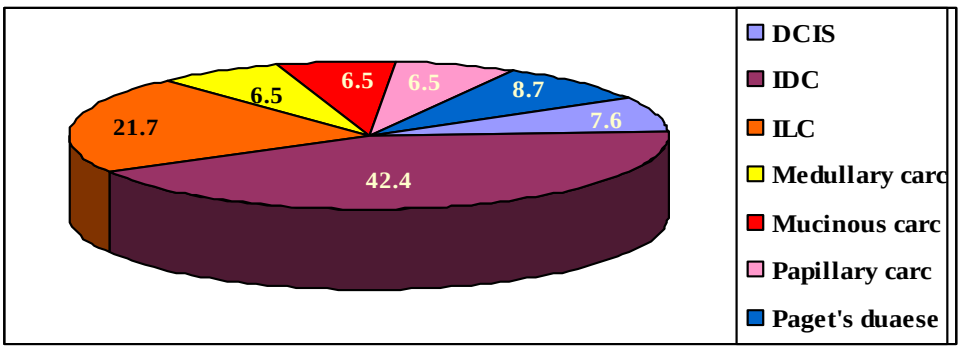
RESULTS

Histopathological examination of all 92 cases breast carcinoma studied revealed 7 cases (7.6%) of duct carcinoma in situ (DCIS), 39 cases (42.4%) of Infiltrating duct carcinoma (IDC), 20 cases (21.7%) of Infiltrating lobular carcinoma (ILC), 6 cases (6.5%) of Mucinous carcinoma, 6 cases (6.5%) of Medullary carcinoma, 6 cases (6.5%) of Papillary carcinoma, and 8 cases (8.7%) of paget's disease. In addition 10 cases of apparently normal breast tissue were taken as control ***(table 12 & Graph 1).***

Table (12): Histopathological diagnosis of all examined cases:

Type	*No.*	*%*
Duct carcinoma in situ (DCIS)	**7**	**7.6**
Infiltrating duct carcinoma (IDC)	**39**	**42.4**
Infiltrating lobular carcinoma (ILC)	**20**	**21.7**
Medullary carcinoma	**6**	**6.5**
Mucinous carcinoma	**6**	**6.5**
Papillary carcinoma	**6**	**6.5**
Paget's disease	**8**	**8.7**
Total	***92***	***100***

Graph (1): Histopathological diagnosis of all examined cases:



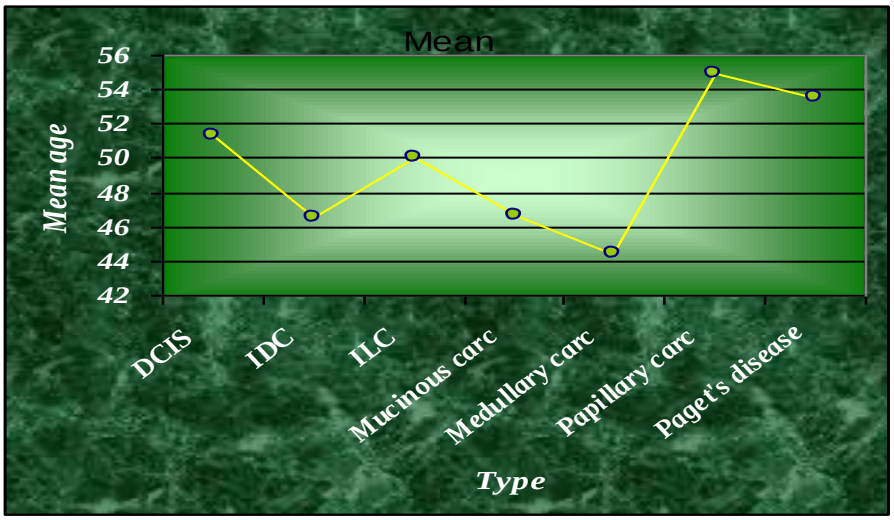
Age distribution:

The age of patients ranged from 25 to 70 years, with a mean age of 48.9 years. The age distribution is shown in ***(Table 13 & Graph 2):***

Table (13): Age distribution in different types of breast carcinoma:

Type	*No. of cases*	*%*	*Range*	*Mean age*
DCIS	7	7.6	40-65	51.3
IDC	39	42.4	25-70	46.5
ILC	20	21.7	33-70	50
Mucinous carcinoma	6	6.5	35-70	46.7
Medullary carcinoma	6	6.5	28-67	44.5
Papillary carcinoma	6	6.5	45-65	55
Paget's disease	8	8.7	45-65	53.6
Total	***92***	***100***	***25-70***	***48.7***

Graph (2): Age distribution in different types of breast carcinoma:



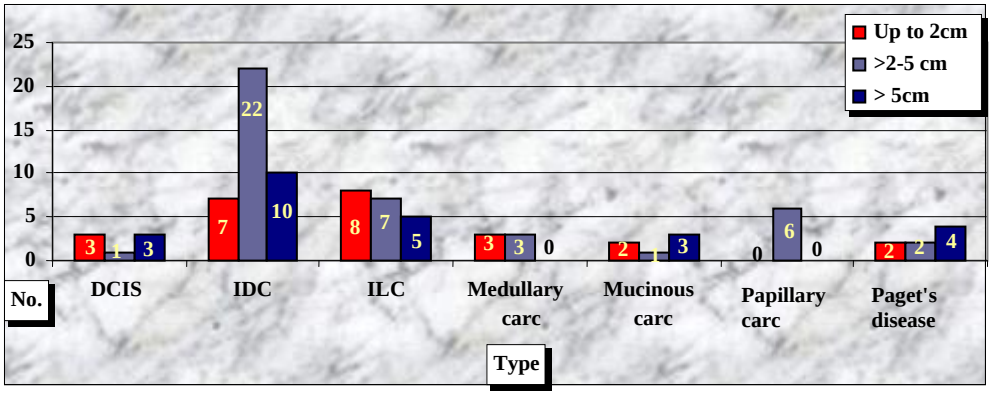
The size of the examined lesions:

The size of the examined breast carcinomas ranged from 0.5cm up to 22cm with the mean value of 4.5cm. Malignant masses were divided according to the size into 3 groups: Twenty-five cases (27.2%) showed small masses (up to 2cm), 42 (45.7%) were with masses measuring >2-5 cm and 25 (27.2%) showed large masses (>5 cm in largest dimensions) ***(Table 14 and Graph 3).***

Table (14): Distribution of cases according to size:

Type	No.	Up to 2cm		>2-5 cm		> 5cm	
		No.	*%*	*No.*	*%*	*No.*	*%*
DCIS	7	3	42.9	1	14.3	3	42.9
IDC	39	7	17.9	22	56.4	10	25.6
ILC	20	8	40	7	35	5	25
Medullary carcinoma	6	3	50	3	50	0	0
Mucinous carcinoma	6	2	33.3	1	16.7	3	50
Papillary carcinoma	6	0	0	6	100	0	0
Paget's disease	8	2	25	2	25	4	50
Total	**92**	**25**	**27.2**	**42**	**45.7**	**25**	**27.2**

Graph (3): Distribution of cases according to size:



Histopathological features of all collected breast carcinomas:

- ***Duct Carcinoma In Situ (DCIS):***

Constituted 7 cases, all were of mixed type. One case was comedo ***(Fig. 16)*** and solid pattern ***(Fig. 18)***, one cribriform and papillary, 2 comedo, cribriform and micropapillary ***(Fig. 17)***, and 3 comedo, solid, cribriform and papillary. One case (14.3%) was of low grade (GI) lesions and 6 (85.7%) high grade (GIII) ***(Table 15 and Graph 4).***

Three cases (42.9%) showed low lymphocytic infiltrate (L.I.), one (14.3%) moderate infiltrate and 3 (42.9%) high lymphocytic infiltrate ***(Fig. 19)***;

Six cases (85.7%) were positive for tumor necrosis (T.N.);

One case only (14.3%) was positive for vascular invasion (V.I.) ***(Table 16 and Graph 5).***

- ***Infiltrating Duct Carcinoma (IDC):***

Constituted 39 cases of IDC not otherwise specified (NOS): three cases (7.7%) were of grade I ***(Fig. 20)***, 18 (46.2%) grade II ***(Fig. 21)*** and 18 (46.2%) grade III ***(Fig. 22) (Table 15 and Graph 4).***

Sixteen cases (41%) showed low lymphocytic infiltrate, 9 (23.1%) moderate infiltrate and 14 (35.9%) high lymphocytic infiltrate;

Thirty cases (76.9%) were positive for tumor necrosis;

Nineteen cases (48.7%) were positive for vascular invasion ***(Table 16 and Graph 5).***

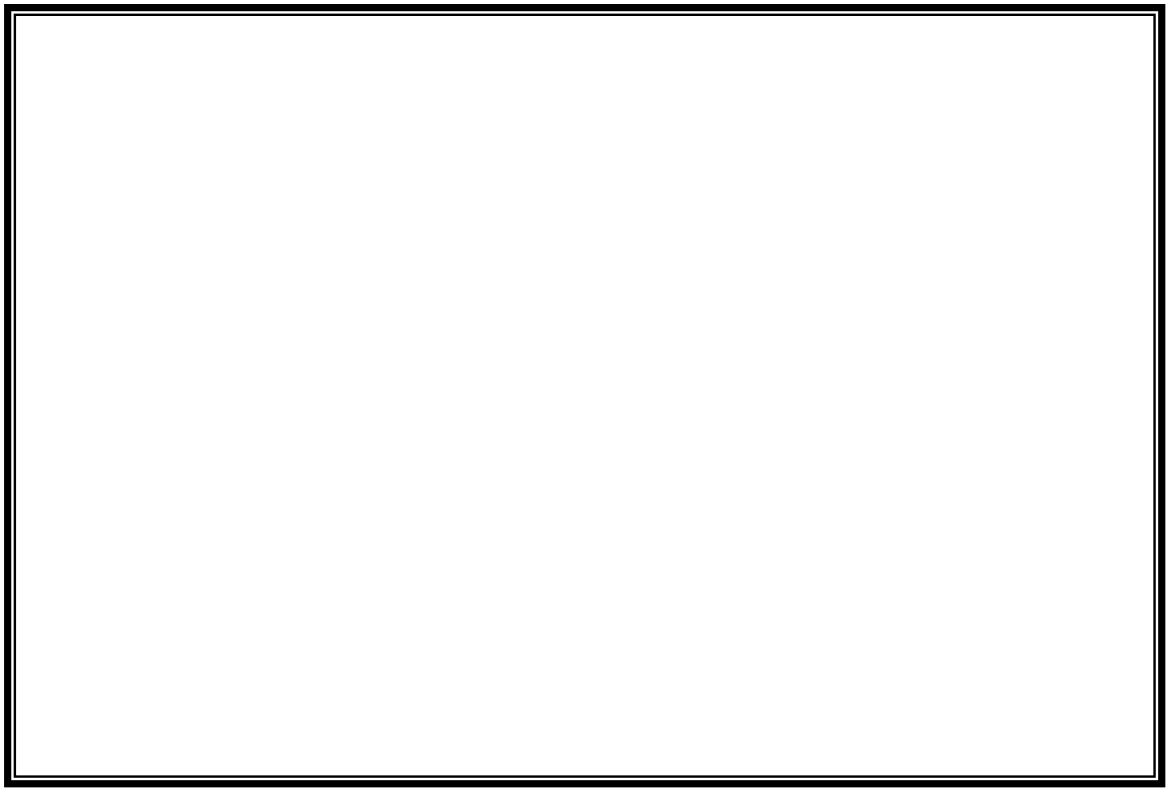


Fig. (16): DCIS (Comedo-pattern) showing large, pleomorphic cellular lining which is associated with necrosis (H&E x100)

