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Original Research Article

Study of Clinical and Cytological Spectrum of Granulomatous Mastitis in South Karnataka Population

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Conflict of interest: Nil

Abstract:

Background: Idiopathic Granulomatous Mastitis (GM) is a chronic granulomatous inflammatory breast disease of unknown origin. In clinico-radiological study it mimics both infectious and malignant lesions. Hence, cytological, histopathological and microbiological study is mandatory to confirm the idiopathic GM.

Method: 92 adult female patients with breast lump, aged between 30 to 40 years, referred to the pathology department were studied clinically, radiologically, cytologically, histopathologically and microbiologically to confirm the idiopathic GM.

Results: Duration of breast lump was about one month. Left laterally located lump was 64 (69.5%) and right was 28 (30.4%), Maximum size of lump was 5 cm. 85 (92.3%) were palpable lumps, 7 (7.60%) had eversion of nipple, 5 (5.43%) had discharging sinuses. Blood-mixed FNACs were 60 (65.2%), and in 32 (34.7%) pus-like material was noted. USG Findings had 26 (28.2%) abscess, 20 (21.7%) irregular hypoechoic masses, 14 (15.2%) with increased vascularity, 11 (11.9%) had lobulated masses. Histopathologically, 90 (97%) had clustered epithelioid like histiocytes, 64 (69.5%) had well defined mixed inflammatory cells, 45 (48.9%) with predominantly lymphocytes and 47 (51.08%) with neutrophils.

Conclusion: The present cytological study of breast lump is very important to exclude tuberculosis and malignancy, because developing countries like India have a high prevalence of TB and malignancy.

Keywords: Clinical manifestation, FNAC, histopathology, microbiology, USG, idiopathic, Granulomatous Mastitis (GM).

Introduction

Idiopathic granulomatous Mastitis (GM), first described by Kessler and Wallach in 1972 [1] is a benign inflammatory condition of the breast of unknown etiology. Several triggers have been proposed, including auto-immune reactions, infections, and hormonal disruption. Idiopathic GM is an important diagnostic and therapeutic challenge because more than 50% of reported cases are initially mistaken for breast carcinoma, leading to diagnostic confusion and heightened anxiety [2].

Occasionally, some patients may be unnecessarily subjected to mastectomy [3]. Many clinicians are unfamiliar with the entity, treating patients with clinical and radiological findings for a refractory infection like tuberculosis, despite the lack of evidence supporting the infection etiology. Most patients with idiopathic GM therefore experience several courses of treatment with antibiotics and unnecessary surgical procedures [4]. GM disease within the breast may also be caused by auto-immune or may represent a manifestation of system diseases. Hence, an attempt was made to evaluate GM with the clinical and cytological spectrum.

Material and Method

92 (ninety-two) adult female patients, aged between 30 to 40 years who were referred to the Pathology Department of Adichunchanagiri Institute of Medical Sciences (AIMS), BG Nagara, Mandya (district), Karnataka-571448, were studied.

Inclusion Criteria: All the patients with a lump measuring about 5cm. and who gave written consent for undergoing the study were selected for the study.

Exclusion Criteria: The cases that presented inadequate FNAC material or an inconclusive cytological diagnosis were excluded from the study.

Method: The cases with a definite cytological diagnosis were classified into the inflammatory, be-

nign, proliferative, and malignant categories. Those cases reported as inflammatory lesions were further classified as acute, chronic non-granulomatous and granulomatous mastitis (or well-defined or ill-defined granulomatous mastitis).

Cytological criteria for granulomatous mastitis (GM) were defined as the presence of at least two clusters of epithelioid histocytes with or without lymphocytes or plasma cells, or Langhan's type of giant cells with absence of necrosis. The smears stained with H and E, MGG, Gram's, and Ziehl-Neelsen stain, of all cases. PAS-stained smears were also examined, where a fungal etiology was suspected.

The clinical correlation was done with a radiological (USG) study. Microbiological cultures were also recorded.

The duration of the study was from April 2022 to March 2024.

Statistical analysis: Various clinical manifestations, history of recent childbirth or lactation, duration of symptoms, location and size of lump, palpability of lumps, retraction or aversion of Nipple, discharging sinuses, FNAC and USG findings and cytological features were classified by percentage. The statistical analysis was carried out in SPSS software.

