ORIGINAL ARTICLE

The Role of Ductography in Patients with Nipple Discharge

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Summary

The main objective of this study is to illustrate the role of ductography in the management of nipple discharge. Thirty-six patients had ductography for the investigation of blood-stained or serous nipple discharge. The ductogram findings were reviewed. Ductography showed an intraductal lesion in 13 patients, duct ectasia in 16 and normal ducts in 7. Fourteen patients had surgery. Eight had preoperative ductography using a mixture of methylene blue and contrast media. Histology revealed 5 cases of duct papilloma, 2 cases of epithelial hyperplasia, 4 cases of fibrocystic change and 3 cases of duct ectasia. Twenty had follow-up without surgery and of these, the nipple discharge ceased in 11 patients. Two patients did not come for follow-up. Ductography has a significant role in the management of nipple discharge. Firstly, surgery might be averted in patients with normal ducts or duct ectasia on ductography. Secondly, intraductal methylene blue will demonstrate the abnormal ductal system to the surgeon and allow for a less radical surgery.

Key Words: Breast radiography, Ductography, Nipple discharge, Breast diseases

Introduction

Nipple discharge is a common problem that may prove difficult to manage. It is especially worrying if the discharge is blood-stained or serous because intraductal carcinoma may present in this way[1]. Other causes of blood-stained or serous discharge include intraductal papilloma, duct ectasia and fibrocystic change[1]. Physical examination, cytology of secretion and mammography may not be helpful in determining the underlying cause of the nipple discharge. Ductography (galactography) which is a contrast examination of the mammary ducts is able to show the nature, location and extent of the underlying lesion. However, it is sometimes thought that ductography is not of any practical value and is time consuming. This review of 36 patients who had ductography is to illustrate its role in the management of nipple discharge.

Method

Over a period of 4 years (1991-1995), 36 patients had ductography for the investigation of spontaneous blood-stained or serous single-duct nipple discharge. The patients were aged between 20 and 66 years (mean, 40 years). Twenty-three had blood-stained discharge and 13 had serous discharge for a duration of between 1 week to 4 years. These patients did not have any palpable lesion. Cytology of the secretion and mammography were not helpful. The ductogram findings, subsequent management of the patients, the final outcome of their complaint and histologic findings were reviewed.

The equipment used was improvised by using a 21G or 19G scalp vein needle (Fig. 1a), the tip of which had been cut and filed until it was blunt. After

cleaning and identifying the discharging duct orifice, 2% lignocaine gel was applied to the nipple. The duct orifice was dilated with a fine lacrimal probe (Fig. 1b). The duct was then cannulated with the blunted scalp vein needle, the tubing of which had been pre-filled with diluted contrast media via a syringe to avoid introducing air bubbles. Contrast (0.5-1.5 mls) was slowly introduced. The patients usually felt a sensation of fullness. Contrast injection was stopped if there was pain as it indicated contrast extravasation. A 2 view mammogram (cranio-caudal and 90° medio-lateral) was done with reduced compression. The scalp vein needle was left in situ to minimize contrast leakage and to facilitate additional contrast injection when necessary.

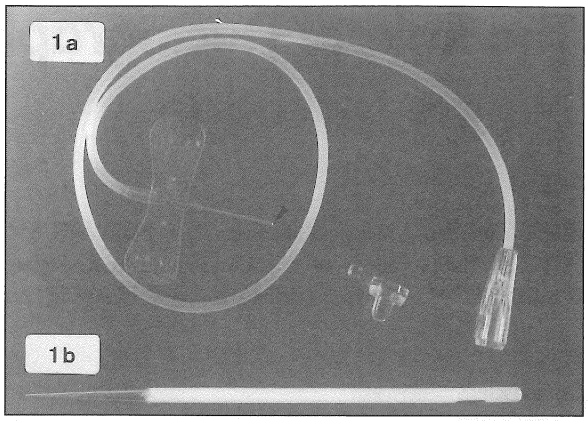

Fig. 1: (a) 21G scalp vein needle, the tip of which has been cut and filed (arrow head)
(b) Fine lacrimal probe used for dilating the duct orifice

Results

Ductography showed an intraductal lesion in 13 patients, duct ectasia in 16 and normal ducts in 7. Twenty had follow-up without surgery and of these the nipple discharge ceased in 11 patients (Table I). Two patients did not come for follow-up. Fourteen patients had surgery. Eight had pre-operative ductography using a mixture of methylene blue and contrast media. Histology revealed 5 cases of duct papilloma, 2 cases of epithelial hyperplasia, 4 cases of fibrocystic change and 3 cases of duct ectasia (Table II).