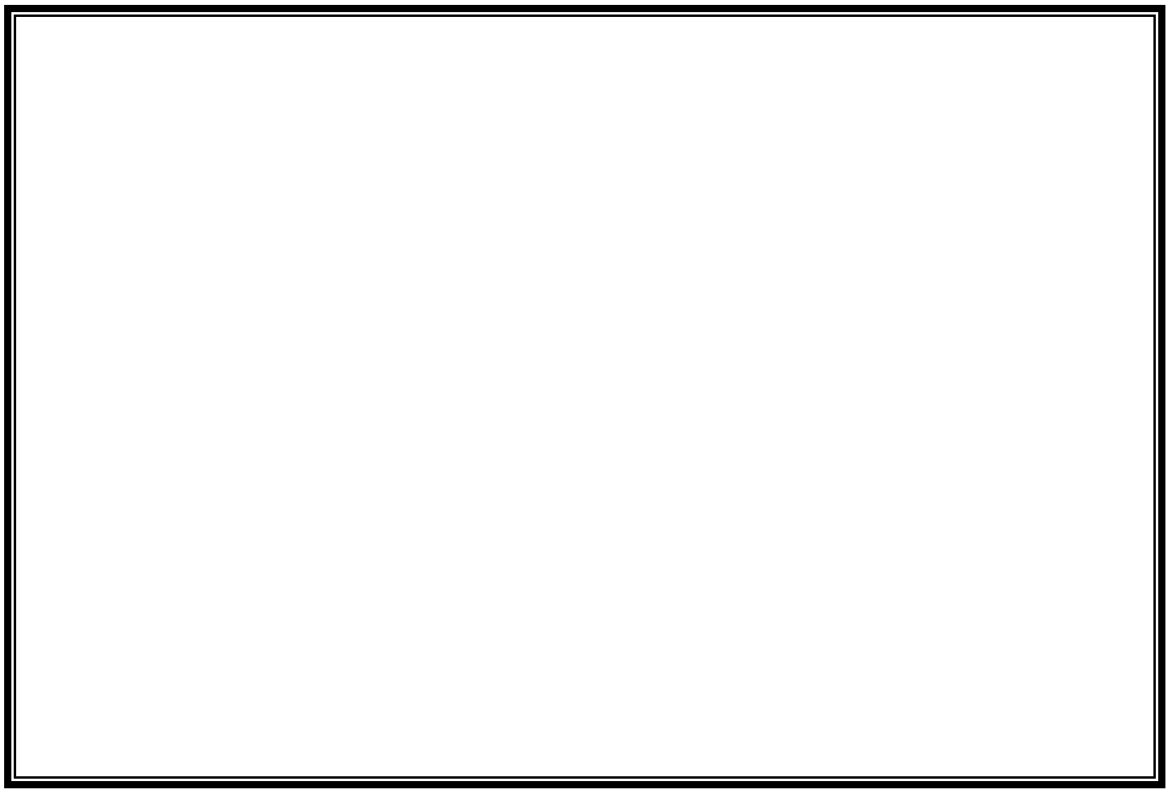


Fig. (17): DCIS (Micropapillary-pattern) showing proliferating cells extend into the lumen of the glandular structure, but without a fibrovascular stalk. (H&E x100)

Fig. (18): DCIS (Solid-pattern). The duct is completely obliterated by relatively small neoplastic cells that have a uniform, monotonous appearance. (H&E x200)

Fig. (19): DCIS show high lymphocytic infiltration. (H&E x100)

Fig. (20): IDC GI. Malignant cells are arranged in well-formed tubular structures. The nuclei show relatively little pleomorphism with fibrous stroma. (H&E x200)

Fig. (21): IDC GII showing solid sheets of malignant cells with less tubular formation. (H&E x200)

Fig. (22): IDC GIII. The tumor mass formed mainly of solid sheets of malignant cells with marked nuclear pleomorphism (H&E x200)

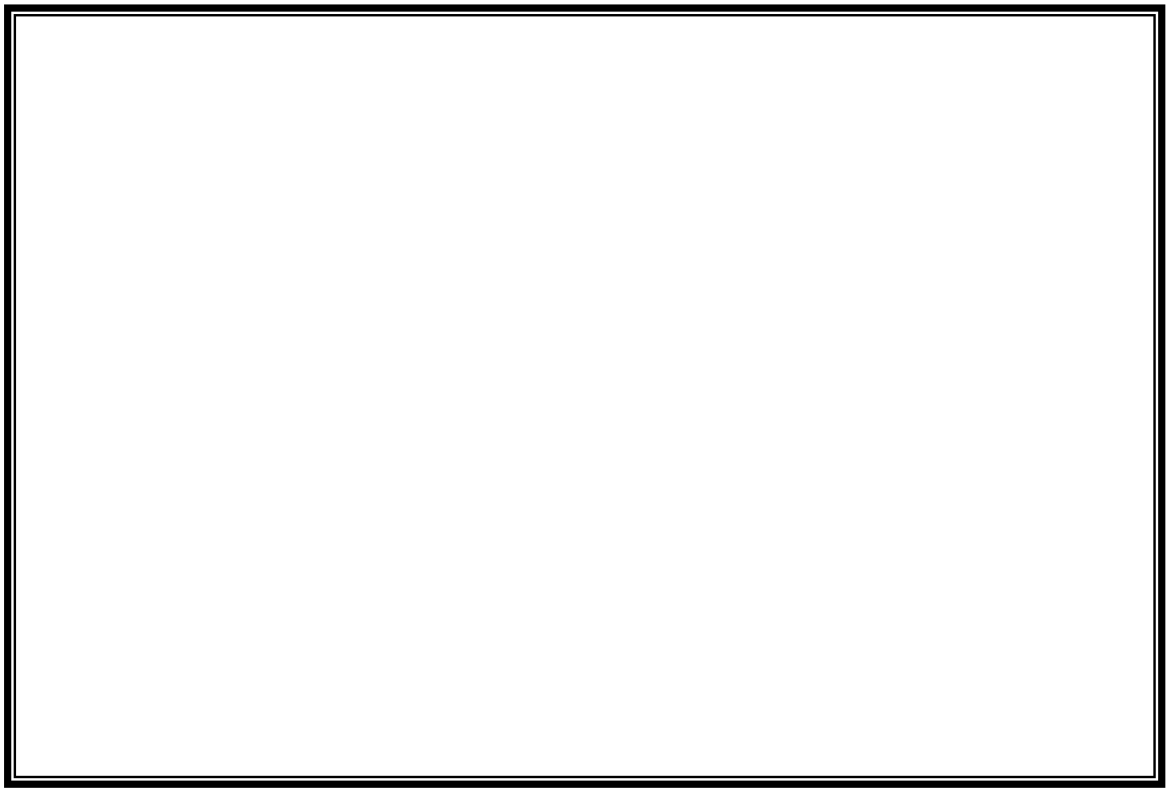


Fig. (23): ILC showing small monotypic cells arranged in linear strands (Indian file pattern) (H&E x200)

- ***Infiltrating Lobular Carcinoma (ILC) (Fig. 23):***

Constituted 20 case; 8 cases (40%) were of grade II and 12 (60%) of grade III ***(Table 15 and Graph 4).***

Twelve cases (60%) showed low lymphocytic infiltrate, 4 (20%) moderate infiltrate and 4 (20%) high lymphocytic infiltrate;

Seven cases (35%) were positive for tumor necrosis;

Five cases (25%) were positive for vascular invasion ***(Table 16 and Graph 5).***

- ***Medullary carcinoma (Fig. 24):***

Constituted 6 cases; 2 were medullary and 4 atypical medullary. Three cases were grade II (50%) and 3 grade III (50%) ***(Table 15 and Graph 4).***

One case (16.7%) showed low lymphocytic infiltrate, one (16.7%) moderate infiltrate and 4 (66.7%) high lymphocytic infiltrate;

Five cases (83.3%) were positive for tumor necrosis;

Two cases (33.3%) were positive for vascular invasion ***(Table 16 and Graph 5).***

- ***Mucinous carcinoma (Fig. 25):***

Constituted 6 cases; five cases (83.3%) were of grade II and one (16.7%) grade III ***(Table 15 and Graph 4).***

Four cases (66.7%) showed low lymphocytic infiltrate, one (16.7%) moderate infiltrate and one (16.7%) high L.I.;

Two cases (33.3%) were positive for tumor necrosis;

All cases (100%) were negative for vascular invasion ***(Table 16 and Graph 5).***

- ***Papillary carcinoma (Fig. 26):***

Constituted 6 cases; all were of grade II (100%) ***(Table 15 and Graph 4).***

Three cases (50%) showed low lymphocytic infiltrate and 3 (50%) showed high lymphocytic infiltrate;

Three cases (50%) were positive for tumor necrosis;

The six cases (100%) were positive for vascular invasion ***(Table 16 and Graph 5).***

- ***Paget's disease (Fig. 27):***

Constituted 8 cases; one case was of grade I (12.5%), 2 grade II (25%) and 5 grade III (62.5%) ***(Table 15 and Graph 4).***

Two cases (25%) showed low lymphocytic infiltrate, 4 (50%) moderate infiltrate and 2 (25%) high lymphocytic infiltrate;

Six cases (75%) were positive for tumor necrosis;

Two cases (25%) was positive for vascular invasion ***(Table 16 and Graph 5).***

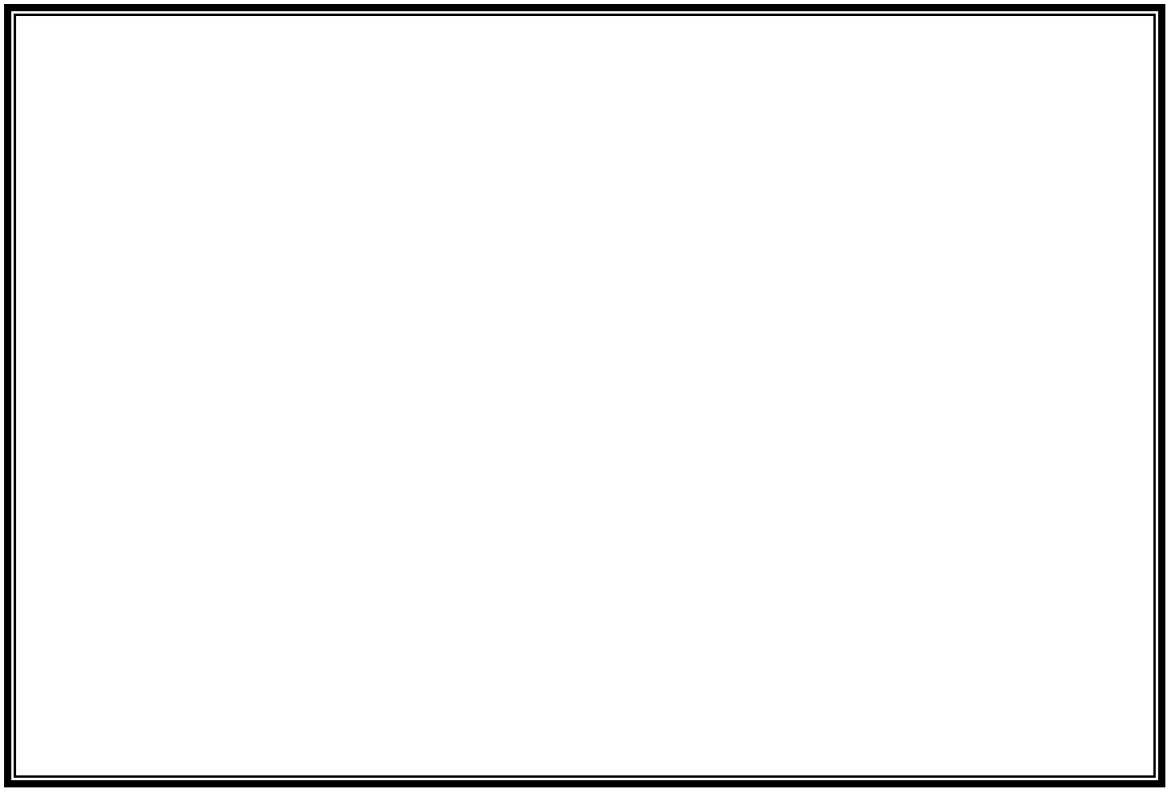


Fig. (24): Medullary carcinoma. The tumor is formed of large sheets of malignant cells with heavy lymphoplasmacytic infiltrate and areas of necrosis. (H&E x200)

