Periductal mastiti

Clinical characteristics an

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ABSTRACT

Objectives: To review our experience with periductal mastitis and address the clinical characteristics, management and outcome.

Methods: A retrospective study was carried out at Princess Basma Teaching Hospital, Irbid, Jordan. Thirty-five patients with the diagnosis of periductal mastitis from the year 1994 through to 2000 were reviewed. Patients presenting with periareolar non-lactational mastitis, periareolar inflammatory mass, abscess, mammary fistula or nipple inversion were included in the study.

Results: The mean age was 35 years. Pain and pus nipple discharge were the most frequent symptoms. A periareolar mass, induration, mammary duct fistula, or nipple deformity were found in 49%, 43%, 17% and 34% of the cases. Twenty-six percent were smokers. This ratio increased to 75% among patients with mammary fistulas. Three patients had synchronous skin lesions; the same bacterial strains were isolated from ... suggest that breast manipulation, ... the breasts from other parts of the ... in the etiology. Broad spectrum ... patients. Surgery was necessary fo

Conclusion: Periductal mastitis ... Patients ... the ... Etiologically bacterial infection and smoking. It mimi ... disorders including carcinoma. ... ectasia affects women between the ... is considered an ageing phenome ... of sepsis or smoking.

Keywords: Periductal mastitis, duct ... nipple inflammation, fistulectomy.

Saudi Med J 2002; Vol. 23 (7): 819-822

Currently, the preponderance of evidence indicates that periductal mastitis (PM) and duct ectasia (DE) are 2 different clinical syndromes.[1,2] Periductal mastitis affects non-lactating women between the ages of 19-48 years and is characterized by periareolar inflammation with or without a mass, a periareolar abscess, or a mammary duct fistula.[2] Patients may also have nipple inversion and pus nipple discharge. Etiologically PM seems to be related to bacterial infection and smoking.[1,3,4] On the contrary DE affects women between the ages of 42-85 years. It usually comp and cheesy nipple discharge, frequently having clinical evidence of duct dilatation. considered an ageing (involu and is not related to sepsis or is not preceded by a history o these 2 syndromes are not inter

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Received 19th January 2002. Accepted for publication in final form 23rd March 2

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Methods. This is a retrospective evaluation of 35 female patients with the clinical, pathological diagnosis of PM, or both, who were treated at Princess Basma Teaching Hospital, Irbid, Jordan, between the years 1994 through to 2000 inclusive. This is the tertiary referral hospital situated in the North of Jordan and is affiliated to Jordan University of Science and Technology. Patients who presented with periareolar non-lactating inflammation with or without a periareolar inflammatory mass, abscess, mammary duct fistula, nipple inversion, or pus nipple discharge were included in the study. All patients with evidence of physiological nipple discharge, DE, breast carcinoma or those in whom the symptoms were largely attributed to fibrocystic disease were not included. Pertinent clinical data regarding age at presentation, child bearing, practice of breast-feeding, smoking, use of contraceptive pills, previous breast diseases, associated skin diseases, and initial findings on physical examination were obtained. Patients were called back to the clinic for follow up and to obtain information with regards to outcome of treatment. Six patients did not attend for follow up. Mammography, ultrasonography, and fine needle aspiration cytology were performed according to clinical situation, but mainly to exclude carcinoma rather than confirming diagnosis of PM. All patients were treated by a therapeutic course of ampicillin and cloxacillin (or cephalexin) with metronidazole for a minimum duration of 5 days. In cases of suspected penicillin allergy patients were given a course of erythromycin with metronidazole. The drugs were modified occasionally in the light of sensitivity results. Required surgical procedures varied from excision of a breast mass, microdochectomy through a periareolar incision, to fistulectomy according to individual patient needs. Histopathology reports were reviewed for patients who underwent surgery.

Results. **Table 1** lists the pertinent clinical criteria for our patients. The mean age was 33 years (range 17 years to 50 years). The majority of patients massaged their nipples for temporary pain relief. Twenty-nine patients mentioned the practice of nipple manipulation at one time or another. Both breasts were involved in 8 (23%) of the cases; symptoms of one side usually dominate over the other. Three patients (8.6%) suffered from associated skin diseases. **Table 2**

Bacteriology studies were obtained for 22 (63%) patients only. Out of these, *Staphylococcus species*, *proteus vulgaris*, and mixed cultures of *enterococci* and *bacteroides* were grown in 9 (41%), 2 (9%), and 4 (18%) of the cases. The cultures were sterile in 7 (32%) of the cases. The overall bacterial isolation rate among cases from which samples were obtained was 68%.