Discussion

Patients with blood-stained or serous nipple discharge need to be investigated because of the possibility of intraductal carcinoma[1]. Often, physical examination, cytology of the secretion and mammography would prove negative[1]. The frequency with which breast cancer presents with nipple discharge without a palpable mass and without a mammographic abnormality is not known[2].

When ductography shows an intraductal lesion (Fig. 2), surgical excision is necessary because it is not possible to determine if the lesion is benign or malignant. The frequency with which intraductal lesions detected on ductography proved to be intraductal carcinoma varies from 3% to 15%[1,3]. In our series, none of the 8 intraductal lesions that were excised showed malignancy.

Table I
Ductogram findings and outcome of 36 patients

Ductogram findings	Operated	Follow-up	Discharge stopped	Absconded	Total
Intraductal lesion	8	2	1	2	13
Duct ectasia	4	6	2	–	12
Duct ectasia & cysts	2	1	1	–	4
Normal	–	–	7	–	7
Total	14	9	11	2	36

Table II
Ductogram findings and histopathology of 14 patients

Ductogram findings	Histology findings				Total
	Papilloma	Epithelial hyperplasia	Fibrocystic change	Duct ectasia	
Intraductal lesion	4	2	2	–	8
Duct ectasia	1	–	2	1	4
Duct ectasia & cysts	–	–	–	2	2
Total	5	2	4	3	14

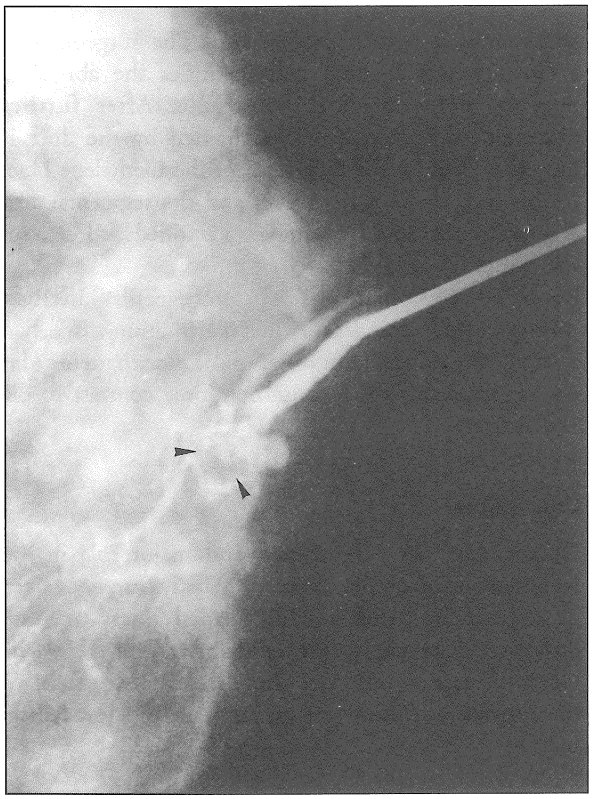

Fig. 2: An intraductal lesion (arrow heads) which proved to be an intraductal papilloma

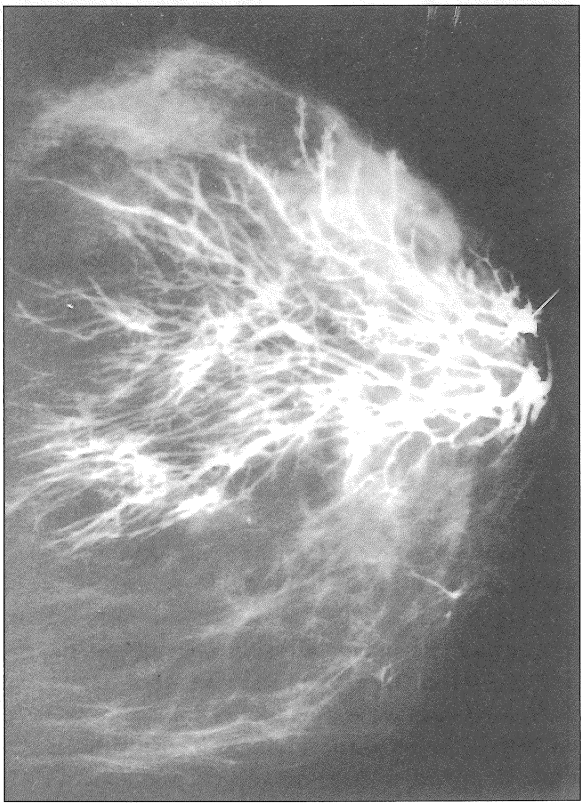

Fig. 3: Normal ductal system. Note the branching tapering pattern

The most common cause of spontaneous nipple discharge is a solitary papilloma[4]. Five of our cases with histologically proven papilloma had central (i.e. within major subareolar or subsegmental ducts) solitary papillomas. Although controversial, it has been suggested that patients with multiple peripheral (i.e. within terminal duct lobular units) papillomas have an increased risk for the development of breast cancer[5].