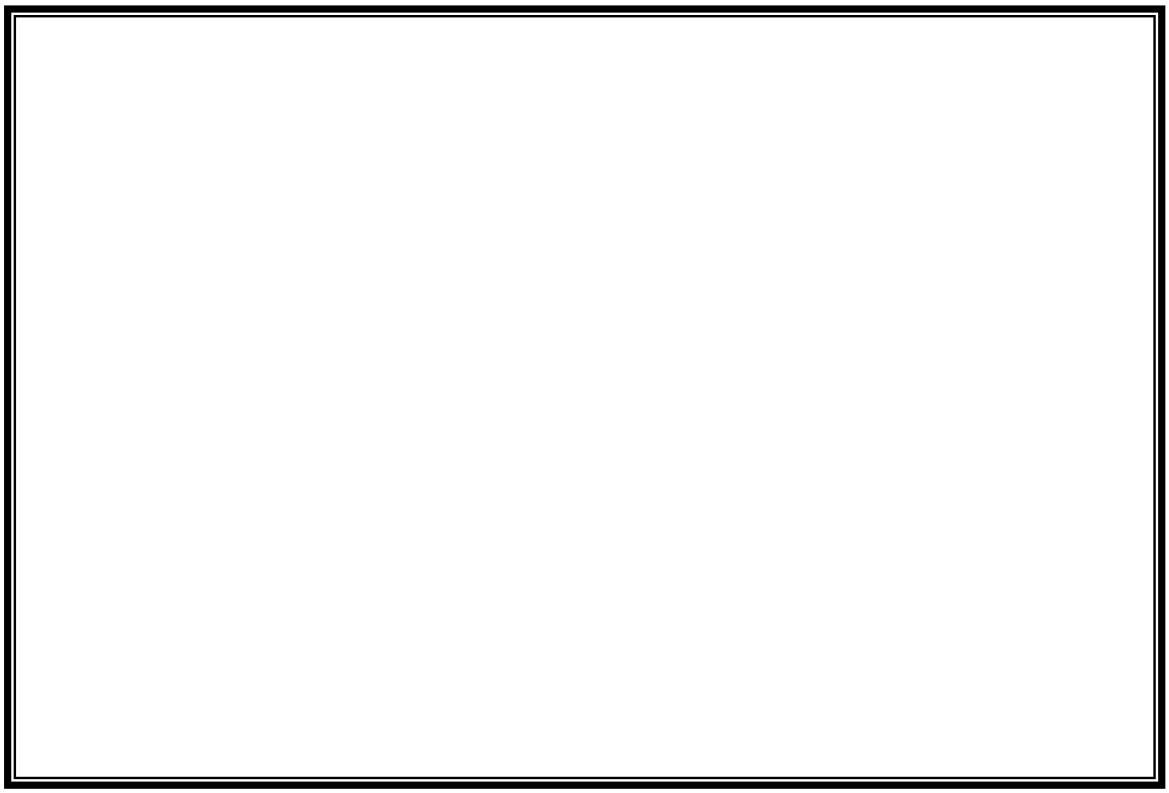


Fig. (25): Mucoid carcinoma. (H&E x100)

Fig. (26): Papillary carcinoma showing the frond-like papillary growth with fibrovascular connective tissue core. (H&E x100)

Fig. (27): Paget's disease of the nipple. (H&E x200)

Table (15): Histopathological Types and Grades of the examined cases:

Histopathologic Type	No.	Grade					
		GI		GII		GIII	
		No.	%	No.	%	No.	%
DCIS	7	1	14.3	2	28.6	4	57.1
IDC	39	3	7.7	18	46.2	18	46.2
ILC	20	0	0	12	60	8	40
Medullary carcinoma	6	0	0	3	50	3	50
Mucinous carcinoma	6	0	0	5	83.3	1	16.7
Papillary carcinoma	6	0	0	6	100	0	0
Paget's disease	8	1	12.5	2	25	5	62.5
Total	92	5	5.4	48	52.2	39	42.4

Graph (4): Histopathological Types and Grades of the examined cases:

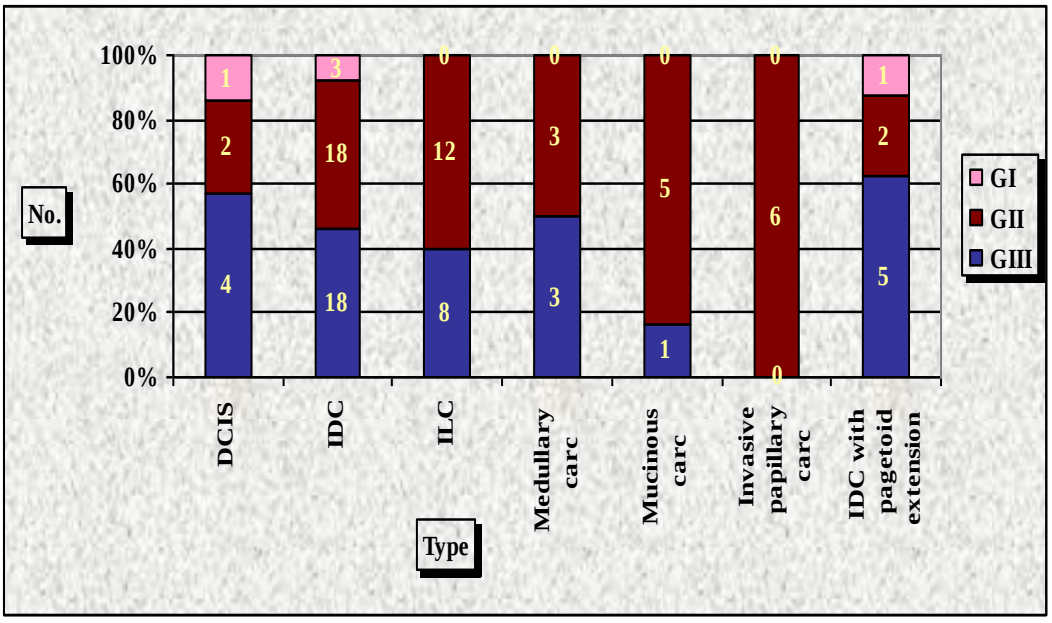


Table (16): Histopathological findings in different breast cancer cases:

Type	No.	Lymphocytic infiltrate			Tumor necrosis	Vascular invasion
		Low	Moderate	High		
DCIS	*7*	3	1	3	6	1
IDC	*39*	16	9	14	30	19
ILC	*20*	12	4	4	7	5
Medullary carc.	*6*	1	1	4	5	2
Mucinous carc.	*6*	4	1	1	2	0
Papillary carc.	*6*	3	0	3	3	6
Paget's disease	*8*	2	4	2	6	2
Total	*92*	*41 (44.6%)*	*20 (21.7%)*	*31 (33.7%)*	*59 (64.1%)*	*35 (38%)*

Graph (5): Histopathological findings in different breast cancer cases:

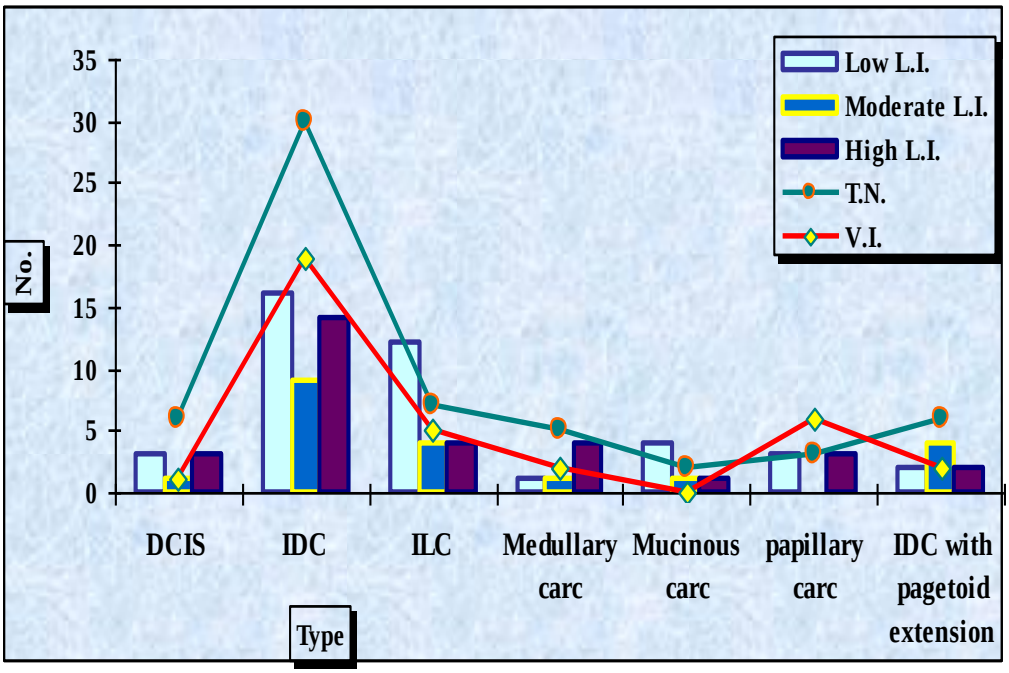
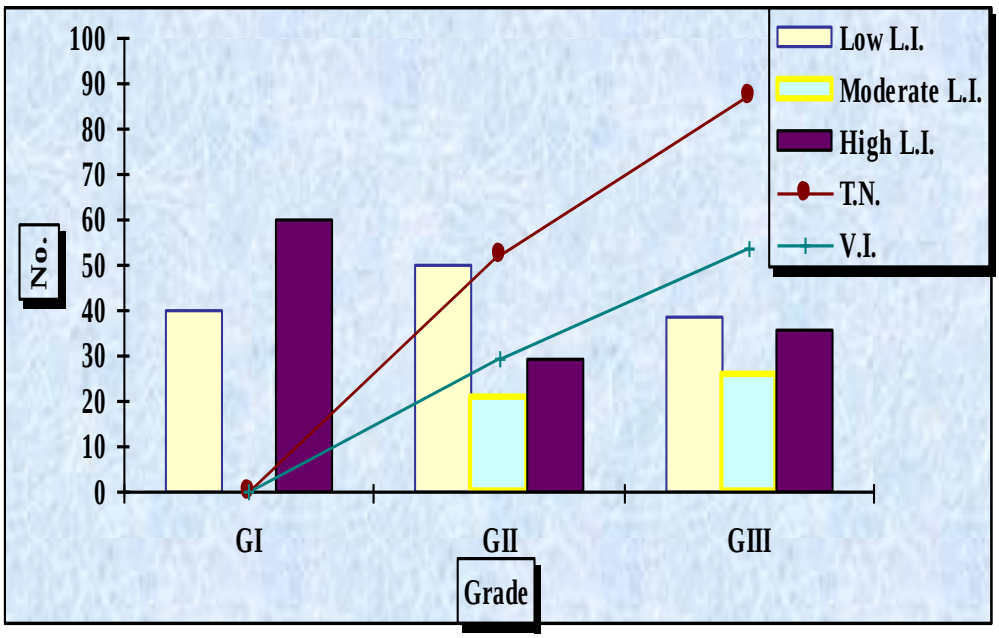


Table (17): Relation between grade and histopathological findings:

Grade	*No.*	*Lymphocytic infiltrate*			*Tumor necrosis*	*Vascular invasion*
		Low	*Moderate*	*High*		
GI	5	2 (40%)	0	3 (60%)	0	0
GII	48	24 (50%)	10 (20.8%)	14 (29.2)	25(52.1%)	14 (29.2%)
GIII	39	15 (38.5%)	10 (25.6%)	14 (35.9%)	34(87.2%)	21 (53.8%)
Total	*92*	*41 (44.6%)*	*20 (21.7%)*	*31 (33.7%)*	*59 (64.1%)*	*35 (38%)*

N.B.: A highly significant correlation (P<0.01) was found between tumor grade and tumor necrosis and vascular invasion.

