

BLOODY NIPPLE DISCHARGE IN INFANCY: REPORT OF A CASE

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Abstract- Bloody nipple discharge in infancy has rarely been reported in medical literature. We report a 7 month-old female infant with a one month history of bilateral nipple discharge. Endocrinologic and hematological workups were within normal limits. Breast ultrasonography showed two non-echogenic cystic areas in each breast. The problem resolved after a period of observation. This is a benign condition and resolves spontaneously, but if persistent, should be properly investigated. Biopsy or excision is not indicated. We recommend breast ultrasonography for the follow-up of this condition.

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INTRODUCTION

A milky discharge may appear in association with breast hypertrophy near the end of the first week of life (1). Manipulation of the breast could prolong this condition and lead to trauma and infection (2). Purulent nipple discharge may be seen with mastitis (1). Bloody nipple discharge which is very rare, has been reported in both female and male infants (3-5). The cause of this condition in infancy is unknown (3). We report a 7 month-old female infant with bilateral bloody nipple discharge.

Case report

A seven month-old breastfed healthy infant girl presented with bilateral bloody nipple discharge of one month duration. The past history was unremarkable with no evidence of previous trauma or pathology except for breast manipulation at the age of 3 months. Her growth curves were all at 50th percentile and physical examination findings were

normal. All hematological and endocrinologic investigations were within normal limits. Cytology and culture of the discharge showed a small number of inflammatory cells with no positive cultures. Ultrasound showed two non-echogenic cysts ranging between 3 to 4 mm on the right side, and 4 to 5 mm on the left. Bloody discharge gradually changed to serous fluid and reduced during 5 months. Ultrasonographic follow-up showed spontaneous regression of the cystic areas.

DISCUSSION

In adults, bloody nipple discharge is mostly the first symptom of breast carcinoma, but it has not been reported in infancy and childhood (4). For this reason biopsy or excision of the breast to rule out malignancy should be avoided in this age group (3). Karl *et al.* reported 17 cases of juvenile secretory carcinoma of the breast. The ages ranged from 3 to 17 years, all children presented with an asymptomatic breast mass and none had a nipple discharge (5). In one series, thirteen percent of patients with carcinoma had a bloody nipple discharge associated with pregnancy. This appears to be related to the vascular engorgement of the breast near term and to ductal hypertrophy from hormonal stimulation (1).

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In adults, a bloody discharge, which may be sanguineous or serosanguinous, is most frequently seen with intraductal papillomas. Breast enlargement and bloody nipple discharge is very rare in infancy and childhood (1). Berkowitz and Inkelis first reported this phenomenon in two infants six weeks old, one girl and one boy (1). More recently, a few other cases have been reported. Biopsy was performed in only three cases. One of them was reported as normal breast hypertrophy and the other two cases showed mammary duct ectasia. Mammary duct ectasia is a benign condition characterized by dilatation of the subareolar duct system. There is an inflammatory reaction with fibrosis in the periductal stroma and the first sign is usually a bloody nipple discharge. It is known to be a disease of middle-age or elderly women. In mammary duct ectasia, the specific etiology is unknown (4). Infection has been implicated as a possible etiologic factor in mammary duct ectasia. (3).

McKierman *et al.* investigated the histological appearance of the breasts of 26 infants and young children between the ages of three weeks and two years. They showed that the human mammary gland remained active for many months after birth and might continue to grow and secrete. They did not notice any difference in histological appearance between male and female glands and established that an infant's gland consisted of well-formed lobules surrounded by dense interlobulae stroma similar to adults (6).

Estrogen promotes growth of the duct system and progesterone that of the alveoli. Circulatory concentrations of FSH rise after birth in both sexes and especially in girls remain relatively high for the next few years. Plasma estradiol concentrations are often higher in girls aged 0-4 years than in later prepubertal years. Histologic studies and biopsy findings show that mammary gland does not involute rapidly after birth and the breast development which begins in the perinatal period due to maternal hormones continues in the postnatal period due to the infant's own endocrine system. This breast development is similar in both sexes and carries on until four years of age with a well-formed lobular pattern and secretory function (4). Maternal hormones, including, estrogens, progesterones and

prolactin, and fetal hormones such as prolactin appear to influence the hypertrophy of neonatal breast tissue noted in most full-term newborn infants of either sex. In spite of the decline in levels of placentally transmitted hormones, palpable breast nodules can persist normally into the second half of the first year, particularly in girls. It has been suggested that trauma to the estrogenized neonatal breast can introduce pathogenic bacteria, such as staphylococci or gram negative organisms, into the duct system. The breast may be particularly susceptible to infection at several days of age, when withdrawal of estrogen stimulation produces dilation of the orifices of the ducts. The infected breast usually appears erythematous, warm, indurated, and tender (1).

Other etiologic factors may be chronic inflammation of the periductal stroma with obliteration of the lumen, congenital abnormalities of the duct system, infection, trauma, and autoimmune reactions (4). We did not find any cause to explain this phenomenon in our case.

Although bloody nipple discharge in infancy has been previously reported, its cause remains unclear and is regarded as similar to that seen in pregnancy. On the other hand, transient duct ectasia has been said to occur in normal newborn infants as a result of transplacental passage of maternal hormones that stimulate the neonatal breast.

Chronic cystic mastitis has been mentioned as a possible cause of bloody nipple discharge, and intraductal cysts in children but the frequency or age distribution is not specified. Intraductal papilloma, a common cause of bloody nipple discharge in adults occasionally occurs in children and investigations show only one reported case in a child under 4 years of age (3).

In the adult population, mammary ductal ectasia is treated by local excision in females and simple mastectomy in males. In children, bloody nipple discharge should be managed expectantly with repeated clinical assessments. If it persists or the breast continues to enlarge, appropriate endocrinologic work-up should be undertaken. Breast biopsy or excision should be avoided in female infants since this could cause permanent destruction of the developing breast. In male infants, when they

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continue to have pain, bloody nipple discharge, or breast enlargement, a subcutaneous mastectomy will resolve the problem when other measures have failed. Stimulation or massage of the breast should be avoided. Culture should be taken and appropriate antibiotics administered when indicated (3).

The cause of the bloody nipple discharge in our patient may be similar to that in pregnancy. It may represent an uncommon effect of hormonal influence on the neonatal breast along with hypertrophy and milk secretion. The trauma of repeated manipulation may have perpetuated the hypertrophy and discharge. Surgical intervention may be considered because of the hardness of the engorged neonatal breast and the finding of a bloody discharge. Surgical procedures to diagnose carcinoma, including biopsy, should be avoided because minimal injury to the breast may produce significant tissue destruction and permanent disfigurement. The condition is benign, resolves spontaneously and represents one aspect of hormonal influence on neonatal breast tissue. It is important to be aware of the disorder and to avoid invasive procedures (1). In other reported cases the duration of bloody nipple discharge had lasted from 3 to 7 months (1, 3, 4, 7- 9).

In our case, we used ultrasonography to follow the patient, and the cystic areas had resolved during 5 months of observation. Ultrasonography seems to be

a valuable noninvasive diagnostic tool in these conditions.

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