Surgical treatment was necessary for 32 (91%) patients **(Table 1)**. The remaining 3 patients had minimal disease and responded to antibiotic treatment. Histology reports revealed chronic inflammatory cells and fibrosed ducts with no ductal dilatation. Occasionally, evidence of added acute suppuration was present. Recurrence occurred in 7 (20%) of the cases. Five of these responded to antibiotics and mild analgesia. Re-operation was necessary for one patient with a periareolar abscess and one patient with a mammary fistula. All patients were instructed to avoid unclean breast handling and smokers were advised to stop smoking. Follow-up revealed that 28 patients (80%) received complete satisfaction after the treatment.

Table 1 - Pertinent clinical characteristics for 35 patients wth diagnosis of periductal mastitis.

Characteristics	N	(%)
Presenting symptoms		
Pain	35	(100)
Nipple discharge (pus)	30	(86)
Physical findings		
Periareolar mass	17	(49)
Tenderness ± induration	15	(43)
Erythema	7	(20)
Mammary duct fistula	4	(11)
Nipple deformity ± retraction	12	(34)
Palpable axillary nodes	13	(37)
History of smoking	9	(26)
Breast feeding	26	(74)
Previous lactational mastitis	4	(11)
Previously treated fibrocystic disease	7	(20)
Treatment		
Antibiotic	35	(100)
Excision of the mass	17	(48)
Microdochectomy	11	(31)
Fistulectomy	4	(11)

N - number

Table 2 - Associated skin lesions found in 3 patients with the diagnosis of periductal mastitis.

Lesion	Bacteria isolated from breast lesions	Bacteria isolated from skin lesion
Eczematous dermatitis	*Staphylococcus aureus* of the hands with fissuring	*Staphylococcus aureus*
Eczematous dermatitis	*Staphylococcus aureus*	*Staphylococcus aureus*
Hidradenitis suppurtaive	*Proteus vulgaris* of the vulva	*Proteus vulgaris*

Figure 1 - Left-sided mammography of a 50-year-old female patient showing a subareolar abscess cavity (arrows).

Figure 2 - A 50-year-old female patient with non-lactational breast abscess. Note the presence of associated eczematous dermatitis of both hands with skin fissuring.

Discussion. Over a period of 7 years we only encountered 35 patients with the diagnosis of PM indicating that this is not a common problem compared to other benign breast disorders such as lactation- related inflammation, cystic mastopathy or, fibroadenomas. Similarly, out of 14225 patients presenting to the Edinburgh Breast Unit, Scotland over a 4 year period between the years 1989 and 1992 only 139 (0.98%) patients were diagnosed to have PM.[2] However, the fact that PM mimics other serious breast disorders including carcinoma makes it essential for the clinician to recognize this entity which is frequently confused with DE.

Among our study group the clinical course was insidious with sharp exacerbations. Pain, felt mainly in nipple-areola complex, was present in all patients. Nipple discharge was present in 86% of the patients and was intermittent consisting of a little amount of pus in most patients. Occasionally, however, the discharge was copious leading to staining of clothes. Characteristically, 40% of the patients reported that gentle massage was very effective in temporal pain relief. We believe that this maneuver helps to evacuate the major ducts leading to reduction of intraductal pressure and, therefore, reduction of pain. The spectrum of physical findings ranged from the mere presence of tenderness and induration (in 3 patients) to mammary fistulas, abscesses and nipple retraction. This was similar to the experience of others.[1,2,5]

The diagnosis is based on clinical grounds. Mammography and fine needle aspiration cytology are performed mainly to rule out carcinoma. However, mammography may occasionally outline the lesions of PM,[6] **(Figure 1)** and ultrasonography may demonstrate the abscess cavity as a circumscribed lesion.[7] Mammography combined with ultrasonography may lead to a better diagnosis.[6] Dynamic magnetic resonance mammography is useful in the follow up of treated cases to demonstrate the success of antibiotics but cannot definitely distinguish between mastitis and inflammatory carcinoma.[8] Smoking and bacterial infection are 2 factors that seem to be related to etiology. An association between smoking and recurrent subareolar breast abscesses or formation of mammary duct fistula, or both was reported previously.[4,9] This association is more prominent among heavy smokers than light smokers.[9] The largest study to date to determine the association between PM and smoking was carried out at Edinburgh Breast Unit, Scotland in which a significant excess of smokers among patients with clinically and pathologically diagnosed PM was found compared to age-matched controls and patients with DE.[1] Toxic metabolites (namely expoxides, aromatic amines, lipid peroxidases, nicotine and octinine) increased tissue damage, and microvascular injuries have all been suggested as mechanisms by which smoking causes the disease.[1,10] Smoking was also reported to inhibit gram-positive bacterial growth in vivo and in vitro, leading to an over growth of gram-negative aerobic and anaerobic bacteria which are usually found in PM.[1,11] Twenty-six percent of our patients were smokers. We believe that this ratio is actually higher. Women in our society might deny smoking due to social restraints. However, it is worth noting that 75% of our patients with a mammary fistula were smokers. We routinely instruct our patients regarding the negative impact of smoking on management.