Graph (6): Relation between grade and histopathological findings:



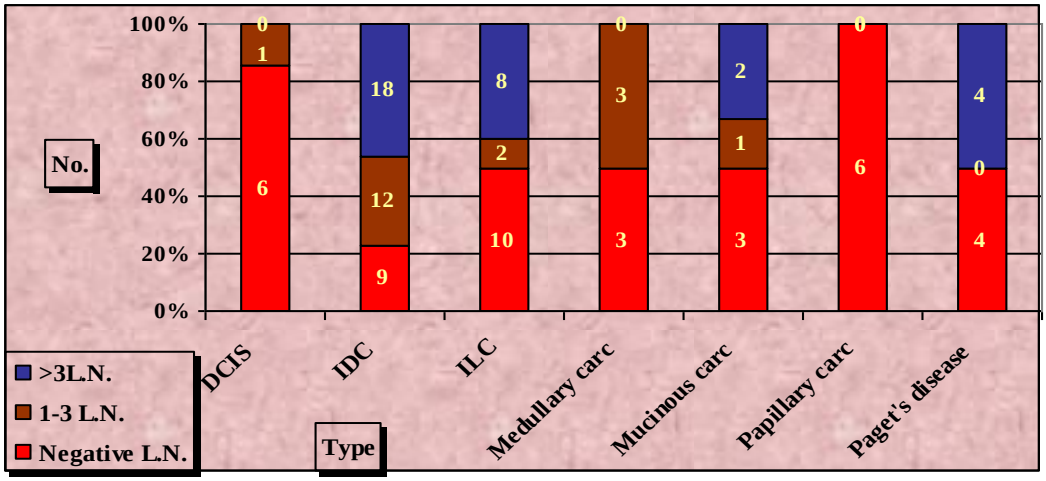
Axillary Lymph Node Involvement in different breast cancer cases:

Ninety two cases of malignant breast lesions showed: 41 cases (44.6%) were negative for axillary lymph node metastasis and 51 cases (55.4%) were positive. The involved L.N.s per case varied from 1 to 19 L.N. with mean value of 7.1. Thirty two cases (34.8%) were with more than 3 positive L.N.s. Lymph nodes Involvement in breast cancer cases was summarized in ***Table 18 and Graph 7.***

Table (18): Lymph node involvement in breast cancer cases:

Type	*No.*	*-ve L.N.*		*1-3 +ve L.N.*		*>3 +ve L.N.*	
		No.	*%*	*No.*	*%*	*No.*	*%*
DCIS	***7***	6	85.7	1	14.3	0	0
IDC	***39***	9	23.1	12	30.8	18	46.2
ILC	***20***	10	50	2	10	8	40
Medullary carcinoma	***6***	3	50	3	50	0	0
Mucinous carcinoma	***6***	3	50	1	16.7	2	33.3
Papillary carcinoma	***6***	6	100	0	0	0	0
Paget's disease	***8***	4	50	0	0	4	50
Total	***92***	***41***	***44.6***	***19***	***20.7***	***32***	***34.8***

Graph (7): L.N. involvement in examined breast cancer cases:



Axillary Lymph Node Involvement in different grades of breast cancer cases:

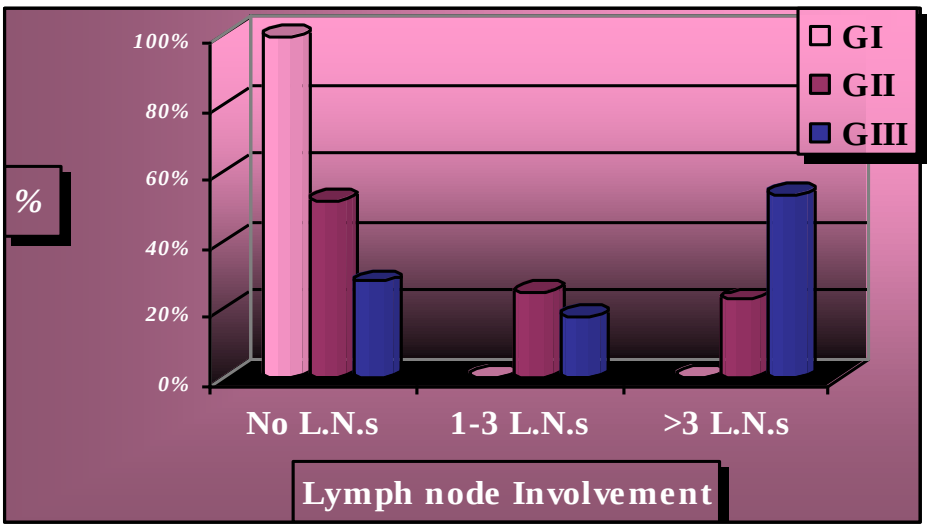
Axillary Lymph Node Involvement in different grades of breast cancer cases Axillary Lymph Node Involvement in different grades of breast cancer cases was summarized in ***Table 19 and Graph 8.***

Table (19): Lymph Node Involvement in different grades of breast cancer:

Grade	*No.*	*-ve L.N.*		*1-3 +ve L.N.*		*>3 +ve L.N.*	
		No.	*%*	*No.*	*%*	*No.*	*%*
I	5	5	100	0	0	0	0
II	48	25	52.1	12	25	11	22.9
III	39	11	28.2	7	17.9	21	53.8
Total	***92***	***41***	***44.6***	***19***	***20.7***	***32***	***34.8***

N.B.: A highly significant correlation (P<0.01) was found between tumor grade and number of involved lymph nodes.

Graph (8): Axillary Lymph Node Involvement in different grades of breast cancer cases:



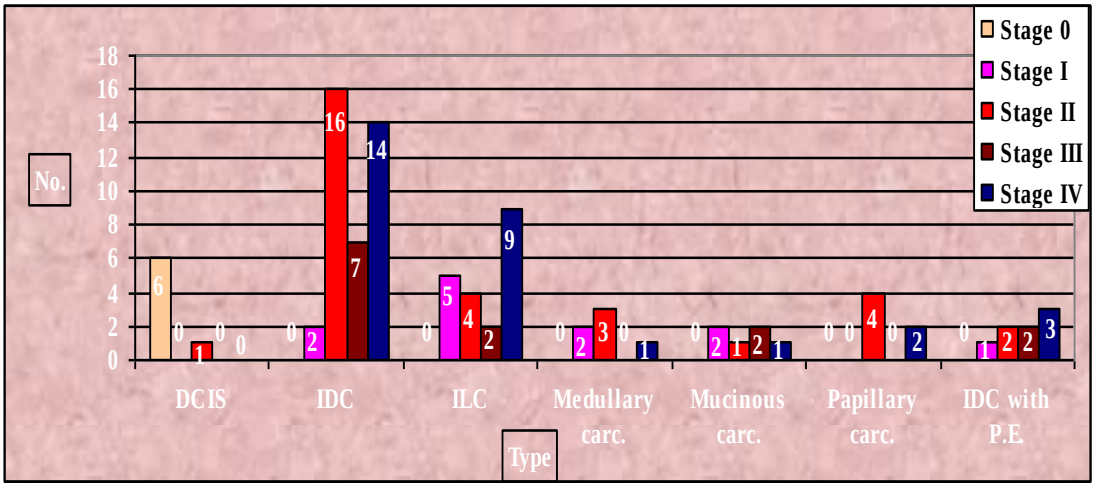
The relation between tumor type and tumor stage:

The Relation between histopathological types of breast cancer to tumor stage is summarized in ***Table 20 and Graph 9:***

Table (20): Relation between histopathological types of breast cancer to tumor stage:

Type	*No.*	*Stage*									
		0		*I*		*II*		*III*		*IV*	
		No.	*%*	*No.*	*%*	*No*	*%*	*No.*	*%*	*No.*	*%*
DCIS	***7***	6	85.7	0	0	1	14.3	0	0	0	0
IDC	***39***	0	0	2	5.1	16	41	7	17.9	14	35.9
ILC	***20***	0	0	5	25	4	20	2	10	9	45
Medullary carc.	***6***	0	0	2	33.3	3	50	0	0	1	16.7
Mucinous carc.	***6***	0	0	2	33.3	1	16.7	2	33.3	1	16.7
Papillary carc.	***6***	0	0	0	0	4	66.7	0	0	2	33.3
Paget's disease	***8***	0	0	1	12.5	2	25	2	25	3	37.5
Total	***92***	***6***	***6.5***	***12***	***13***	***31***	***33.7***	***13***	***14.1***	***30***	***32.6***

Graph (9): Relation between histopathological types of breast cancer to tumor stage:


Stage 0
Stage I
Stage II
Stage III
Stage IV
No.
18
16
14
12
10
8
6
4
2
0
6
0
1
0
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2
16
7
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9
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2
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1
2
2
3
DCIS
IDC
ILC
Medullary carc.
Mucinous carc.
Papillary carc.
IDC with P.E.
Type

The relation between tumor grade and stage:

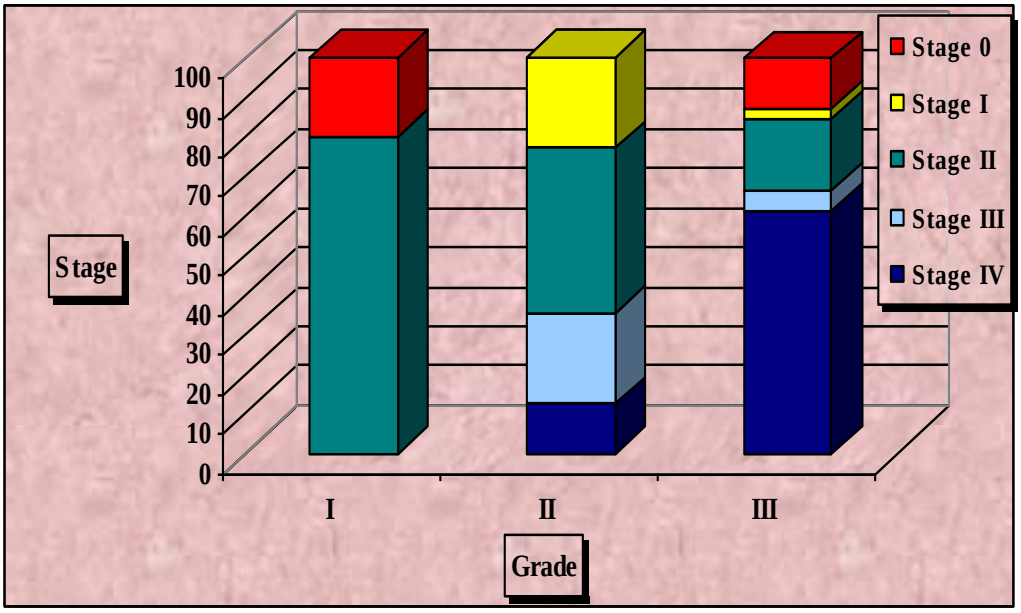
The Relation between grade of breast cancer to tumor stage is summarized in ***Table 21 and Graph 10:***

Table (21): Relation between grade of breast cancer to tumor stage:

Tumor grade	*No.*	*Stage*									
		0		*I*		*II*		*III*		*IV*	
		No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
I	***5***	1	20	0	0	4	80	0	0	0	0
II	***48***	0	0	11	22.9	20	41.7	11	22.9	6	12.5
III	***39***	5	12.8	1	2.6	7	17.9	2	5.1	24	61.5
Total	***92***	***6***	***6.5***	***12***	***13***	***31***	***33.7***	***13***	***14.1***	***30***	***32.6***

N.B.: A high statistically significant correlation (P<0.01) is found between the grade and the stage.

