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Case Report

Bloody nipple discharge caused by an intraductal papilloma of the breast in an adolescent girl: A case report ☆,☆☆

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ABSTRACT

Bloody nipple discharge in pediatric patients is rare and mostly associated with benign conditions. Despite the generally benign nature, a thorough investigation of the cause and treatment is required if a palpable lesion is present. Here, the author reports a case of bloody nipple discharge in an adolescent girl with no significant medical history. Breast ultrasound demonstrated a solid, oval-shaped, circumscribed mass in the left subareolar region that was categorized as category 4a according to the breast imaging reporting and data system (BI-RADS). An excisional biopsy and histological examination confirmed a diagnosis of intraductal papilloma. While intraductal papilloma is rare in the pediatric population, ultrasound evaluation and knowledge of characteristic findings are useful for noninvasive diagnostics and image-guided treatment planning.

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Introduction

Nipple discharge can occur in patients of all ages and sexes, though its causes and management may vary with age and clinical patterns. Bilateral milky nipple discharge with breast enlargement in neonates is a self-limiting process caused by endocrine changes from prenatal maternal influences and birth, and it requires observation. However, bloody nipple discharge (BND) is a distressing breast symptom that

requires careful evaluation of the underlying pathology [1]. In adults, BND may be associated with benign or malignant disease, whereas in children, it is almost always associated with benign conditions, primarily mammary duct ectasia, which needs clinical monitoring or surgery [1,2]. Intraductal papilloma (IDP) is a well-known pathological cause of BND, but it is very rare in the pediatric age group [3,4]. This report describes a case of BND caused by an IDP in an adolescent girl and the role of breast ultrasound in the diagnosis and appropriate treatment.

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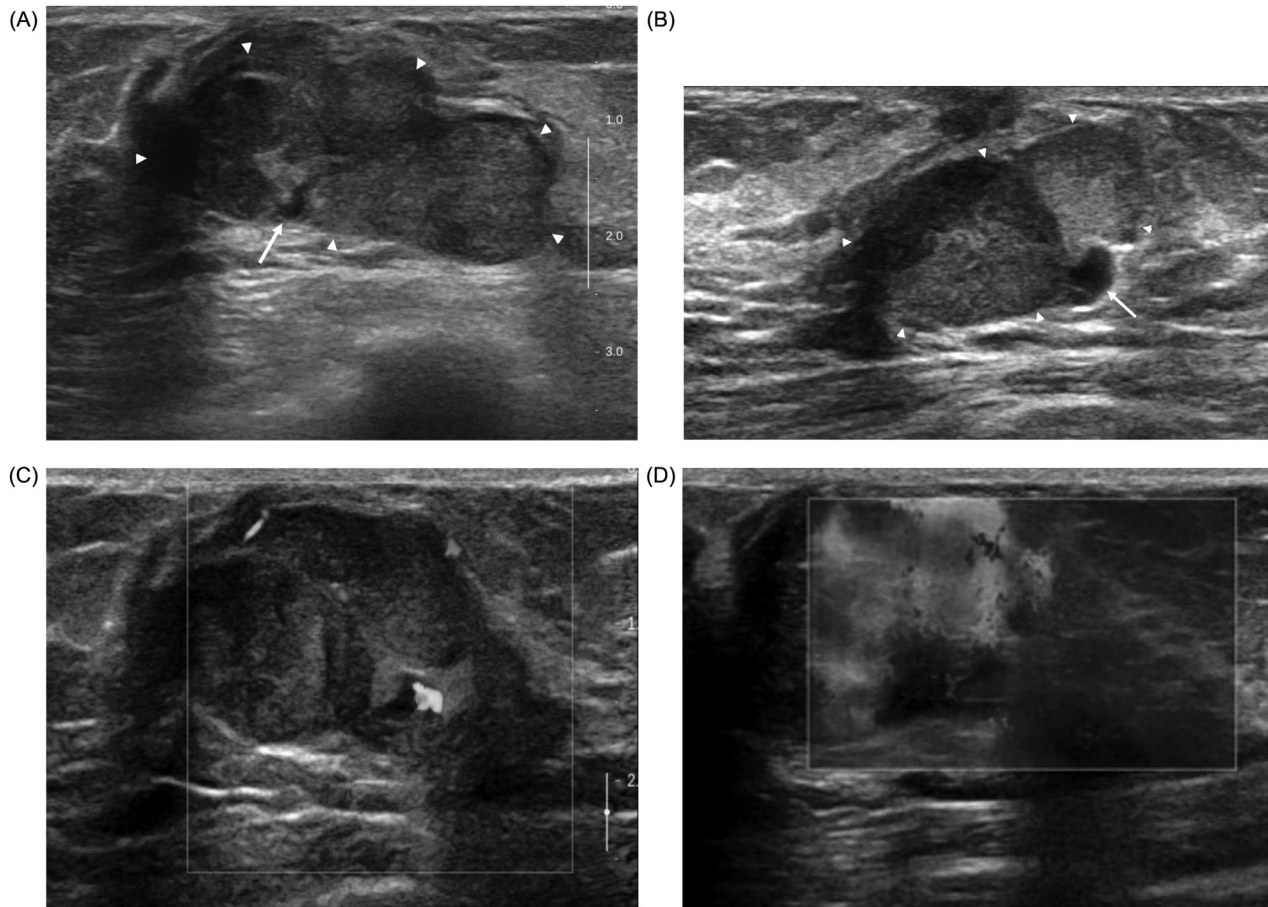