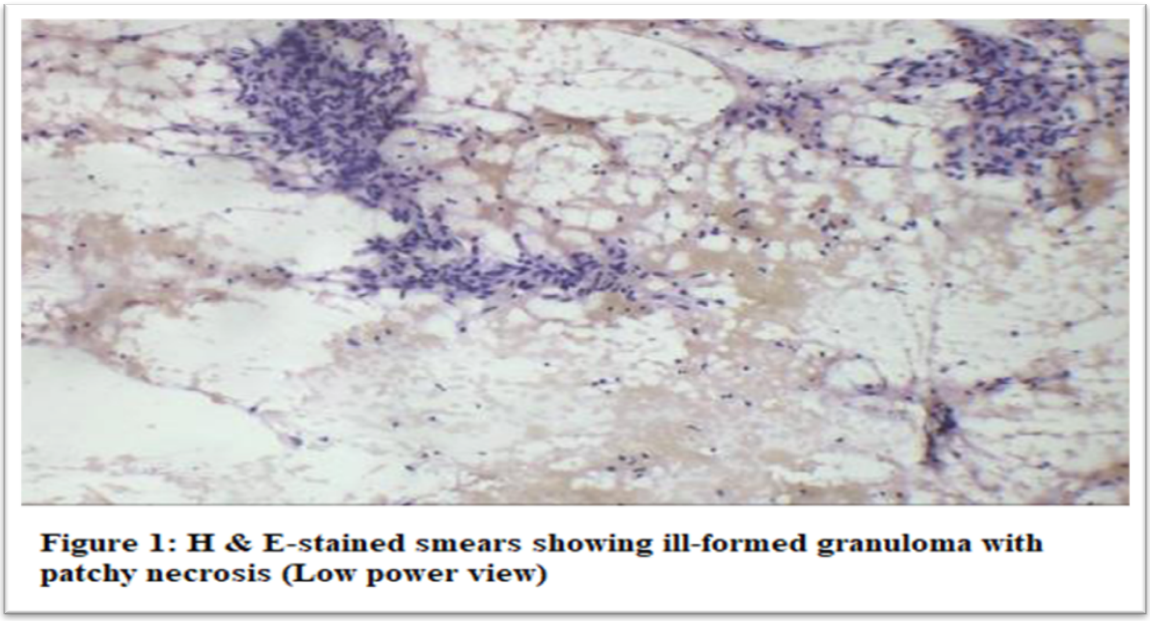

Figure 1: H & E-stained smears showing ill-formed granuloma with patchy necrosis (Low power view)

Figure 1:

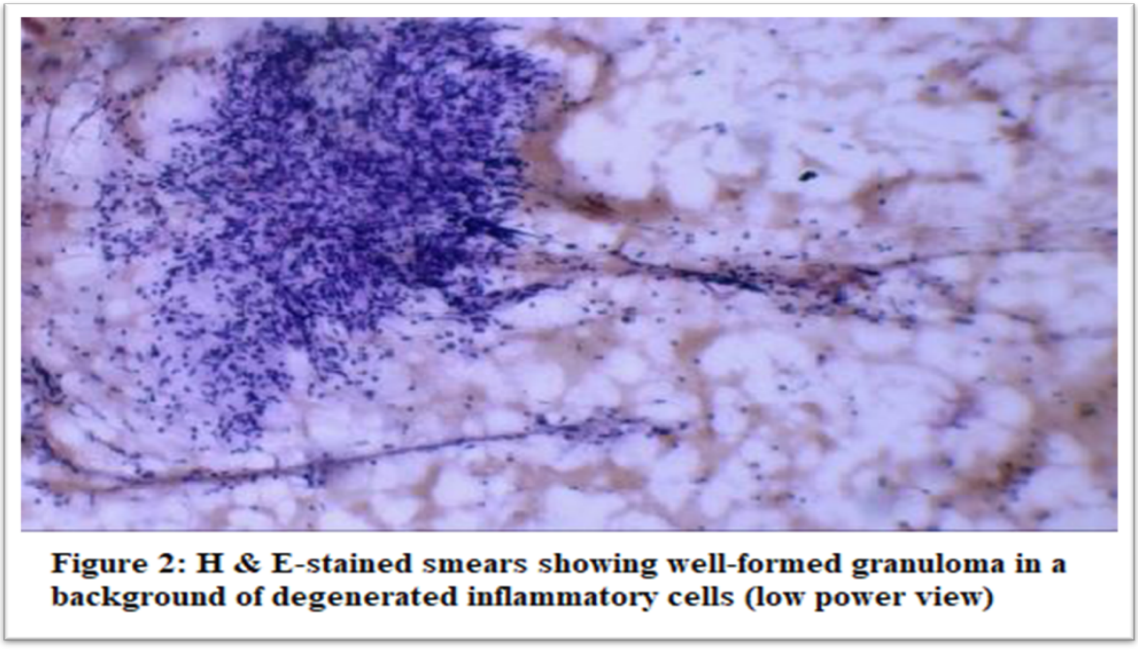

Figure 2: H & E-stained smears showing well-formed granuloma in a background of degenerated inflammatory cells (low power view)

Figure 2:

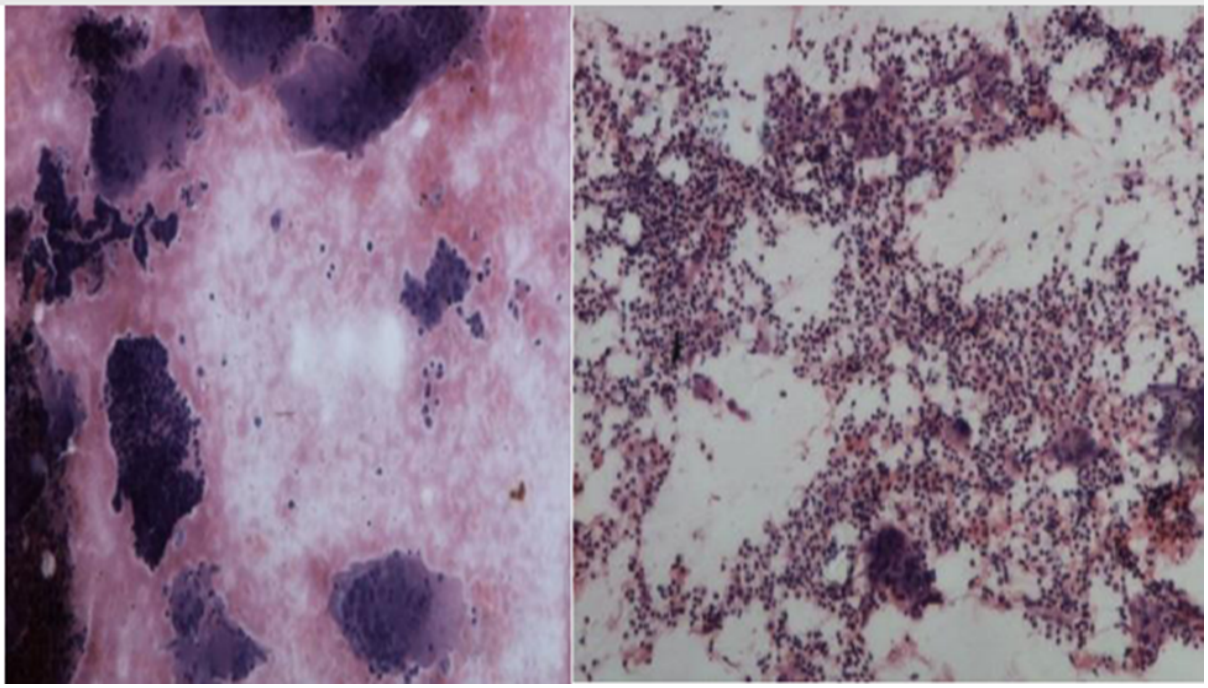

Figure 3: A. Clusters of ductal epithelial cells and many multinucleated giant cells, B. Mixed inflammatory background