Graph (10): Relation between grade of breast cancer to tumor stage:



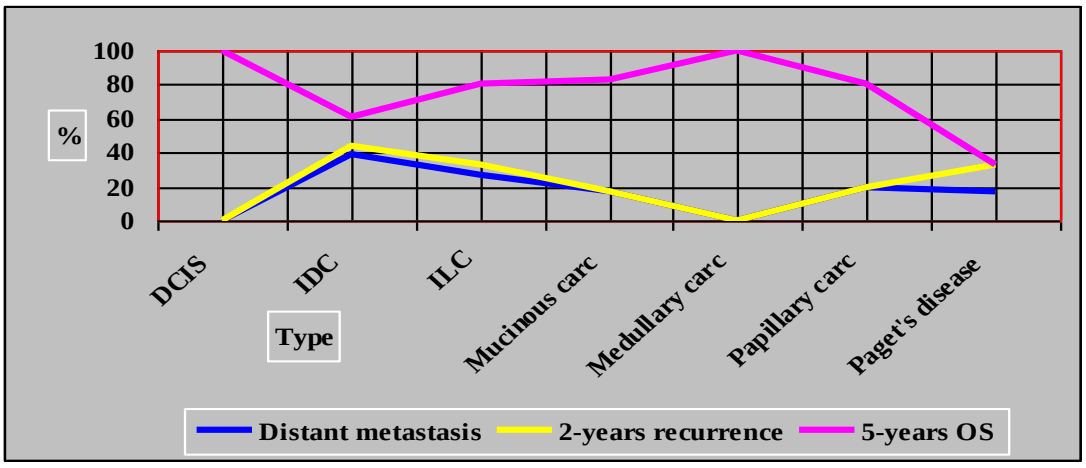
Relation between histopathological types of breast cancer to distant metastases, 2-years recurrence and 5-years (O.S.):

The relation between the type to distant metastasis, 2-years recurrence and 5-years overall survival is summarized in ***Table 22 and Graph 11:***

Table (22): Relation between histopathological types of breast cancer to distant metastases, 2-years recurrence and 5-years (O.S.):

Type	*No.*	*Distant metastases*		*2-years recurrence*		*5-years O.S.*	
		No.	*%*	*No.*	*%*	*No.*	*%*
DCIS	3	0	0	0	0	3	100
IDC	36	14	38.9	16	44.4	22	61.1
ILC	15	4	26.7	5	33.3	12	80
Medullary carc.	6	1	16.7	1	16.7	5	83.3
Mucinous carc.	5	0	0	0	0	5	100
Papillary carc.	5	1	20	1	20	4	80
Paget's disease	6	1	16.7	2	33.3	2	33.3
Total	*76*	*21*	*27.6*	*25*	*32.9*	*53*	*69.7*

Graph (11): Relation between histopathological types of breast cancer to distant metastases, 2-years recurrence and 5-years O.S.:



Relation between grade of breast cancer to distant metastases, 2-years recurrence and 5-years (O.S.):

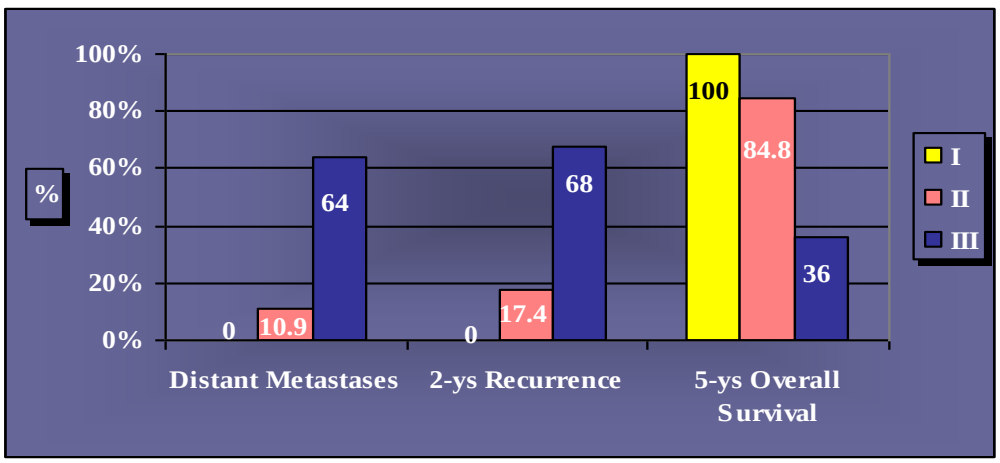
The relation between the grade to distant metastasis, 2-years recurrence and 5-years overall survival is summarized in ***Table 23 and Graph 12:***

Table (23): Relation between grade of breast cancer to distant metastases, 2-years recurrence and 5-years (O.S.):

Tumor grade	*No*	*Distant Metastases*		*2-ys Recurrence*		*5-ys O.S.*	
		No.	%	No.	%	No.	%
I	**5**	**0**	**0**	**0**	**0**	**5**	100
II	**46**	**5**	**10.9**	**8**	**17.4**	**39**	84.8
III	**25**	**16**	**64**	**17**	**68**	**9**	36
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

N.B.: Statistically high significant correlation is found between grade and more distant metastasis (P<0.01), higher incidence of 2-years recurrence (P<0.01), and inverse correlation with 5-years survival (P<0.01)

Graph (12): Relation between grade of breast cancer to distant metastases, 2-years recurrence and 5-years (O.S.):



Relation between tumor size to distant metastases, 2-years recurrence and 5-years overall survival:

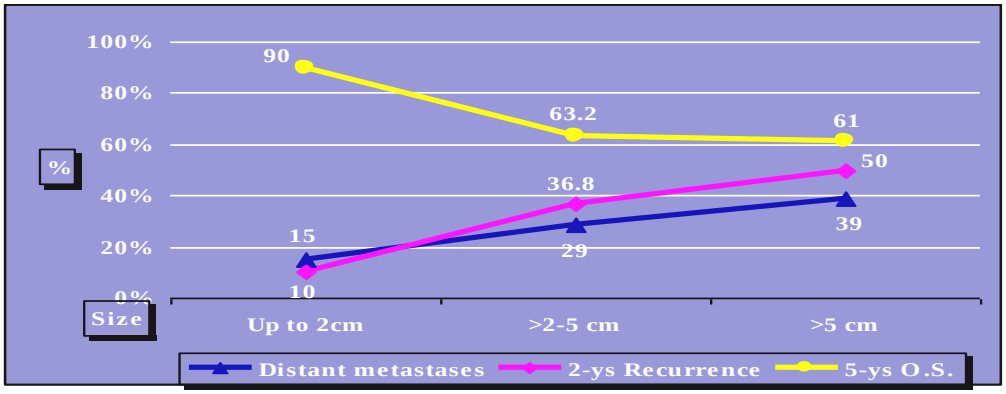
The relation between the tumor size to distant metastasis, 2-years recurrence and 5-years O.S. is summarized in ***Table 24 and Graph 13:***

Table (24): The relation between distant metastases, 2-years recurrence, 5-years O.S., and tumor size:

Tumor Size	*No.*	*Distant metastases*		*2-ys Recurrence*		*5-ys O.S.*	
		No.	**%**	**No.**	**%**	**No.**	%
Up to 2cm	***20***	3	15	2	10	18	**90**
>2-5 cm	***38***	11	28.9	14	36.8	24	**63.2**
>5 cm	***18***	7	38.9	9	50	11	**61.1**
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

N.B.: Statistically high significant correlation is found between size and more distant metastasis (P<0.1), higher incidence of 2-years recurrence (P<0.01), and inverse correlation with 5-years survival (P<0.05)

Graph (13): The relation between distant metastases development, 2-years recurrence, 5-years OS and tumor size:



Relation between L.N. Status to distant metastases, 2-years recurrence and 5-years overall survival:

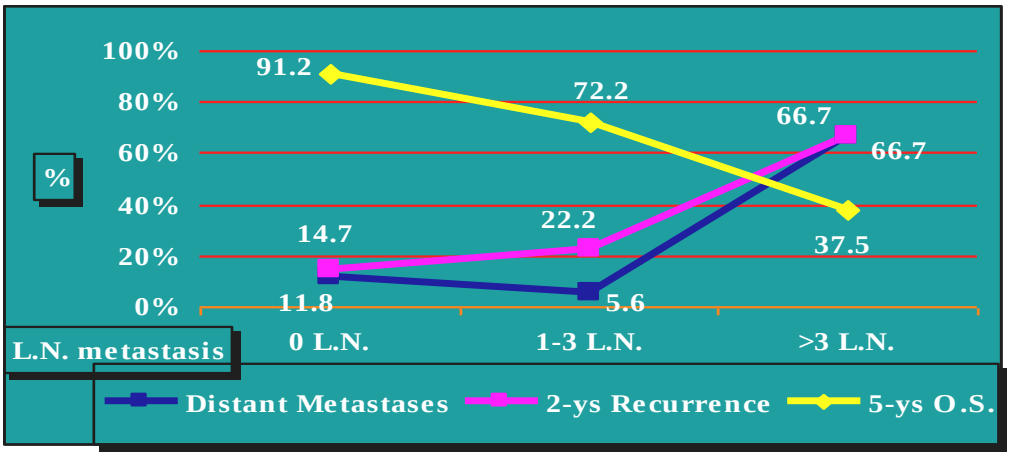
The relation between L.N. Status to distant metastasis, 2-years recurrence and 5-years O.S. is summarized in ***Table 25 and Graph 14:***

Table (25): Relation between distant metastases, 2-years recurrence, 5-years overall survival, and L.N. Status:

L.N. Status	*No*	*Distant Metastases*		*2-ys Recurrence*		*5-ys O.S.*	
		No.	*%*	*No.*	*%*	*No.*	*%*
0	***34***	4	11.8	5	14.7	31	91.2
1-3	***18***	1	5.6	4	22.2	13	72.2
>3	***24***	16	66.7	16	66.7	9	37.5
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

N.B.: Statistically high significant correlation is found between the number of involved L.N.s and distant metastasis (P<0.01), higher incidence of 2-years recurrence (P<0.01), and inverse correlation with 5-years survival (P<0.01).

Graph (14): Relation between distant metastases, 2-years recurrence, 5-years OS, and L.N. status:



The relation between 2-years recurrence, 5-years OS and tumor stage:

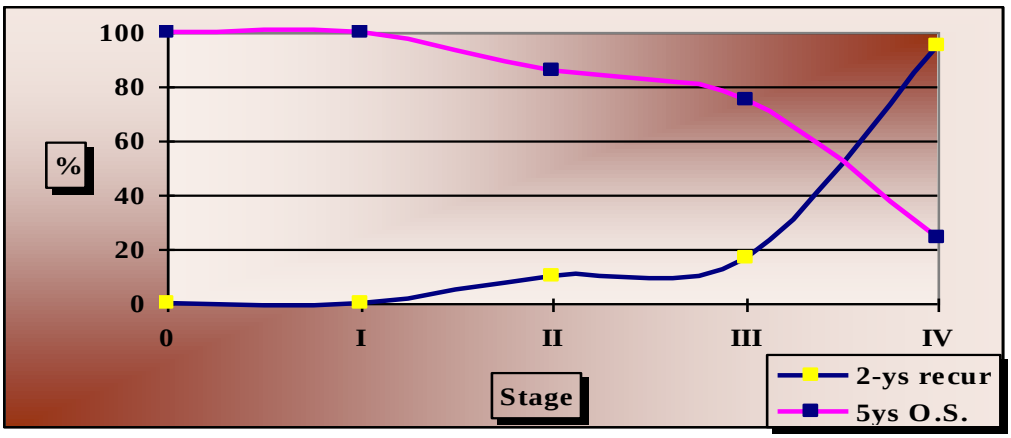
The relation between 2-years recurrence, 5-years overall survival and tumor stage is summarized in ***Table 26 and Graph 15:***

Table (26): The relation between 2-years recurrence, 5-years OS and tumor stage:

Stage	No	2-ys Recurrence		5-ys O.S.	
		No.	%	No.	%
0	*3*	0	0	3	100
I	*11*	0	0	11	100
II	*29*	3	10.3	25	86.2
III	*12*	2	16.7	9	75
IV	*21*	20	95.2	5	23.8
Total	***76***	***25***	***32.9***	***53***	***69.7***

N.B.: A high significant direct correlation (P<0.01) is found between the stage and recurrence; and high significant inverse correlation (P<0.01) between stage and 5-year overall survival.

Graph (15): The relation between 2-years recurrence, 5-years OS and tumor stage:



The relation between distant metastases, 2-years recurrence, 5-years OS, and other histopathological findings:

The relation between distant metastases, 2-years recurrence, 5-years OS, and other histopathological findings including vascular invasion, tumor necrosis and lymphocytic infiltration are summarized in ***Table 26, 28, 29 and Graph 16, 17, 18*** respectively.

Table (27): Relation between distant metastases, 2-years recurrence, 5-years OS and vascular invasion:

Vascular invasion	*No.*	*Distant Metastases*		*2-ys Recurrence*		*5-ys O.S.*	
		No.	**%**	**No.**	**%**	**No.**	**%**
Negative	***46***	1	2.2	1	2.2	43	93.5
Positive	***30***	20	66.7	24	80	10	33.3
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

N.B.: Statistically high significant correlation is found between vascular invasion and more distant metastasis (P<0.01), 2-years recurrence (P<0.01), and inverse correlation with 5-years survival (P<0.01).