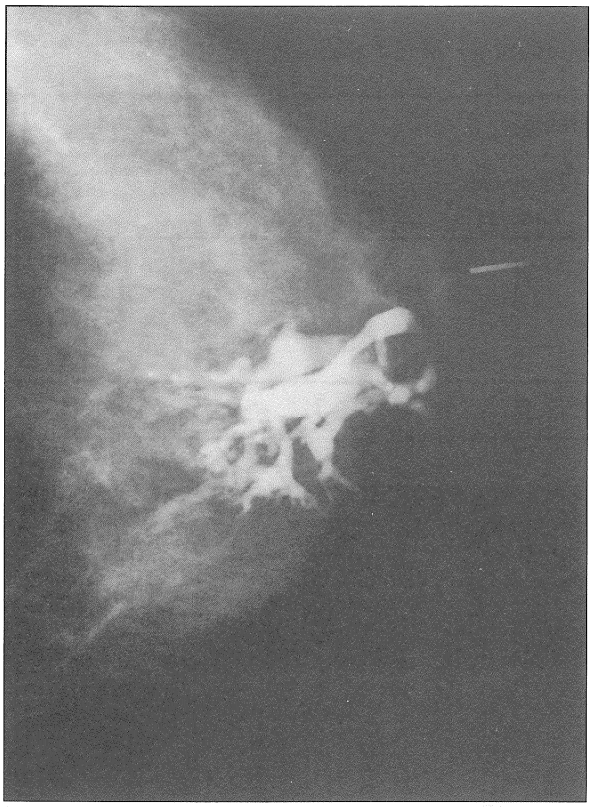

Fig. 4: Ectatic ductal system

Ductography plays a significant role in deciding which patients should have surgery[1,2]. Surgery is not necessary in patients where ductography showed normal ducts (Fig. 3), ectatic ducts (Fig. 4) or cysts (Fig. 5). In our series, of the 20 patients who had follow-up without surgery, the nipple discharge ceased in 11 patients and the rest are still on follow-up. While all 13 patients with intraductal lesion were offered surgery, 4 patients with ductogram showing duct ectasia and 2 showing duct ectasia and cysts were also operated on because of persistent and/or copious discharge. Of these, 1 proved to have intraductal papilloma.

In 8 of our patients who had surgical excision, ductography using a mixture of methylene blue and contrast media were done just prior to the operation. The patients were wheeled to the operating theatre

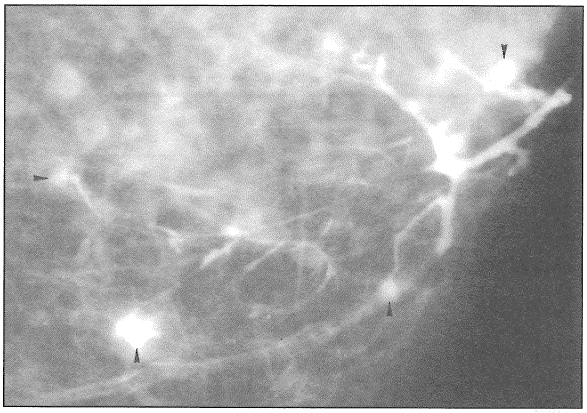

Fig. 5: Ductogram shows clusters of small cysts (arrow heads) filling up with contrast

with the scalp vein needle in situ. The surgeon does a circumareolar incision and identifies the abnormal duct by palpating for the needle. After further dissection, the segmental area drained by the duct is then identified by the blue stain of the methylene blue. In this way, the abnormal duct and the segmental area drained by the duct is accurately identified and excised.

Reported complications of ductography include contrast extravasation and duct perforation[2]. We had 2 cases of contrast extravasation. These patients did not require analgesics because non-ionic contrast media was used.

Conclusion

Ductography has a significant and major role in the management of nipple discharge. Firstly, surgery might be averted in patients with normal ducts or duct ectasia on ductography. Secondly, intraductal methylene blue will demonstrate the abnormal ductal system to the surgeon and allow for an accurate and less radical surgery.

Acknowledgement

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