

Bloody nipple discharge in infants, case report in a male toddler

Telorragia en el lactante, reporte de caso en lactante mayor de sexo masculino

Fernanda Ignacia González Vidal^a, Daniela Constanza Ibáñez Salinas^a, Juan Ignacio Lagos Chávez^a,
Sofía Catalina Klein Díaz^a, Julio César Soto Barros^{b,c}, Laura Irene Campos Cerda^c

^aEstudiante de Medicina. Facultad de Medicina, Universidad de Concepción. Concepción, Chile.

^bDepartamento de Pediatría, Facultad de Medicina, Universidad de Concepción. Concepción, Chile.

^cUnidad de endocrinología, Servicio de Pediatría, Hospital las Higueras. Talcahuano, Chile.

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What do we know about the subject matter of this study?

Bloody nipple discharge in infants is a rare symptom and is only associated with benign etiologies such as ductal ectasia, breast cysts, intraductal papilloma, fibroadenomas, and mastitis. Therefore, it generally does not require invasive study or surgical management.

What does this study contribute to what is already known?

We present the condition progression of an older male infant with bloody nipple discharge and ductal ectasia. Based on this case, we provide an update on the most frequent etiologies with their respective epidemiological and clinical characteristics and management.

Abstract

Bloody nipple discharge in infants is an infrequent clinical finding and is associated with benign etiologies. **Objective:** To report a case of bloody nipple discharge in an older infant with gynecomastia and discuss the clinical decision-making in relation to this symptom. **Clinical Case:** A 13-month-old male infant who presented with a one-month history of three episodes of bilateral bloody nipple discharge, with no other associated symptoms. He was exclusively breastfed until 6 months of age and afterwards with breastfeeding and complementary feeding until the day of consultation, without history of exposure to endocrine disruptors. Physical examination revealed gynecomastia with Tanner stage 3 of breast development. No abnormalities in his growth chart were noted. Upon breast compression, dark red blood came out of the right nipple, and brownish fluid from the left one. Breast ultrasound showed a simple cyst in the right breast. The clinical and radiological findings were attributable to ductal ectasia. An expectant management approach was adopted, and spontaneous resolution occurred within two months of onset. There was no clinical recurrence after nine months of follow-up. **Conclusions:** The most common etiology of bloody nipple discharge in pediatric patients is ductal ectasia; however, it can be secondary to breast cysts, intraductal papilloma, fibroadenomas, and mastitis. Current literature recommends an expectant management approach with follow-up until resolution, with no need for further procedures.

Keywords:

Bloody Nipple Discharge;
Infant;
Ductal Ectasia;
Intraductal Papilloma;
Breast Cyst

Introduction

Bloody nipple discharge in children is a rare condition that is very alarming for parents, who tend to go to the emergency room when it occurs. The main cause of bloody nipple discharge in childhood is ductal ectasia, a benign condition characterized by dilation of the mammary ducts associated with inflammation and periductal fibrosis¹. Ductal ectasia is more common in infants² and in males, with a ratio of 5:2 compared to females. The average age of presentation is 38 months, with a range from 2 months to 13 years³. Other reported etiologies include breast cysts, papillomas, fibroadenomas, phyllodes tumors, and mastitis⁴. Breast carcinomas have not been described in preschool-aged children, but they have been described in adolescents, such as juvenile secretory carcinoma and phyllodes tumors².

The initial study is performed with bilateral breast ultrasound, and if benign alterations such as ductal ectasia or breast cysts are observed, a hormonal study is not required¹. Otherwise, a hormonal study with serum levels of prolactin, estradiol, and thyroid hormones should be requested, and referral to an endocrinologist should be considered if alterations are present¹. In case an infectious etiology is suspected, a cytological study of the secretion should be performed (culture, Gram stain, cell count)⁵. In exceptional cases, depending on the etiology, the patient is referred to a surgeon¹.

Historically, breast tissue biopsies and mastectomies were performed in patients with this condition⁶. However, current evidence shows that it is a self-limiting condition that does not require invasive procedures that can cause significant breast deformity affecting future functionality and cosmetic outcomes^{1,7,8}.

Therefore, a watch-and-wait approach is considered appropriate when the physical examination and ultrasound show no lesions that would indicate a different course of action⁴.

In Chile, a case of bloody nipple discharge in infants has been reported. The condition occurred in a 6-month-old patient and was secondary to ductal ectasia⁹. The objective of this manuscript is to report a case of bilateral bloody nipple discharge in an older infant with gynecomastia and to discuss clinical decision-making in the face of this symptom.