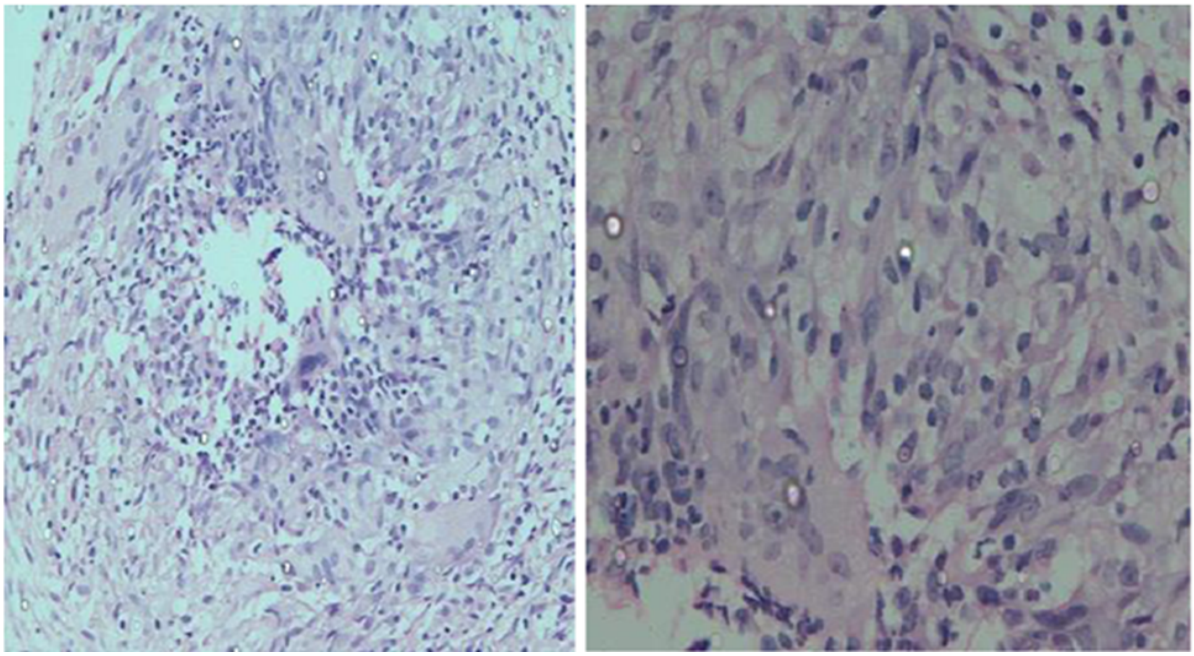

Figure 4: A) Epithelioid granulomas with both Langhas and foreign body giant cells around a central space (10x). B) Epithelioid histiocytes admixed with lymphocytes, plasma cells, neutrophils and histiocytic giant cell (20x)

Observation and Results

Table 1: Clinical manifestations of GM

- Gender: 92 (100%) females
- History of recent childbirth or lactation: 70 (76.08%) yes, 22 (23.9%) No.
- Duration of symptoms: 68 (73.9%) were less than one month, and 24 (26.8%) were more than one month.
- Location of lump: 28 (30.4%) right, 64 (69.5%) left
- Size of lump: 81 (88.04%) less than 5 cm, 11 (11.9%) more than 5 cm
- Palpable lump: 85 (92.3%) Yes, 7 (7.60%) No, 64 (69.2%) are well defined and 28 (30.4%) are ill-defined.
- Nipple retraction/eversion: 7 (7.6%) retracted
- Discharging sinuses: 5 (5.43%)
- Axillary lymphadenopathy: 14 (15.2%)

- Type of FNAC: 60 (65.2%) blood mixed, 32 (34.7%) pus-like
- USG Findings: 26 (28.2%) had an abscess. 20 (21.7%) had irregular hypoechoic mass, 14 (15.2%) with increased vascularity, and 11 (11.9%) were lobulated mass.

Table 2: Spectrum of cytological features in GM

- Epithelioid cells: 90 (97.8%) were in clusters, 2 (2.17%) were scattered, and 14 (15.2%) had ductal cells.
- GM formation: 64 (69.5%) well-defined, 28 (30.4%) ill-defined, and 3 (3.26%) multinucleated giant cells
- Background of inflammation 45 (48.9%) with pre-dominantly lymphocytes, 47 (51.08%) with pre-dominantly neutrophils
- Background Necrosis: 49 (53.2%) had non-caseous

Table 3: Clinical manifestations of granulomatous mastitis

Parameter	Details	No. of patients	Percentage
Gender	Female	92	100%
History of recent child birth or lactation	Yes	70	76.08
	No	22	23.9
Duration of symptoms month	< 1 (less than one month	68	73.9
	> 1 (more than one month)	24	26.08
Laterality of lump	Right	28	30.4
	Left	64	69.5
Size of lumps in cms	< 5cm (less than 5 cm)	81	88.04
	> 5 cm (more than 5 cm)	11	11.95
Palpable lump	Yes	85	92.3
	No	7	7.60
	Wall defined	64	69.2
	Ill defined	28	30.4
Nipple retraction/eversion		7	7.60
Discharging/non-discharging sinus		5	5.43
Axillary lymphadenopathy		14	15.2
Type of Aspirate on FNAC	Blood Mixed	60	65.21
	Pus like	32	34.7
USG Findings	Abscess	26	28.2
	Irregular hypoechoic mass	20	21.7
	Increased vascularity	14	15.2
	Lobulated mass	11	11.9

