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RESEARCH ARTICLE

AN ASSESSMENT OF ELASTOSIS IN FIBROCYSTIC BREAST DISEASE AND INVASIVE BREAST CARCINOMA

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Abstract

Fibrocystic disease is one of the most common benign condition of the breast. Its incidence is significantly increased by nulliparity, late age of first birth, and late menopause, factors also associated with increased risk for breast carcinoma risk. Breast cancer is the second leading cause of cancer related deaths in females all over the world.

Materials and methods : In the present study 30 cases of fibrocystic disease and carcinoma breast were taken and studied for the presence and grade of elastosis using Hematoxylin Eosin staining and Verhoeff Van Gieson staining.

Results : The association between ductal epithelial hyperplasia and grade of elastosis in the Fibrocystic breast disease increased with the severity of the epithelial hyperplasia, but was not statistically significant . The correlation between histological grade of invasive ductal carcinoma-NOS type and grade of elastosis was statistically insignificant, but may be used as predictive marker of response to endocrine therapy.

Introduction:-

Fibrocystic disease is one of the most common benign condition of the breast. Its incidence is significantly increased by nulliparity, late age of first birth, and late menopause[1], factors also associated with increased risk for breast carcinoma . Ductal and lobular hyperplasia, cyst formation, adenosis and fibrosis are major morphologic changes of fibrocystic breast disease. Ductal hyperplasia is a frequent constituent of fibrocystic change that may be detected by mammography or as a palpable tumor. Moderate or florid hyperplasia without atypia and sclerosing adenosis both are at slightly increased risk of breast carcinoma.[5,7]

Epithelial hyperplasia is a premalignant component of fibrocystic breast disease and shows higher degree of elastosis when compared to other morphologic changes of FCD[6]. Breast cancer is the second leading cause of cancer related deaths in females all over the world. It has doubled in India in the last two decades. The significance and pathogenesis of elastosis in breast carcinoma is unknown[2]. It is common in infiltrating ductal and lobular carcinomas of the breast.

The presence of elastosis or elastic tissue in the stroma of sections from breast carcinoma was first described by Cheatle and Cutler. Elastic tissue is probably produced by fibroblasts, smooth muscle cells or myofibroblasts, under the stimulation of the infiltrating cancer cells. Elastosis was located around carcinomatous tissue mammary neoplastic ducts , around veins and as scattered foci in the stroma. Yellow streaks and flecks may be apparent grossly and probably reflect the increased elastic tissue. In H&E stained sections, elastosis is seen as a homogenous material with a faintly visible fibrillar appearance[2].In sections stained with the Verhoeff-Van Gieson method, it is seen as

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densely packed black colored elastin fibrils. Periductal and stromal elastosis are usually observed in invasive carcinoma of breast[2]. Tumors lacking elastosis have showed lower rate of response to endocrine therapy[4]. Grade of elastosis was followed according to the study by Curt Lundmark[2]

Grade 0 - No elastosis
Grade 1- Mild to moderate degree of elastosis
Grade 2- Gross elastosis

Aims and Objectives:-

To correlate grade of elastosis with ductal epithelial hyperplasia in fibrocystic breast disease and to correlate grade of elastosis with histological grade of carcinoma in invasive duct carcinoma using Verhoff Van Gieson staining .

Materials and Methods:-

30 reported cases of fibrocystic disease and 30 reported cases of invasive ductal carcinoma breast were chosen , grossed and macroscopic features noted. The tissue was then processed , paraffin sections were cut at 4 to 5 µm thickness and stained using Hematoxylin & Eosin and Verhoeff Van Gieson stains.