Clinical Case

A 13 months old male patient with no history of illness, who was exclusively breastfed until 6 months of age and breastfed in combination with complementary feeding until the time of consultation. He was seen in the emergency department due to a one-month history of three episodes in which dark brown stains were observed on his clothing at nipple level, starting on the left side and then spreading to the right. After the last episode, blood was observed upon compression, which prompted the consultation. The targeted medical history ruled out exposure to endocrine disruptors and relevant personal and family history.

Physical examination revealed that he was in good general condition, with Tanner stage 3 gynecomastia, which his mother had not noticed before. Upon compression of the breasts, dark red blood emerged from the right nipple and a brownish fluid from the left nipple (Figure 1). The rest of the examination was normal, with no evidence of pubertal development and no alterations in the growth chart.

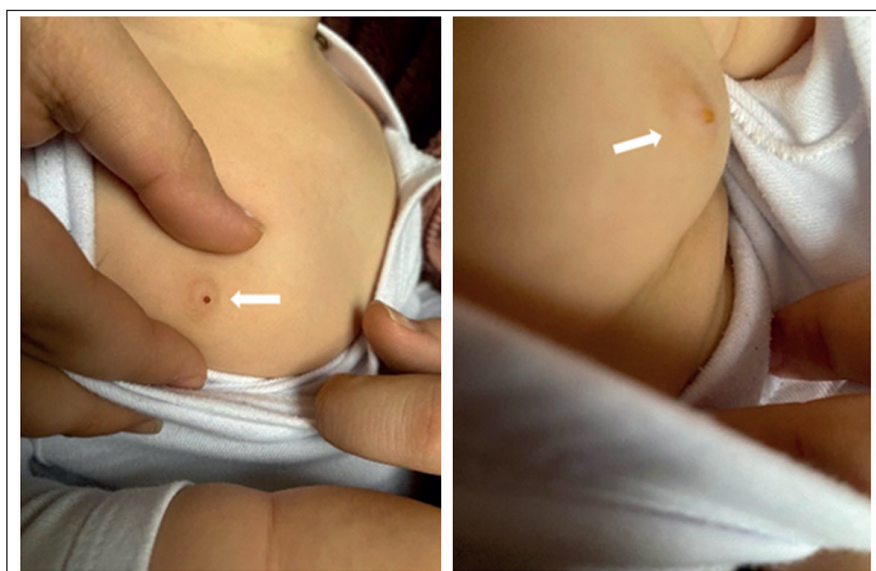


Figure 1. Upon compression of the breasts, dark red blood emerged from the right nipple and a brownish fluid from the left nipple.

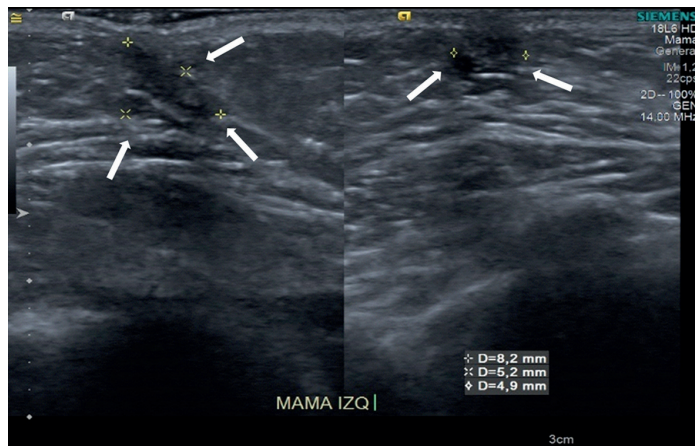


Figure 2. Left breast ultrasound showed a diffuse hypoechoic retroareolar fibroglandular tissue, poorly vascularized, measuring 8 × 5 × 5 mm.

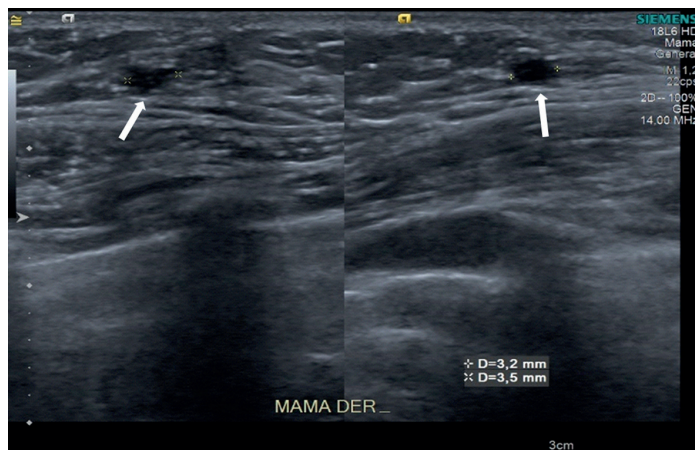


Figure 3. Right breast ultrasound displayed diffuse hypoechoic bilateral fibroglandular tissue, poorly vascularized, measuring 9 × 5 × 3 mm. In addition, a small simple cyst was found, measuring 3.5 mm.