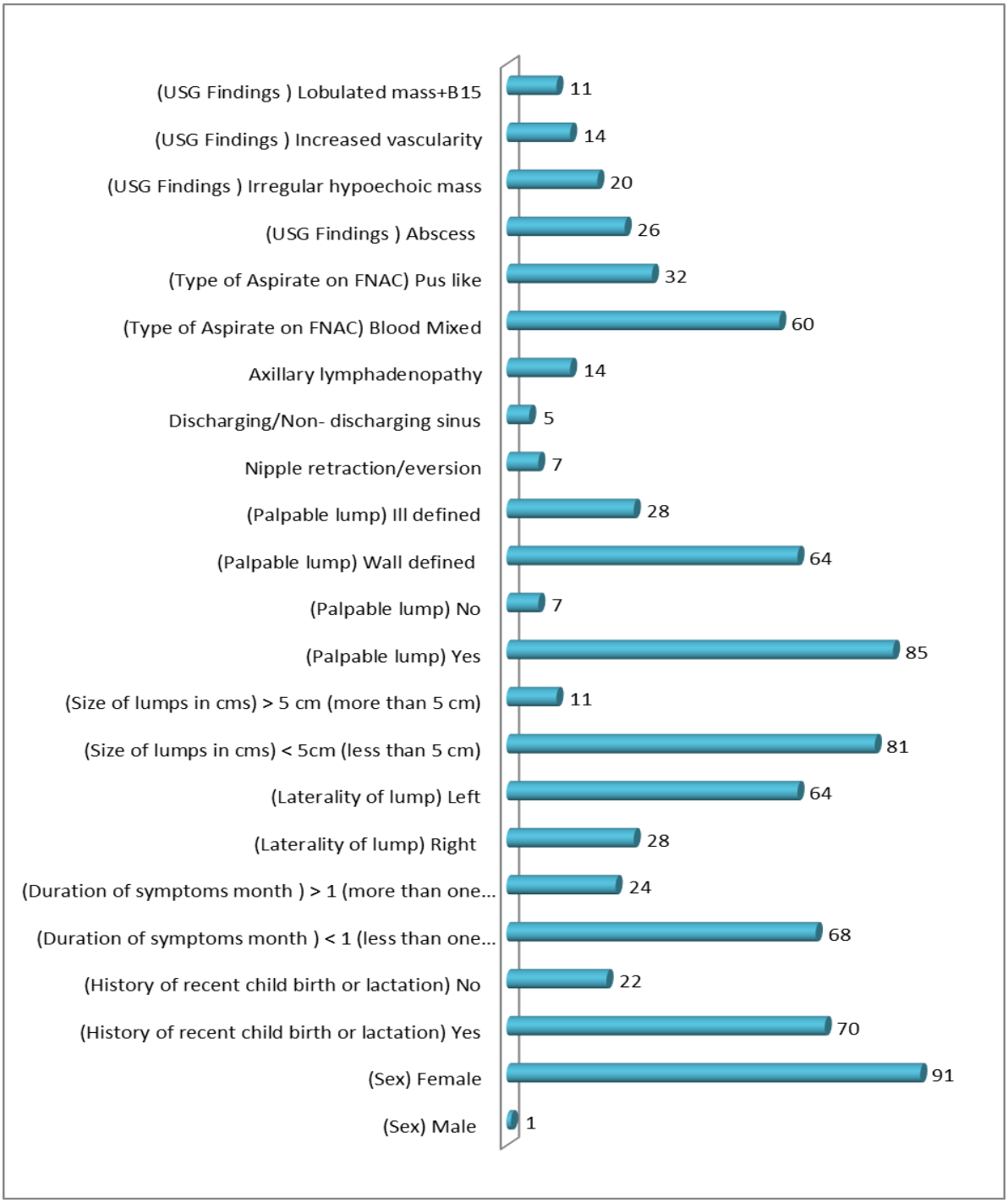

Figure 5: Clinical Manifestations of Granulomatous Mastitis

Table 4: Spectrum of cytological features in granulomatous mastitis

Sl. No	Cytological features		No. of Cases	Percentage
1	Epithelioid Cells	In clusters	90	97.8
		Scattered	2	2.17
2	Presence of duet Eyes		14	15.2
3	Granulomatous formation	Well-defined	64	69.5
		Ill defined	28	30.4
4	Multi nucleated giant cells		3	3.26
5	Back ground of inflammation	Pre-dominantly lymphocytes	45	48.9
		Pre-dominantly Neutrophils	47	51.08
6	Back ground Necrosis	Caseous/ Non caseous	49	53.2