Bacteria were isolated from 83% of patients with a periareolar inflammatory mass and 100% of patient with non-lactating abscesses and mammary ducts fistula; the most frequent isolated organisms were anaerobic.[1,12] Among our study group the ratio of bacterial isolation was 68%. Anaerobic bacteria were isolated in 18% only. This reflects (in our opinion) the inadequate processing of samples rather than a real departure from the spectrum of other series.[1]

Depending on the experience of others,[1,2] antibiotic treatment should cover all suspected bacteria even if anaerobic organisms were not obtained.

Interestingly, 3 of our patients had simultaneous skin lesions **(Table 2, Figure 2)**. The same bacterial strains were isolated from the breast and skin lesions. One may speculate that breast handling and transferring bacteria to the breasts from other parts of the body, might play a role in the etiology. It has been suggested that autoimmunity may play a role in the etiology,[13] but this has not been verified and further research is needed.[10] Childbearing, breast feeding and use of contraceptive pills were not implicated in the etiology.[1] Among our study group, there was no difference regarding these factors when compared to the general female population in the north of Jordan.[14]

We share the opinion of others that microdochectomy and excision of the mass or fistulectomy are usually enough.[5,10,13] Total ductal excision[15] and subareolar dissection[16] are better preserved for debilitating conditions with recurrent periareolar sepsis. In such cases, patients should be warned of the possibility of loss of nipple sensation[15] and nipple depression. All these procedures should be performed under antibiotic cover; the use of antibiotics was reported to decrease the incidence of wound infection in PM.[17]

In conclusion, there is much evidence that PM is a different clinical entity from DE with different etiology. Periductal mastitis is a form of mastitis with suppuration, nipple discharge and deformity that should be considered in non-lactating women in childbearing age. Despite the retrospective nature of this study, still it calls for further research to clarify the etiology of the condition.

References

1. Dixon JM. Periductal mastitis and duct ectasia: an update. *The Breast* 1998; 7: 128-130.
2. Dixon JM, Ravisekar O, Chetty U, Anderson TJ. Periductal mastitis and duct ectasia: different condition with different aetiologies. *Br J Surg* 1996; 83: 820-822.
3. Bundred NJ, Dover MS, Coley S, Morrison JM. Breast abscesses and cigarette smoking. *Br J Surg* 1992; 79: 58-59.
4. Shaffer P, Furrer G, Mermillod B. An association of cigarette smoking with recurrent subareolar breast abscesses. *Int J Epidemiol* 1988; 17: 810-813.
5. Dixon JM, Thompson AM. Effective surgical treatment for mammary duct fistula. *Br J Surg* 1991; 78: 1185-1186.
6. van Overhagen H, Zonderland HM, Lameris JS. Radiodiagnostic aspects of non-puerperal mastitis. *Rofo Fortschr Geb Rontgenstr Nuklearmed* 1998; 149: 294-297.
7. Boisserie-Lacroix M, Lafitte JJ, Sirben C, Latrabe V, Grelet P, Zeinoun R et al. lnflammatory and infectious lesions of the breast. Contribution of ultrasonography. *J Radiol* 1993; 74: 157-163.
8. Tomczak R, Rieber A, Zeitler H, Rilinger N, Kreienberg R, Brambs HJ. The value of MR-mammography at 1.5 tesla in the differential diagnosis of non-puerperal mastitis and inflammatory breast carcinoma. Rofo *Fortschr Geb Rontgenstr Neuen Bildgeb Verfar* 1996; 165: 148-151.
9. Bundred NJ, Dover MS, Aluwihare N, Faragher EB, Morrison JM. Smoking and periductal mastitis. *BMJ* 1993; 307: 1146-1147.
10. Bundred NJ. Surgical management of periductal mastitis. *The Breast* 1998; 7: 179-180.
11. Bundred NJ. The aetiology of periductal mastitis. *The Breast* 1993; 2: 1-2.
12. Bundred NJ, Dixon JMJ, Lumsden AB, Radford D, Hood J, Miles RS et al. Are the lesions of duct ectasia sterile? *Br J Surg* 1985; 72: 844-845.
13. Al Gari MAA, Preece PE. Sequelae of subareolar mammary duct excision. *The Breast* 1998; 7: 213-215.
14. Yaghan RJ, Buheis NI, Al-Jaberi TM, Gharaybeh KI, Khammash MR. Breast cancer in the North of Jordan with special emphasis on descriptive epidemiology. *Saudi Med J* 1999; 20: 447-450.
15. Dixon JM, Kohlhardt SR, Dillon P. Total duct excision. *The Breast* 1998; 7: 216-219.
16. Hartley MN, Stewart J, Benson EA. Subareolar dissection for duct ectasia and periareolar sepsis. *Br J Surg* 1991; 78: Dixon JM, Chetty U, Forrest APM. Wound infection after breast biopsy. *Br J Surg* 1988; 75: 918-919.