	Results	Reference Range
Hemoglobin	13.2 g/dL	10.5 – 13.5 g/dL
Platelets	166,000 / μ L	150 – 400 $\times 10^9$ /L
Activated Partial Thromboplastin Time	22 sec	22.1 – 28.1 sec
Plasma Luteinizing Hormone	< 0.07 mIU/mL	< 1.30 mIU/mL
Plasma Follicle-Stimulating Hormone	1.54 mIU/mL	0.4 – 7.1 mIU/mL
17-Beta Estradiol	< 11.80 pg/mL	< 20 pg/mL
Prolactin	20.8 ng/mL	2.8 – 29.2 ng/mL
Free Thyroxine	1.23 ng/dL	1.09 – 2.02 ng/dL
Thyroid-Stimulating Hormone	1.503 mIU/L	1.300 – 7.090 mIU/L

DISCUSSION

The occurrence of BND can be particularly distressing for both parents and pediatricians, due to its association with breast carcinoma in adults.⁽³⁾ Importantly, to our knowledge no malignant cases have been reported in patients younger than three years.⁽⁶⁾ Despite its benign nature, BND often leads to unwarranted diagnostic procedures and treatments.⁽⁷⁾

The initial assessment should include detailed history (onset, duration, character of discharge, perinatal and maternal history), followed by careful examination.⁽²⁾ Benign discharges are often bilateral and manipulation-induced, whereas pathological ones tend to be unilateral, spontaneous, and persistent.⁽⁸⁾ In our case, the BND showed mixed features, requiring a precise and cautious approach.

Physical examination is normal in nearly half of the cases of BND.⁽⁹⁾ Therefore, a structured diagnostic approach should be outlined.⁽⁸⁾ The initial workup must include laboratory evaluation with a complete blood cell count, coagulation tests and hormonal profile, discharge *Gram* staining and culture and breast ultrasound.⁽²⁾

In this infant the hormonal and coagulation levels were found to be normal and the ultrasound results were unremarkable. Ultrasound typically demonstrates dilated retroareolar ducts in duct ectasia, though findings may be absent in mild cases, as in our case.⁽⁶⁾ It is important to highlight that when imaging reveals an abnormality other than mammary duct ectasia, referral to paediatric surgery is warranted.⁽⁸⁾

Cytological findings of BND vary widely, from diffuse foam cells and rare duct epithelial cells to erythrocytes and macrophages, sometimes described as “pigmented macrophages” possibly from prior bleeding. Peri-ductal fibrosis, atrophy and the formation of granulation tissue are prevalent findings as well.⁽⁵⁾ Despite its limited utility, cytology can help confirm the absence of atypical cells and acute inflammatory process, avoiding unnecessary biopsies.⁽⁶⁾

Management should prioritize conservative follow-up. Even minor surgical intervention may damage breast buds,

risking permanent deformity or impaired development. Some experts recommend a monitoring period ranging from six to ten months because most reported cases resolve spontaneously within three-nine months. Surgical intervention should be reserved for cases with concerning features such as persistent bleeding >nine months, palpable masses, suspicious cytology, progressive enlargement, pain, or abnormal imaging.⁽⁹⁾

Although this BND was unilateral, in infants, both bilateral and unilateral discharge are commonly benign, she displayed no other malignant features and the BND resolved spontaneously before six months, thus a conservative management was preferred.⁽¹⁰⁾ This case underscores the importance of recognizing this condition, as meticulous clinical follow-up is safe and minimizes unnecessary diagnostic procedures and invasive treatments.

AUTHORSHIP

Inês Soares - Data curation; Formal analysis; Writing – original draft; Writing – review & editing

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