Observations and Results:-

Analysis of Elastosis In cases of Fibrocystic Breast Disease

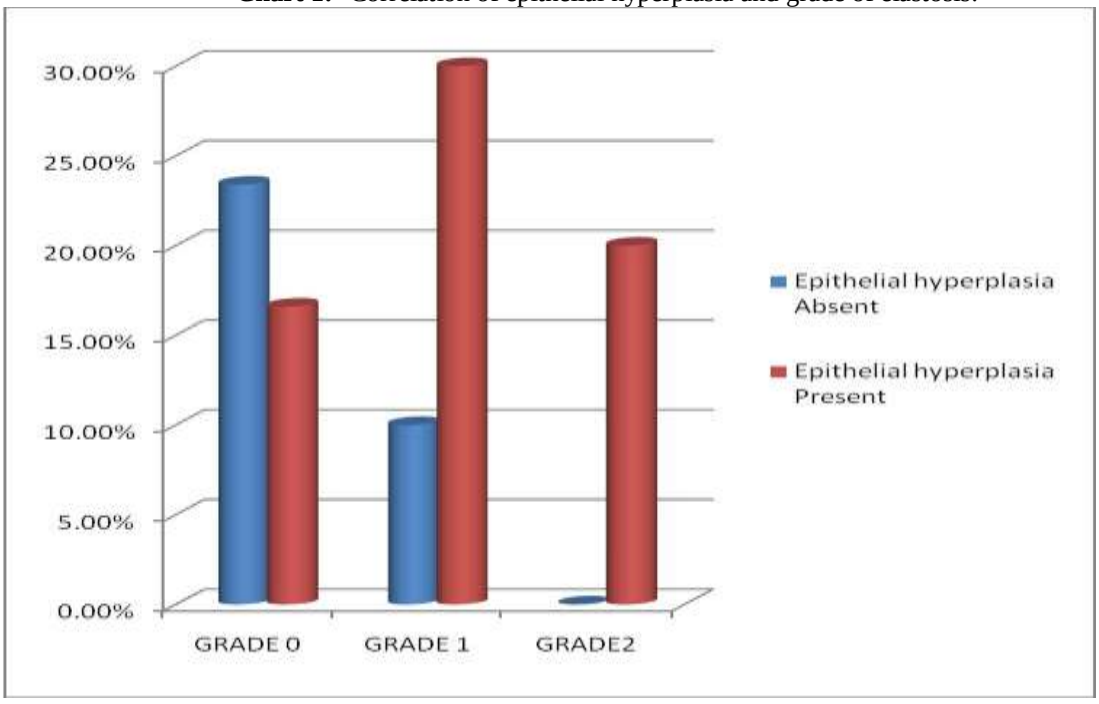
Total of 30 cases were studied and the following observations were obtained

Table 1:- Correlation of epithelial hyperplasia and grade of elastosis.

MORPHOLOGY	**ELASTOSIS GRADE**			
	GRADE 0	**GRADE 1**	**GRADE 2**	**TOTAL**
Epithelial hyperplasia Absent	7 (23.4 %)	3 (10 %)	0	10 (33.4 %)
Epithelial hyperplasia Present	5 (16.6 %)	9 (30 %)	6 (20 %)	20 (66.6 %)
TOTAL	**12 (40 %)**	**12 (40 %)**	**6 (20 %)**	**30 (100 %)**

In this study Elastosis is more commonly associated with epithelial hyperplasia, but was not statistically significant (p value >0.05)

Chart 1:- Correlation of epithelial hyperplasia and grade of elastosis.