Graph (16): The relation between distant metastases, 2-years recurrence, 5-years OS and vascular invasion:

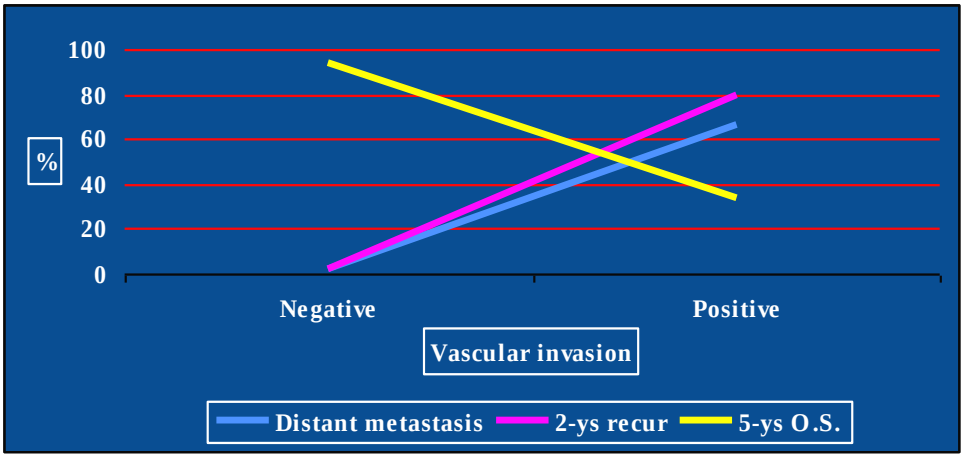


Table (28): The relation between distant metastases, 2-years recurrence, 5-years OS and tumor necrosis:

Tumor necrosis	*No.*	*Distant Metastases*		*2-ys Recurrence*		*5-ys O.S.*	
		No.	**%**	**No.**	**%**	**No.**	%
Negative	***31***	3	9.7	6	19.4	27	**87.1**
Positive	***45***	18	40	19	42.2	26	**57.8**
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

N.B.: Statistically high significant correlation is found between tumor necrosis and more distant metastasis (P<0.01), 2-years recurrence (P<0.5), and inverse correlation with 5-years survival (P<0.01).

Graph (17): The relation between distant metastases, 2-years recurrence, 5-years OS and tumor necrosis:

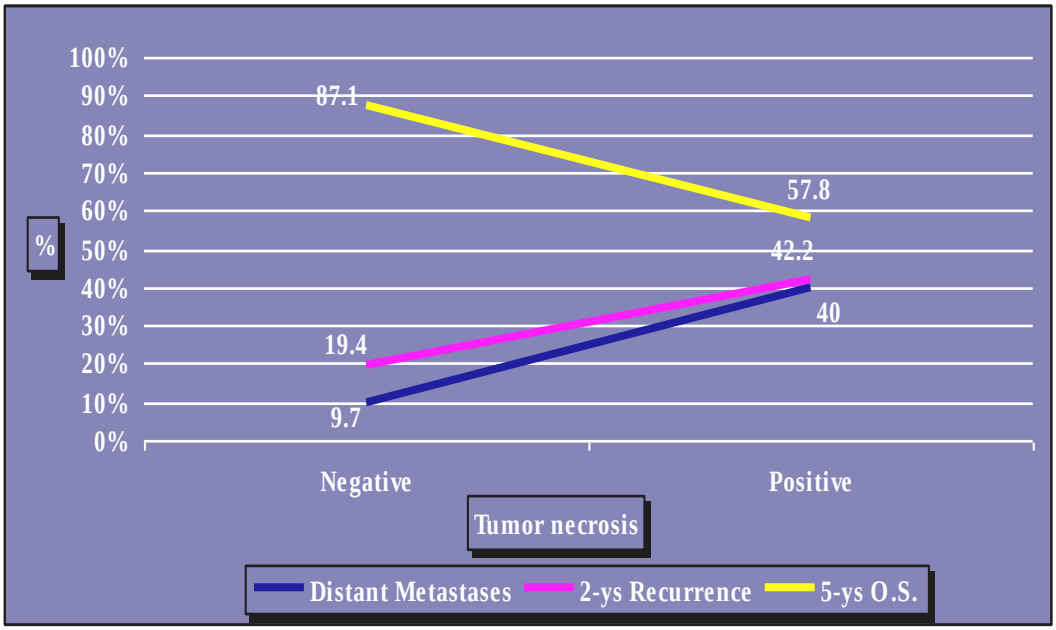
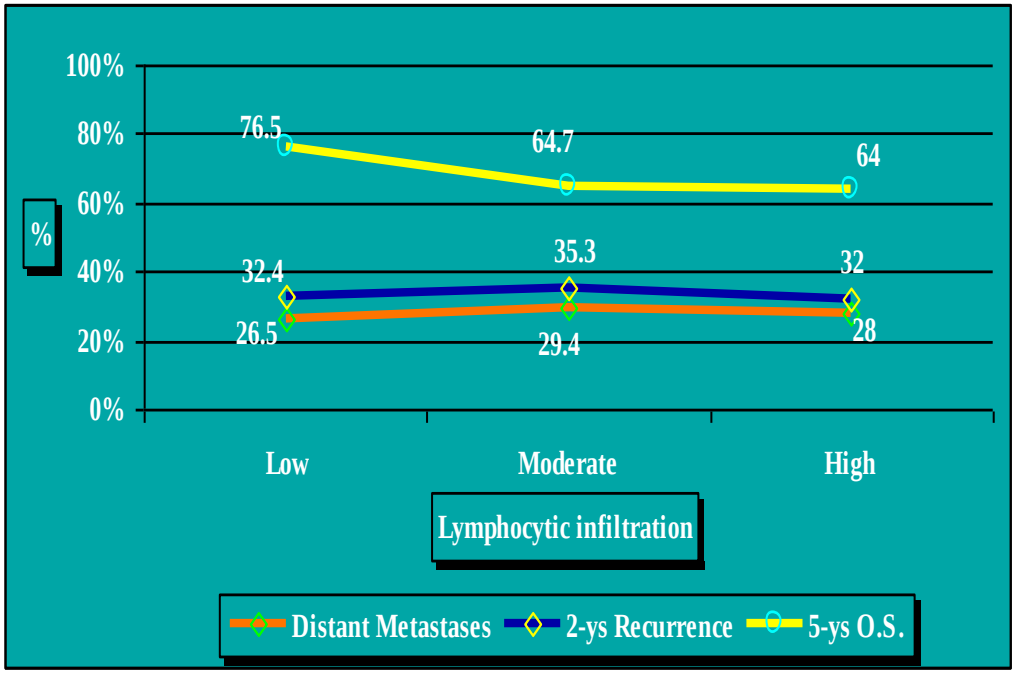


Table (29): The relation between distant metastases, 2-years recurrence, 5-years OS and lymphocytic infiltration:

Lymphocytic infiltrate	*No.*	*Distant Metastases*		*2-ys Recurrence*		*5-ys O.S.*	
		No.	*%*	*No.*	*%*	*No.*	*%*
Low	***34***	9	26.5	11	32.4	26	76.5
Moderate	***17***	5	29.4	6	35.3	11	64.7
High	***25***	7	28	8	32	16	64
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

Graph (18): The relation between distant metastases, 2-years recurrence, 5-years OS and lymphocytic infiltrate:



The relation between tumor stage and other histopathological findings:

The relation between tumor stage and other histopathological findings including lymphocytic infiltration, vascular invasion and tumor necrosis are summarized in ***Table 30, 31 & Graph 19, 20*** respectively.

Table (30): The relation between stage and lymphocytic infiltration:

Stage	No	Lymphocytic infiltration					
		Low		Moderate		High	
		No.	%	No.	%	No.	%
0	6	3	50	0	0	3	50
I	12	2	16.7	3	25	7	58.3
II	31	13	41.9	8	25.8	10	32.3
III	13	8	61.5	3	23.1	2	15.4
IV	30	15	50	6	20	9	30
	92	41	44.6	20	21.7	31	33.7

N.B.: A border-line significant correlation (P=0.09) is found between the stage and Lymphocytic infiltration.

Graph (19): The relation between stage and lymphocytic infiltration:

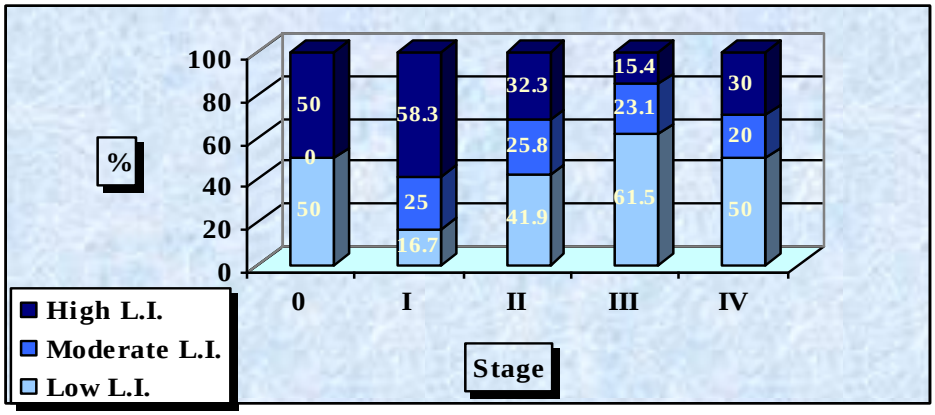
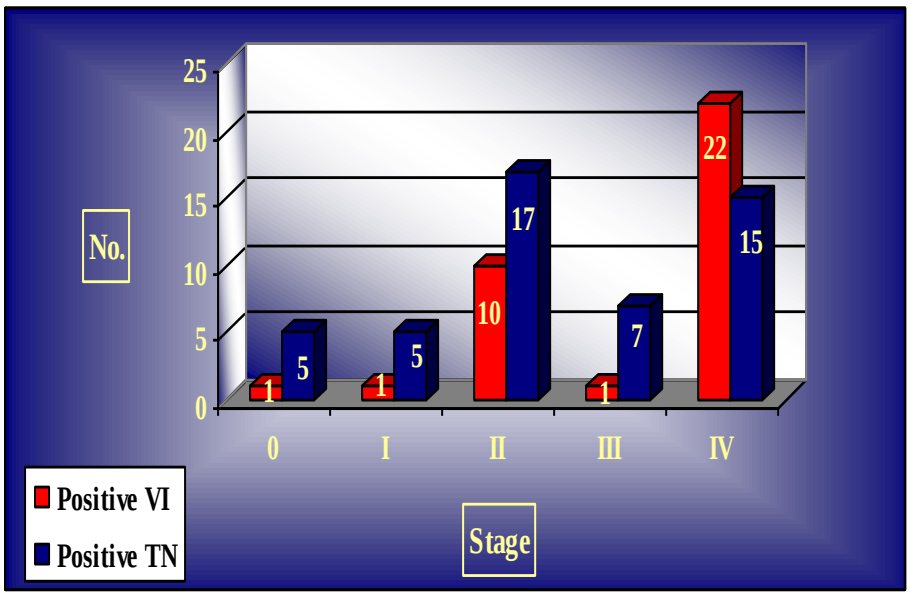


Table (31): Relation between stage, vascular invasion and tumor necrosis:

Stage	No.	Vascular invasion				Tumor necrosis			
		Negative		Positive		Negative		Positive	
		No.	%	No.	%	No.	%	No.	%
0	*6*	5	83.3	1	16.7	1	16.7	5	83.3
I	*12*	11	91.7	1	8.3	7	58.3	5	41.7
II	*31*	21	67.7	10	32.3	14	45.2	17	54.8
III	*13*	12	92.3	1	7.7	6	46.2	7	53.8
IV	*30*	8	26.7	22	73.7	5	16.7	15	83.3
Total	***92***	***57***	***62***	***35***	***38***	***33***	***35.9***	***59***	***64.1***

N.B.: A highly significant correlation (P<0.01) is found between the stage and vascular invasion and border line significant correlation with tumor necrosis (p= 0.07).

Graph (20): The relation between stage, vascular invasion and tumor necrosis:



Evaluation of CD34 expression in different breast cancer cases:

All cases were stained for vascular endothelial cells using CD34 antibody. It gives strong and distinct cytoplasmic reaction with membranous accentuation in the endothelial cells of small vessels. Microvessel density (MVD) ranged from 18.3 to 65 with cut off point of 49.4. Accordingly, cases are classified into 2 groups: Group with high MVD including 55 cases (59.8%) and the other with low MVD including 37 cases (40.2%).

- **Control cases:**

All normal breast tissues showed low MVD with CD34 positive spindle cells in the normal mammary stroma.