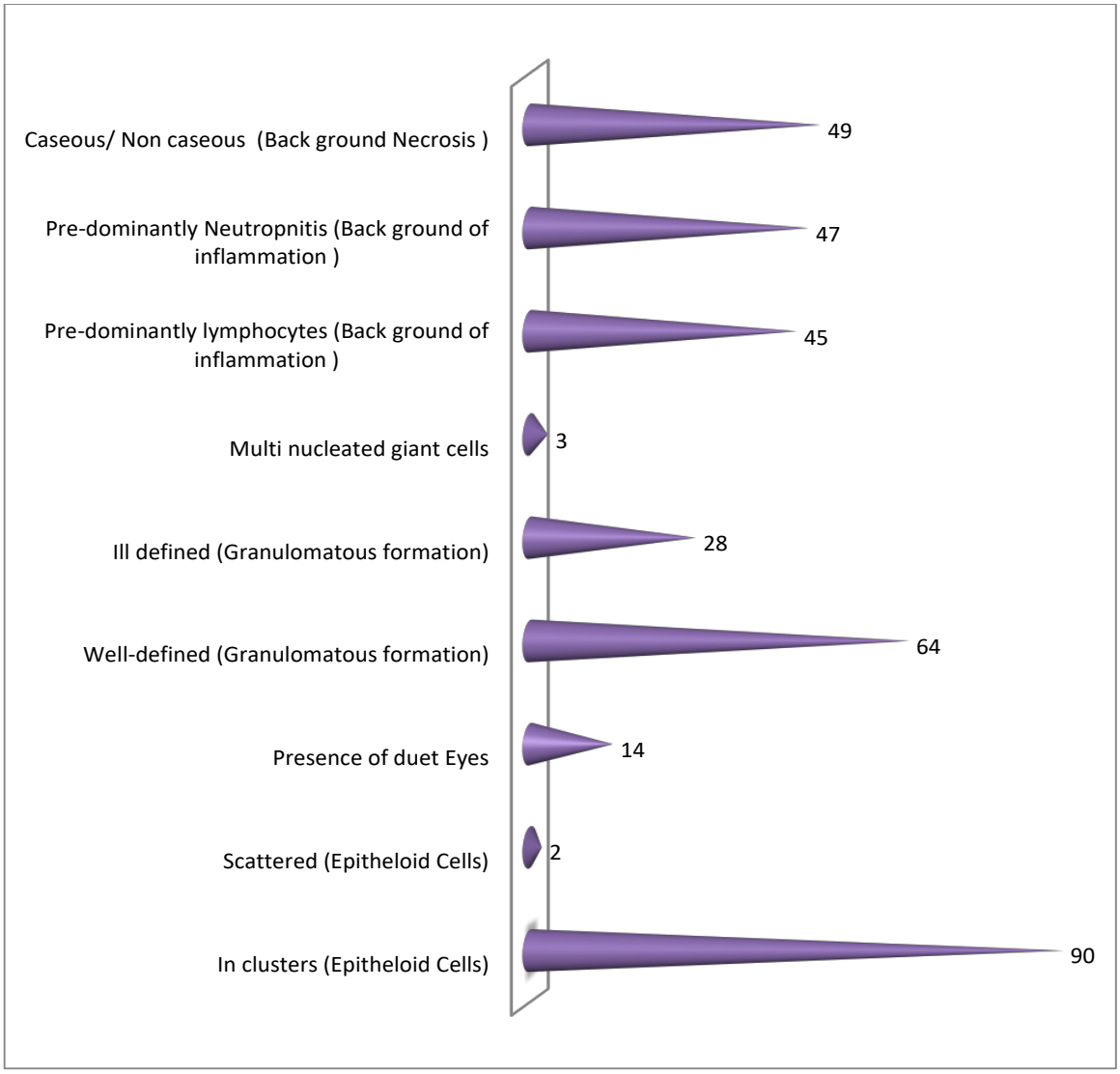

Figure 6: Spectrum of cytological features of Granulomatous Mastitis

Discussion

Present study is of the clinical and cytological spectrum of GM in the South Karnataka population. The clinical manifestations were 91 (98.9%). History of recent birth or lactation: 70 (76.08%) yes, 22 (23.9%) No. The duration of symptoms was 68 (73.9%) less than one month and 24 (26.08%) more than one month. Laterality of Lump was 28 (30.4%) on right side, 64 (69.5%) on left side. Size of lump in 81 (88.04%) had less than 5 cm, 11 (11.95%) had more than 5 cm.

Palpable lumps were 85 (92.3%), and 7 (7.60%) were non-palpable. 64 (69.2%) were well-defined lumps, 28 (30.4%) were ill-defined lumps, 7 (7.60%) had nipple retraction or eversion, 5 (5.43%) had discharging sinus, and 14 (15.2%) had axillary lymphadenopathy. Types of FNAC aspiration were: 60 (65.2%) had blood mixed, and 32 (34.7%) pus-like. USG findings had: 36 (28.2%) had an abscess, 20 (21.7%) had irregular hypoechoic mass and 14 (15.2%) increased vascularity. 11 (11.9%) had lobulated mass (Table 1). Spectrum of cytological features: Epithelioid cells 90 (97.8%) were in clusters, 2 (2.17%) were scattered, and 14 (15.2%) had ductal cells.

GM formation had 64 (69.5%) well-defined GM, 28 (30.4%) ill-defined GM, and 3 (3.26%) multinucleated giant cells. Background inflammation had 45 (48.9%) predominated lymphocytes and 47 (51.08%) predominated neutrophils. Background of Necrosis: 49 (53.2%) had caseous or non-caseous cases (Table 2). These findings are more or less in agreement with previous studies [5,6,7].

GM is an uncommon inflammatory lesion of breast. It can be due to a variety of etiologies, like tuberculosis, fungal infections, connective tissue disorders, fat necrosis, and sarcoidosis, and when no attribute cause is detected, it is termed as idiopathic [8]. TGM (Tuberculosis granulomatous mastitis) is an infrequent disease, but in endemic areas like India, it is one of the most common causes of GM [9]. The GM has been found worldwide and, in all rac-

es. But it is supposed to be more prevalent among Hispanic and Asian women. In recent decades, a number of relatively large series of cases have been reported from developing countries [10].