To complete the etiological evaluation, a bilateral breast ultrasound was requested, which revealed bilateral retroareolar breast tissue with a simple cyst on the right side, with no signs of malignancy (Figures 2 and 3). The clinical and radiological findings were attributable to ductal ectasia. Expectant management was decided upon, and the condition resolved spontaneously within 2 months of its onset, with no clinical recurrence after 9 months of follow-up.

Discussion

Bloody nipple discharge is a rare symptom that, in most cases, occurs in healthy children. 74.1% of patients present it during the first year of life¹⁰. Among

the most common causes of bloody nipple discharge in childhood are ductal ectasia, breast cysts, intraductal papilloma, fibroadenomas, and mastitis. Traumatic etiology, due to manipulation and secondary to nipple irritation from clothing, should also be considered in the differential diagnosis¹⁰. In adults, it is significantly associated with breast carcinoma; however, all cases reported in children are due to benign processes¹.

Ductal ectasia is the most common cause. It has previously been referred to as comedo mastitis, cholesterol granuloma, and plasma cell mastitis³. It results from a benign, self-limited dilation of the subareolar milk ducts, leading to distortion of the surrounding tissue, accumulation of debris in the canaliculi, and a subsequent inflammatory response. This leads to the progressive development of fibrosis and granulation tissue formation with ulceration of the ductal epithelium, causing bleeding¹¹. Its etiology has not been elucidated. It has been hypothesized that it could occur after bacterial infections or trauma. Other authors believe it could correspond to an abnormality in breast development³.

On ultrasound, it can be seen as ductal dilation with tubular structures oriented toward the nipple, simple cysts, or complex septated cysts. However, a normal ultrasound does not rule out the diagnosis¹². The management of ductal ectasia is conservative², requiring no intervention, only periodic check-ups. Close monitoring every 6 months is recommended⁴. Blocked milk ducts can predispose to infection; however, in the pediatric population, infectious complications are less frequent and occur when the breasts are manipulated⁷.

Another etiology includes retroareolar breast cysts, which are the most common breast pathology in peri- and post-pubertal adolescents. These are more common in females, but cases have also been reported in males¹³. They have a benign etiology and complete spontaneous resolution. They can be solitary or multiple and are commonly located near the nipple and areola¹⁰.

Intraductal papillomas are another cause of bloody nipple discharge that should be considered only in post-pubertal patients¹⁴. It is a rare tumor that presents as a small lesion under the areola and produces bloody discharge from the nipple. It is bilateral in 25% of cases¹². Subareolar resection of the mammary gland has been reported in children. In female patients, tumor resection with clear margins, or quadrantectomy for more extensive lesions, are the recommended techniques¹⁴.

Fibroadenomas are the most common benign neoplastic lesions in children⁵. They commonly present as a firm, non-tender, encapsulated mass that grows

slowly. These tumors are estrogen-sensitive. Some regress spontaneously, others continue to grow slowly, and some remain latent for several years¹². On ultrasound, they appear as a well-defined, hypoechoic, and homogeneous mass¹⁰.

In addition, mastitis has been reported as another sporadic etiology in infants, as it is more common in adolescents and adults, manifesting as bloody nipple discharge². In case of clinical signs of infection where mastitis is suspected, antibiotic therapy should be initiated, considering that the most common germ is *Staphylococcus aureus*².

The initial study is performed according to the suspected etiology with breast ultrasound, in addition to cytological study and culture of the discharge if an infectious process is suspected¹⁰. If the cytological study and clinical findings point to an infection, it should be treated as mastitis¹. However, if ultrasound reveals dilated anechoic ducts, the main suspicion will be ductal ectasia⁸. In this case, periodic monitoring is appropriate until the lesion regresses.

Invasive procedures are not recommended; however, if the discharge is unilateral, spontaneous, persistent, and accompanied by a palpable mass, they may be considered. In addition, some authors recommend that if bloody nipple discharge does not subside after 6 to 9 months, referral to a pediatric surgeon should

be considered regardless of other findings¹. Otherwise, only follow-up until spontaneous resolution is recommended⁵.

In our patient, the condition resolved within a month, and after nine months of clinical follow-up, there has been no recurrence. Although a right breast cyst was observed on ultrasound, considering the epidemiology, clinical features, bilateral presentation, and the fact that ductal ectasia can manifest as breast cysts on imaging, the most probable diagnosis in this case is ductal ectasia. An accurate diagnosis could be made with a biopsy; however, as we have mentioned, this is not necessary, as it does not change the clinical approach.

