## Periductal mastiti

## Clinical characteristics and

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## **ABSTRACT**

Objectives: To review our experience with were declared from mastitis and address the suggest affect with were declared from management and outcome.

Methods: A retrospective spatishing the ethology: Broad spectrum from the patients of the princess Basma, I eaching Hospital, I bid in the ethology: Broad spectrum five patients with the diagnosis to be precised in the stidies of the period of the patients of the year 1994, through to 2001 a the precise of the period of the pe

urrently, 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. 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 compand cheesy nipple discharge frequently having clinical evidence of duct dilatation considered an ageing (involuant is not related to sepsis or a first preceded by a history can be a syndromes are not interplated address the clinical characand outcome.

From the Department of Surgery, Faculty of Medicine, Jordan University of Scier Received 19th January 2002. Accepted for publication in final form 23rd March 2 Address correspondence and reprint request to: Dr. Fuad F. Ammari, Associa Medicine, Jordan University of Science and Technology, PO Box 3030, Irbid 22 E-mail: frammari@yahoo.com

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 breastfeeding, 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

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

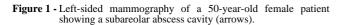
Characteristics	N	(%)	
Presenting symptoms Pain Nipple discharge (pus)	35 30	(100) (86)	
Physical findings Periareolar mass Tenderness ± induration Erythema Mammary duct fistula Nipple deformity ± retraction Palpable axillary nodes	17 15 7 4 12 13	()	
History of smoking	9	(26)	
Breast feeding	26	(74)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

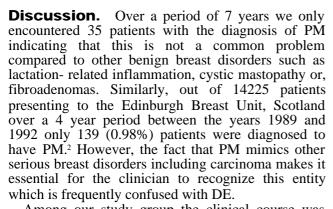
**Table 2 -** Associated skin lesions found in 3 patients with the diagnosis of periductal mastitis.

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

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.







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



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.

demonstrate the success of antibiotics but cannot distinguish between mastitis definitely 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.<sup>4,9</sup> 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.<sup>1,12</sup> 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.<sup>1</sup>

Depending on the experience of others,<sup>1,2</sup> 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, <sup>13</sup> but this has not been verified and further research is needed. <sup>10</sup> Childbearing, breast feeding and use of contraceptive pills were not implicated in the etiology. <sup>1</sup> Among our study group, there was no difference regarding these factors when compared to the general female population in the north of Jordan. <sup>14</sup>

We share the opinion of others microdochectomy and excision of the mass or fistulectomy are usually enough.5,10,13 Total ductal excision<sup>15</sup> and subareolar dissection<sup>16</sup> 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<sup>15</sup> 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.<sup>17</sup>

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.

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