Fig. 1 – Transverse and longitudinal views of gray-scale ultrasound show a circumscribed, solid mass with heterogeneous internal echotextures (arrowheads) and focal anechoic area (arrow) in the peripheral portion of the mass (A, B), and color Doppler sonography demonstrates increased intralesional vascularity (C). On shear wave elastography, the mass showed intermediate elasticity (D)

Case presentation

A 12-year-old girl presented to our hospital with eczematous changes in the areola and bloody nipple discharge of her left breast, which had started a month prior. She received topical treatment, but the symptoms persisted. No relevant medical history or previous trauma to the breast was noted, and there was no family history of breast cancer. On physical examination, the areola showed eczematous changes with some blood clots. A firm movable mass was palpated beneath the nipple without tenderness. During gentle compression, a bloody nipple discharge was observed in a single duct orifice. No palpable axillary lymphadenopathy was observed. Laboratory results were within normal limits. Breast ultrasound examination was performed with a 15-MHz linear transducer and revealed an oval-shaped circumscribed mass of 3.6 cm in the left subareolar region. The mass was mostly solid, with a heterogeneous internal echo pattern of hyperechoic and hypoechoic components. Only small anechoic areas were noted in the peripheral portion of the mass (Figs. 1A & B). Color Doppler sonography showed a mildly increased internal vascularity (Fig. 1C). On shear wave elastographic

assessment, intermediate elasticity was noted (Fig. 1D). No definite mammary ductal dilatation was seen in the subareolar portion or around the mass. The right breast showed proliferation of the fibro glandular tissue without a focal lesion. Based on the ultrasound findings, the mass was classified as BI-RADS (breast imaging reporting and data system) category 4a. The patient underwent excisional biopsy of the lesion. On histopathologic examination, it was determined to be an intraductal papillary proliferating mass. The mass revealed columnar cell hyperplasia with stromal proliferation and myxoid changes, consisting of intraductal papilloma (Figs. 2A & B). The patient was discharged and underwent follow-up ultrasound six months later, which showed mild postoperative changes without evidence of recurrence.

Discussion

Intraductal papilloma's (IDPs) are benign lesions characterized by an arborescent proliferation of epithelial and myoepithelial cells overlying fibrovascular stalks that protrude into the ductal lumen [5]. They are generally solitary and lo-