- **Ductal Carcinoma In Situ:**

Two out of the 7 DCIS (28.6%) examined showed low MVD. One of them was low grade and was of cribriform and papillary pattern and the other was high grade and was of comedo, cribriform and micropapillary. While the case which was of high grade showed moderate lymphocytic infiltrate and was positive for tumor necrosis, the other which was of low grade showed high lymphocytic infiltrate and was negative for tumor necrosis. Five cases (71.4%) showed high MVD ***(Fig. 28)***, all were high grade ***(Table 32, 33 and Graph 21, 22).*** Two cases showed high lymphocytic infiltrate ***(Fig. 29)*** and 3 showed low infiltrate ***(Table 38 and Graph 27).*** All were positive for tumor necrosis ***(Table 39 and Graph 28).*** One case only was positive for vascular invasion ***(Table 40 and Graph 29)*** and showed high lymphocytic infiltrate.

Fig. (28): CD34 in DCIS: show low MVD. (Streptavidin Biotin x200)

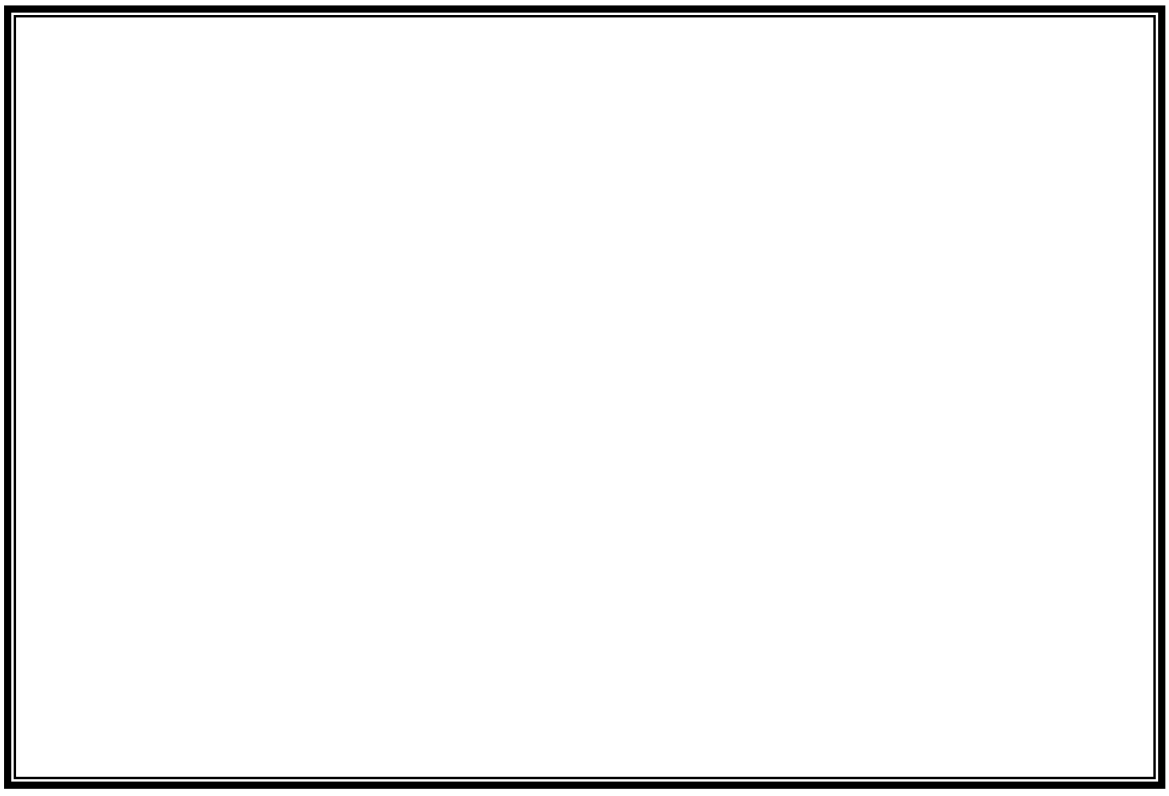


Fig. (29): CD34 in DCIS (Comedo pattern) with high lymphocytic infiltration: show high MVD. (Streptavidin Biotin x100)**.**

- **Infiltrating Duct Carcinoma:**

Twenty-nine cases out of 39 (74.4%) showed high MVD (14 cases 48.3% of GII and 15 cases 51.7% of GIII ***(Fig. 31, 32)***). The 3 cases of GI showed low MVD ***(Fig. 30) (Table 32, 33 and Graph 21, 22).***

Ten out of 16 cases (62.5%) with low lymphocytic infiltration showed high MVD, all cases (100%) with moderate infiltration showed high MVD, and 10 out of 14 (71.4%) with high infiltration ***(Fig. 33)*** showed high MVD ***(Table 38 and Graph 27).***

Twenty-four out of 30 cases (80%) with tumor necrosis showed high MVD, while 5 out of 9 (55.6%) without tumor necrosis showed high MVD ***(Table 39 and Graph 28).***

Seventeen out of 19 (89.5%) cases with vascular invasion showed high MVD, while 12 out of 20 (60%) without vascular invasion showed high MVD ***(Table 40 and Graph 29).***

- **Infiltrating Lobular Carcinoma:**

Six cases out of 20 (30%) showed high MVD (three 50% of GII and three 50% of GIII ***(Fig. 34, 35)***) ***(Table 32, 33 and Graph 21, 22).***

Three out of 12 cases (25%) with low lymphocytic infiltration showed high MVD, 2 cases (50%) with moderate infiltration showed high MVD, while one out of 4 (25%) with high infiltration showed high MVD ***(Table 38 and Graph 27).***

Three out of 7 cases (42.9%) with tumor necrosis showed high MVD, while 3 out of 13 (23.1%) without tumor necrosis showed high MVD ***(Table 39 and Graph 28).***

Three out of 5 (60%) cases with vascular invasion showed high MVD, while 3 out of 15 (20%) without vascular invasion showed high MVD ***(Table 40 and Graph 29).***

Fig. (30): CD34 in IDC GI: show low MVD. (Streptavidin Biotin x200)

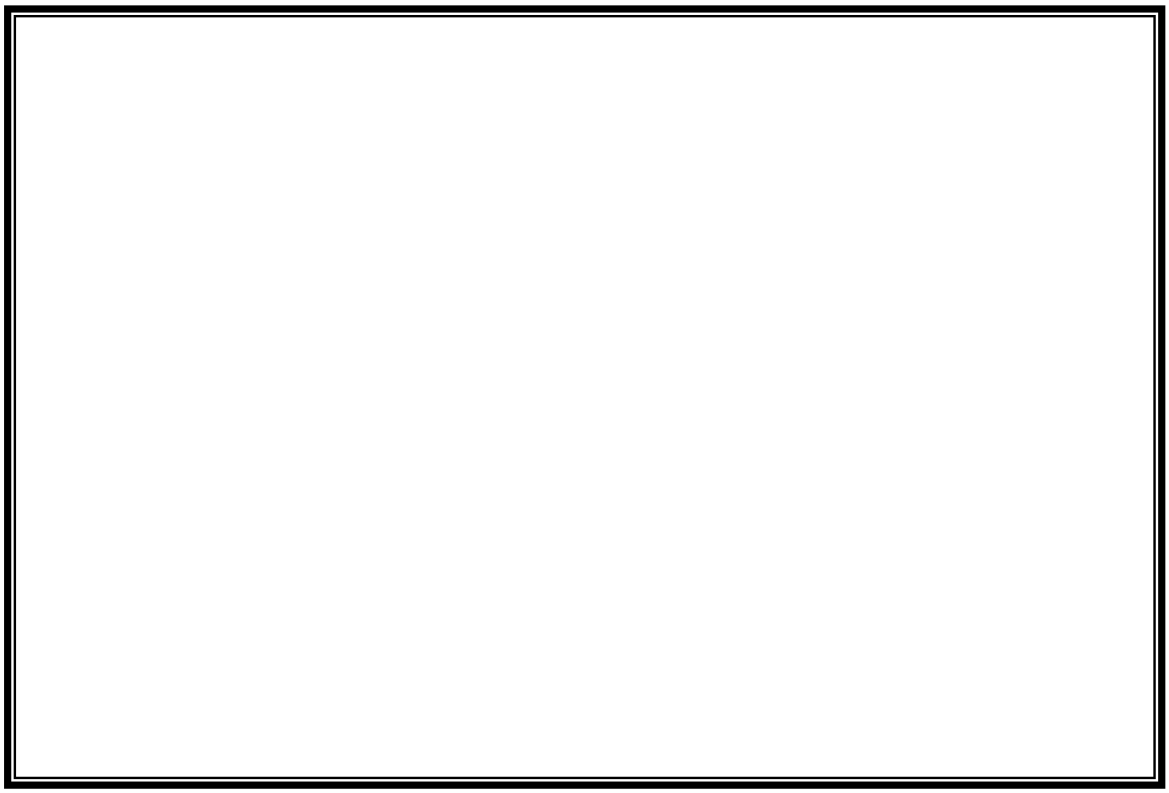


Fig. (31): CD34 in IDC GII: show higher MVD than in GI. (Streptavidin Biotin x200)

Fig. (32): CD34 in IDC GIII: show high MVD. (Streptavidin Biotin x200)

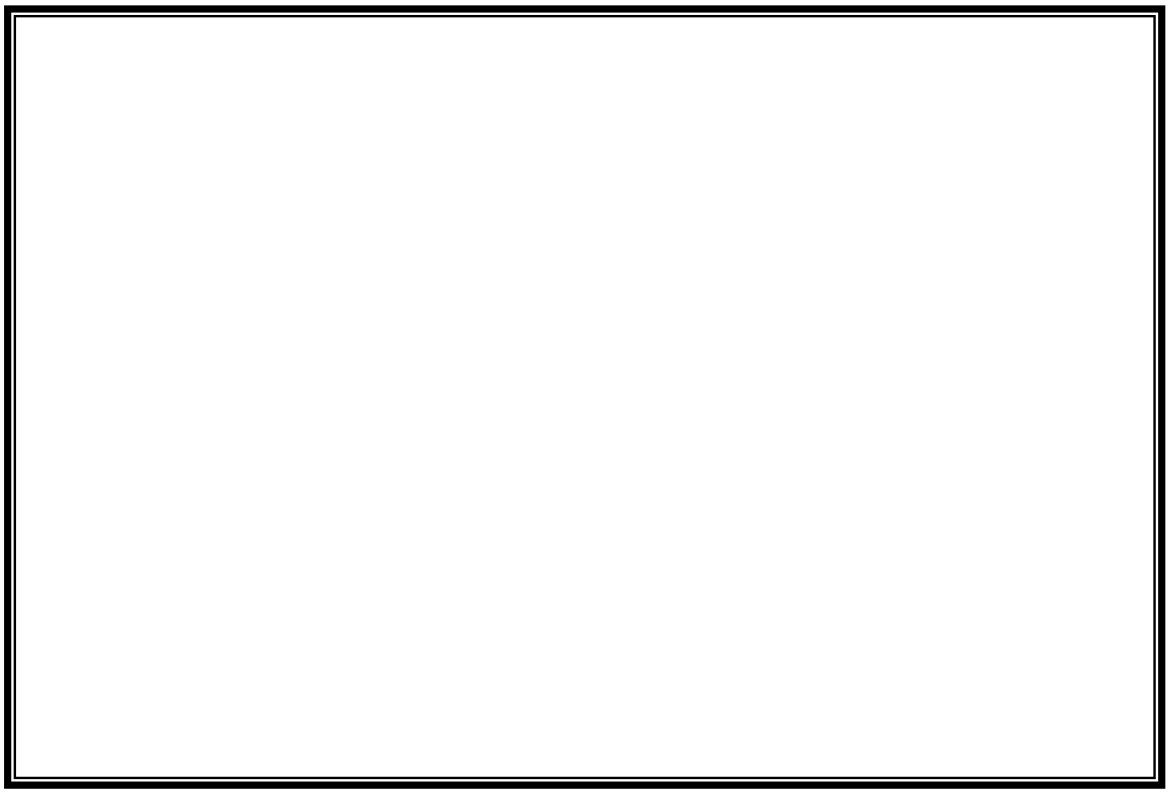


Fig. (33): CD34 in IDC with high lymphocytic infiltration: show high MVD. (Streptavidin Biotin x200)