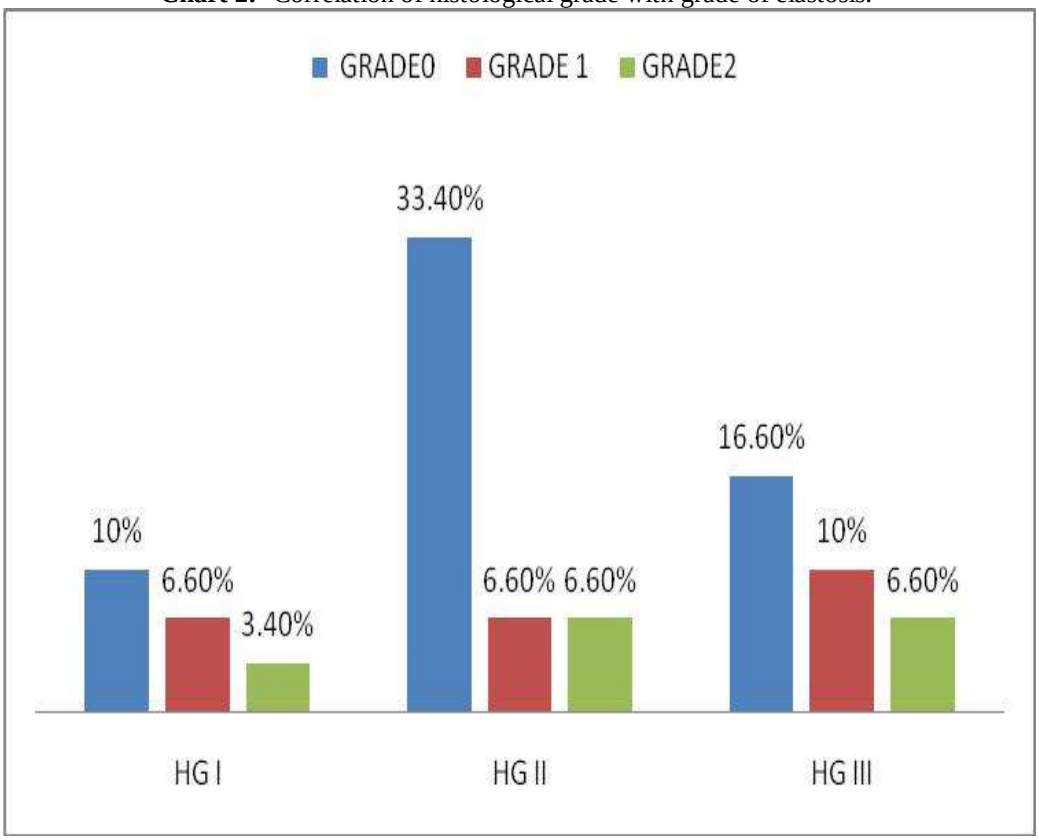
Analysis Of Elastosis In Invasive Ductal Carcinoma-NOS Type
Total of 30 cases were studied and following results obtained

Table 2:- Correlation of histological grade in carcinoma breast with grade of elastosis.

ELASTOSIS		HISTOLOGICAL GRADE OF INVASIVE DUCTAL CARCINOMA – NOS TYPE		
GRADE	I	II	III	Total
0	3(10%)	10(33.4%)	5(16.6%)	18(60%)
1	2(6.6%)	2(6.6%)	3(10%)	7(23.4%)
2	1(3.4%)	2(6.6%)	2(6.6%)	5(16.6%)
Total	6(20%)	14(46.6%)	10(33.4%)	30(100%)

Significant correlation between elastosis and histological grade tumor was not seen.(p value >0.05)

Chart 2:- Correlation of histological grade with grade of elastosis.



HG – HISTOLOGICAL GRADE
GRADE 0/1/2 – GRADE OF ELASTOSIS

Discussion:-

In present study , grade of elastosis was commonly associated with ductal epithelial hyperplasia, but was not statistically significant .This was in accordance with study by Parfrey and Doyle et al[6] showed as periductal and interstitial elastosis in the Fibrocystic breast disease increased gradually with the severity of the epithelial

hyperplasia.In this present study histological grade II tumor showed elastosis in 46.6 % of cases and grade III showed elastosis in 33.4% of cases.The elastosis grade in this study does not appear to have a prognostic significance.This is comparable to the study by Jackson and Orr et al[3]in which grade II and grade III tumors showed 69.9% and 63.1% of elastosis respectively.

Conclusion:-

The association between ductal epithelial hyperplasia and grade of elastosis in Fibrocystic breast disease increased gradually with the severity of the epithelial hyperplasia.The correlation between histological grade of invasive ductal carcinoma-NOS type and grade of elastosis was statistically insignificant , but tumors lacking elastosis have showed lower rate of response to endocrine therapy. So, this might be useful as predictive marker of response to endocrine therapy.