Considering this review, we propose a flowchart for diagnosis and management (Figure 4).

Conclusions

Bloody nipple discharge in childhood is a symptom that can be alarming for both parents and treating physicians; however, in most cases, its etiology is benign and self-limiting. The main etiology is ductal ectasia. The initial study is a breast ultrasound, with expectant management, and periodic check-ups until complete resolution of the condition.

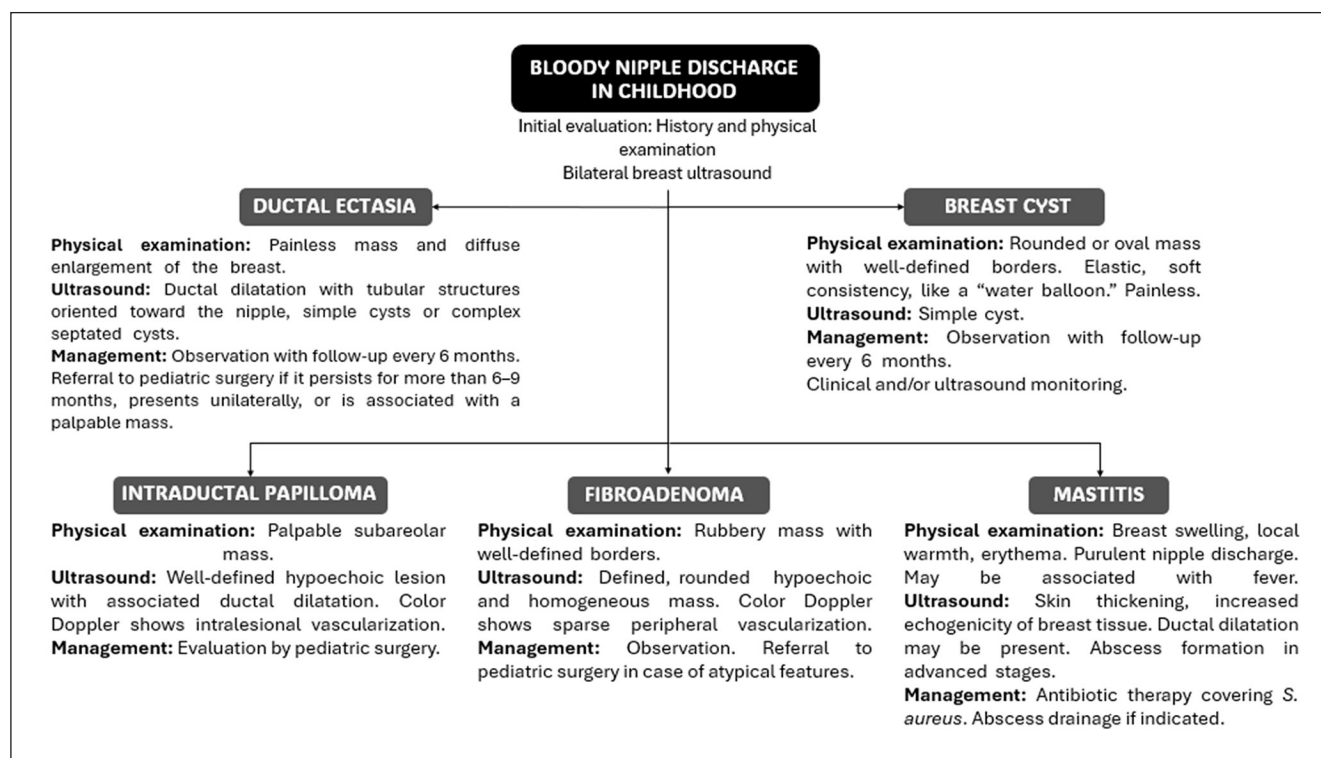


Figure 4. Flowchart for evaluation of bloody nipple discharge in childhood. Main characteristics of the most common etiologies and their management are detailed.

Ethical Responsibilities

Human Beings and animals protection: Disclosure the authors state that the procedures were followed according to the Declaration of Helsinki and the World Medical Association regarding human experimentation developed for the medical community.

Data confidentiality: The authors state that they have followed the protocols of their Center and Local regulations on the publication of patient data.

Rights to privacy and informed consent: The authors have obtained the informed consent of the patients

and/or subjects referred to in the article. This document is in the possession of the correspondence author.

Conflicts of Interest

Authors declare no conflict of interest regarding the present study.

Financial Disclosure

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