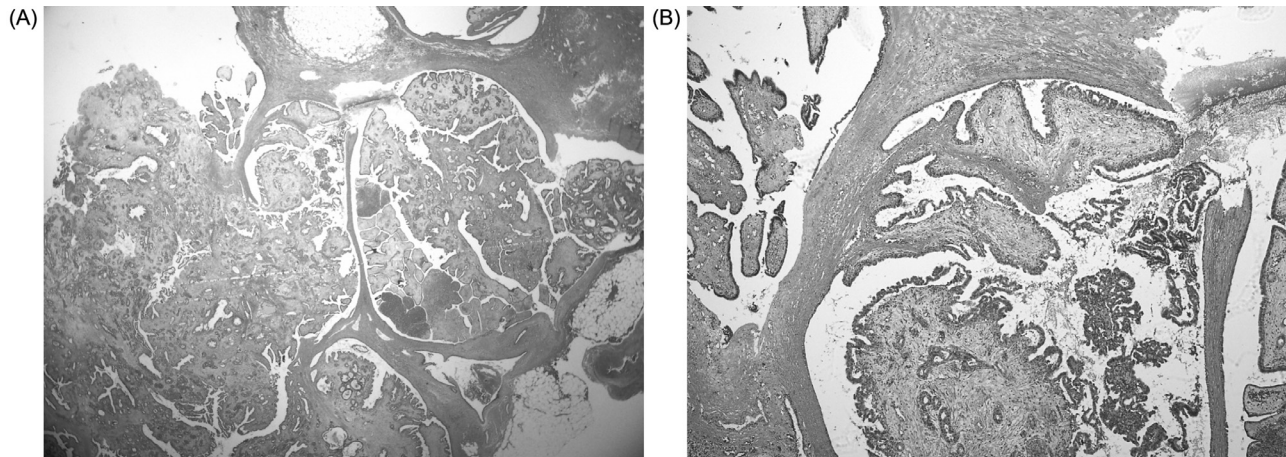


Fig. 2 – Excised specimen reveals an intraductal papillary proliferating mass (hematoxylin and eosin(H & E) scan view) (A). On H & E x4 objective, the mass reveals columnar cell hyperplasia with proliferations and myxoid change (B)

cated in the subareolar region of the major and lactiferous ducts, referred to as central/solitary papilloma, of peri- or postmenopausal women with serous or serosanguinous nipple discharge. On the other hand, peripheral or multiple papilloma's, called papillomatosis, are lesions of papillary proliferations within multiple terminal ductal lobular units and usually occur in women younger than those with the central type. They are palpable, or incidentally found on imaging studies depending on the size and location and rarely accompanied by nipple discharge, but are associated with atypia or malignancy [5,6]. With the increase in resolution and wider use of breast ultrasound, they have been detected in increasing numbers even in young, asymptomatic patients. Nevertheless, IDPs are rare in adolescents, with an incidence of 1.2% [3,4].

Evaluation of pediatric breast complaints always begins with clinical assessment, which then determines the need for imaging. Ultrasound is the primary imaging modality for the evaluation of pediatric breast abnormalities because of its high sensitivity without radiation hazards, making it a good first choice in treatment decision-making, including reassurance, imaging follow-up, or surgical treatment. Mammography is seldom used because of the radiation exposure to the patient, as well as the dense parenchymal tissue in this age group. Computed tomography or magnetic resonance imaging is reserved for the evaluation of disease extent [7]. On ultrasound, IDPs typically appear as well-defined solid mural nodules within dilated ducts filled with anechoic fluid. Concomitant dilated duct is a reminiscent feature of papilloma. If the papilloma is very small, ductal dilatation may be the only finding. In some cases of papilloma's within the only focally dilated mammary duct, IDPs may be seen as intracystic nodules or cystic and solid lesions. Color Doppler imaging can depict blood flow arising from the vascular feeding pedicle of IDPs [6-8]. Although these characteristic ultrasound findings are the same as in adults, careful investigation of the relationship between IDP and breast bud or lactiferous duct is necessary for children, especially girls.

The possible etiologies of bloody nipple discharges (BNDs) in children include mammary duct ectasia, hemorrhagic cyst, gynecomastia, intraductal papilloma, infarcted fibroadenoma, and benign phyllodes tumor [2,9]. Among these, ultrasound examination can help distinguish duct ectasia or gynecomastia from solid tumors with typical findings of cystic lesions or mammary glandular proliferation in the subareolar portion. However, in the case of a solid neoplasm depicted on ultrasound in a pediatric patient with BND, the main differential diagnosis includes fibroadenoma, the most common benign solid tumor in this age group. According to previous studies [9,10], infarcted fibroadenomas might cause BND with a palpable painful mass. The most common histologic pattern of infarction is central necrosis, but it can vary from a localized form to an extensive portion. Differences in the size and location of the infarcted area may lead to various sonographic findings from homogeneous to complex masses. However, unlike usual fibroadenomas, the most infarcted form is accompanied by pain or tenderness. In the present case, small anechoic portions were seen only in the peripheral area, not in the central region of the tumor, and the patient did not complain of pain or tenderness.

The treatment of IDP involves surgical excision along with the central duct from which drainage occurs. In prepubertal and adolescent girls, special care is needed to minimize damage or deformity of the lactiferous duct for normal future breast development and maturation [4,11]. Preoperative ultrasound with high resolution can visualize the breast bud or mammary duct and distinguish it from pathologic conditions.

Conclusion

Bloody nipple discharge by IDP is rare in pediatric patients, but can occur. Detailed ultrasound evaluation and knowledge of its characteristic findings are helpful for accurate diagnosis and subsequent therapeutic surgery.

Patient Consent

Written informed consent was not necessary because no patient data has been included in the manuscript.

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