There are three main hypotheses about the possible causes of idiopathic GM that have been suggested, including an autoimmune response, infectious disease, and hormonal disruption. The most commonly accepted view currently is that idiopathic GM is an autoimmune disease [11]. Idiopathic GM is more common in women of childbearing age, especially those taking oral contraceptive pills or close to the period of childbirth or breast feeding. However, it is also observed in nulliparous women. The disease is unusual during pregnancy but occurs during lactation [12].

GM usually presents with progressive, painful breast lumps. The lesions are variable in size, usually firm, tender, ill-defined, and unilateral, but sometimes bilateral GMs are also reported. GM can cause nipple retraction or skin color changes which mimics a malignant tumor. Patients with GM can develop fistulae, sterile abscesses, and nipple inversion [13]. Imaging studies including USG, mammography, and MRI help to exclude GM from breast carcinoma. Moreover, the FNAC, followed by biopsy will confirm the idiopathic GM.

Limitation of study:

Owing to the tertiary location of the center, the small number of patients, and the lack of the latest techniques, such as auto-antibody detection, PCR etc., we have limitations in very accurate diagnosis.

Summary and Conclusion

GM is a common lesion in India, particularly owing to the high prevalence of tuberculosis or carcinoma of the breast. Hence, awareness of idiopathic GM can be confirmed by clinical and cytological, histopathological and microbiological evaluation and treated accordingly. In the present study stain for bacteria and fungi are negative. There are no features of malignancy. Therefore, these cases may be considered as IGM. However, Auto-antibody estimation and PCR for tubercle bacillus and any other relevant higher investigations are in demand to exclude any possible etiology.

This research paper was approved by the ethical committee of Adichunchanagiri Institute of Medical Sciences (AIMS), BG Nagara, Mandya (district), Karnataka-571448.

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