Fig 1:- FCD With Periductal Elastosis (VVG Special Stain)

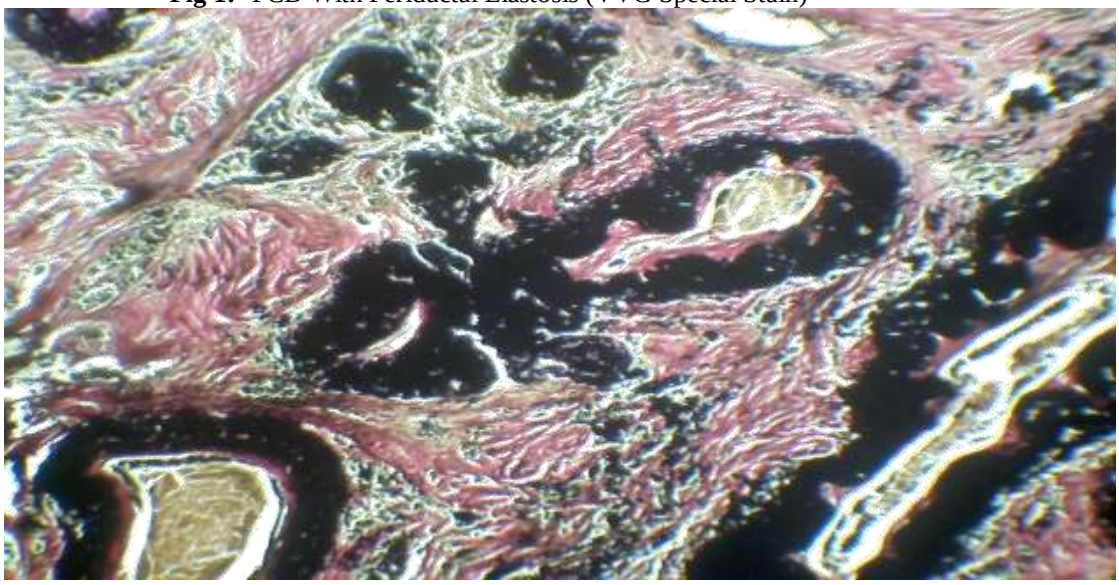
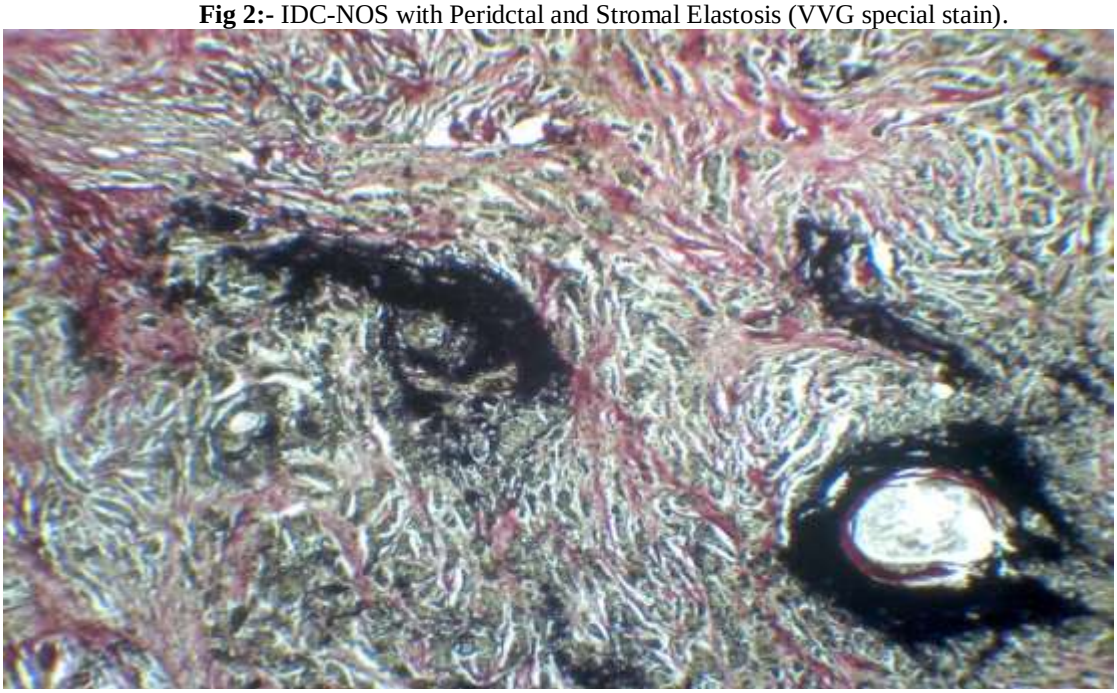


Fig 2:- IDC-NOS with Peridctal and Stromal Elastosis (VVG special stain).



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