Fig. (34): CD34 in ILC GII: show low MVD. (Streptavidin Biotin x200)

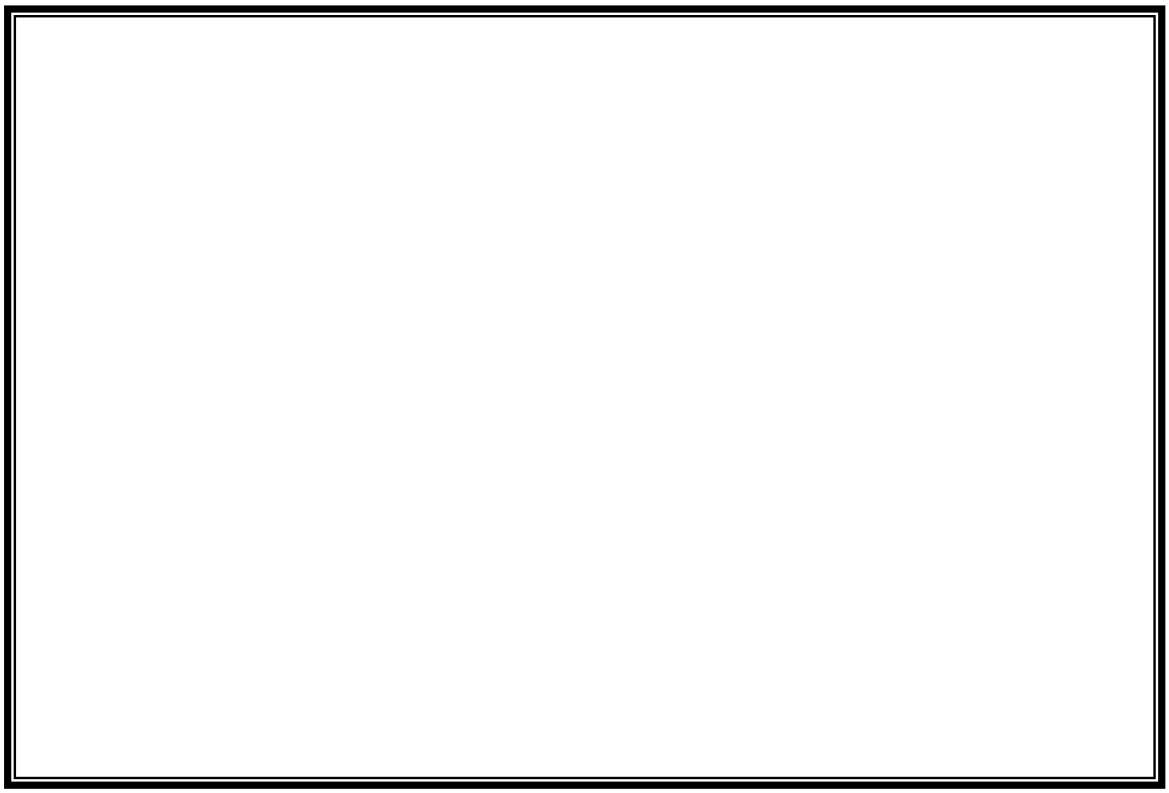


Fig. (35): CD34 in ILC GIII: show high MVD. (Streptavidin Biotin x200)

- **Medullary Carcinoma *(Fig. 36)*:**

Three cases out of 6 (50%) showed high MVD (all 100% were of GIII). The 3 cases of GII showed low MVD ***(Table 32, 33 and Graph 21, 22).***

The case with low lymphocytic infiltration showed low MVD, the case with moderate infiltration showed high MVD, and 2 out of 4 (50%) with high infiltration showed high MVD ***(Table 38 and Graph 27).***

Three out of 5 cases (60%) with tumor necrosis showed high MVD, while the case without tumor necrosis showed low MVD ***(Table 39 and Graph 28).***

The 2 cases with vascular invasion showed high MVD, while one out of 4 (25%) without vascular invasion showed high MVD ***(Table 40 and Graph 29).***

- **Mucinous Carcinoma *(Fig. 37)*:**

Two cases out of 6 (33.3%) showed high MVD (one case 50% were of GII and one case 50% of GIII) ***(Table 32, 33 and Graph 21, 22).***

One out of 4 cases (25%) with low lymphocytic infiltration showed high MVD, none of cases with moderate infiltration showed high MVD, while the case with high infiltration showed high MVD ***(Table 38 and Graph 27).***

One out of 2 cases (50%) with tumor necrosis showed high MVD, while one out of 4 (25%) without tumor necrosis showed high MVD ***(Table 39 and Graph 28).***

Two out of the 6 cases (33.3%) without vascular invasion showed high MVD ***(Table 40 and Graph 29).***

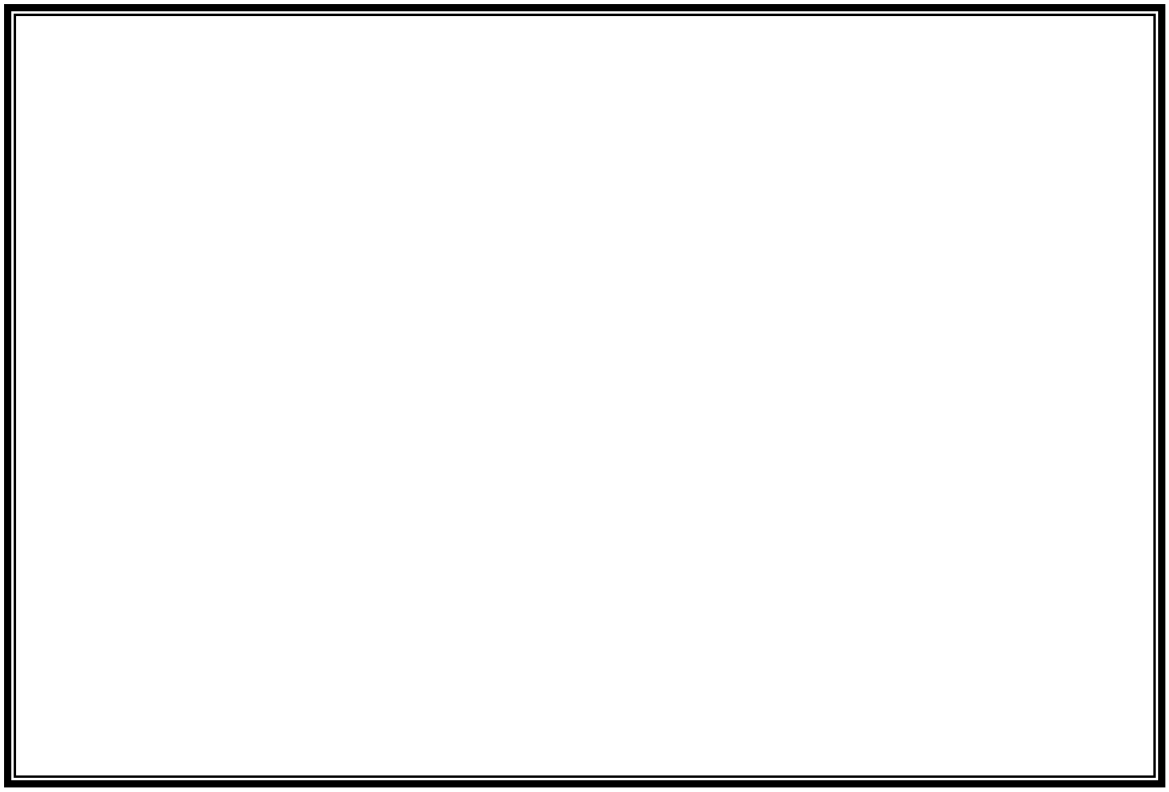


Fig. (36): CD34 in medullary carcinoma: show low MVD. (Streptavidin Biotin x200)

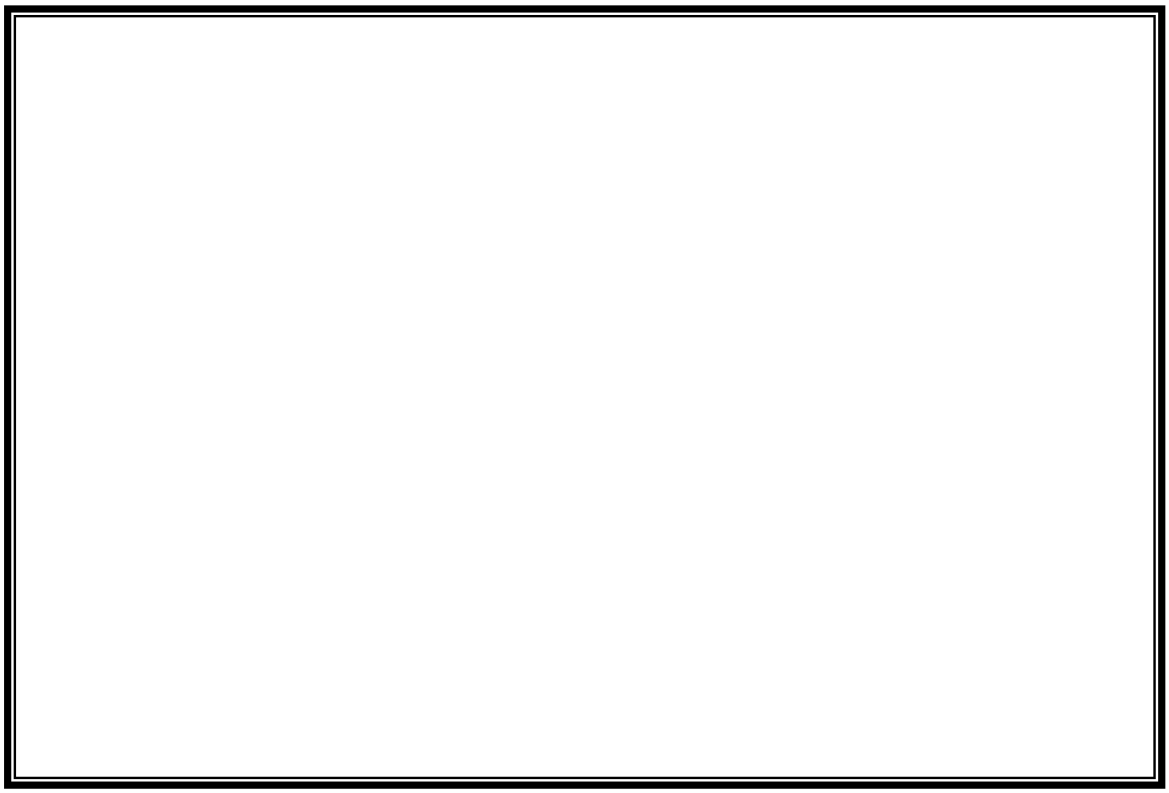


Fig. (37): CD34 in mucinous carcinoma: show low MVD. (Streptavidin Biotin x200)

- **Papillary Carcinoma *(Fig. 38)*:**

Three cases out of 6 (50%) showed high MVD. The 3 cases were of GII ***(Table 32, 33 and Graph 21, 22).***

The three cases with low lymphocytic infiltration showed low MVD, while the 3 with high infiltration showed high MVD ***(Table 38 and Graph 27).***

The three cases with tumor necrosis showed high MVD, while the 3 without tumor necrosis showed low MVD ***(Table 39 and Graph 28).***

Three out of 6 (50%) cases with vascular invasion showed high MVD ***(Table 40 and Graph 29).***

- **Paget's disease *(Fig. 39)*:**

Seven cases out of 8 (87.5%) showed high MVD (one case 14.3% was of GI, 3 cases 42.9% of GII and 3 cases 42.9% of GIII) ***(Table 32, 33 and Graph 21, 22).***

The 2 cases with low lymphocytic infiltration showed high MVD, 3 out of 4 (75%) with moderate infiltration showed high MVD, and the 2 with high infiltration showed high MVD ***(Table 38 and Graph 27).***

The 6 cases with tumor necrosis showed high MVD, while one out of 2 (50%) without tumor necrosis showed high MVD ***(Table 39 and Graph 28).***

The 2 cases with vascular invasion showed high MVD, while 5 out of 6 (83.3%) without vascular invasion showed high MVD ***(Table 40 and Graph 29).***

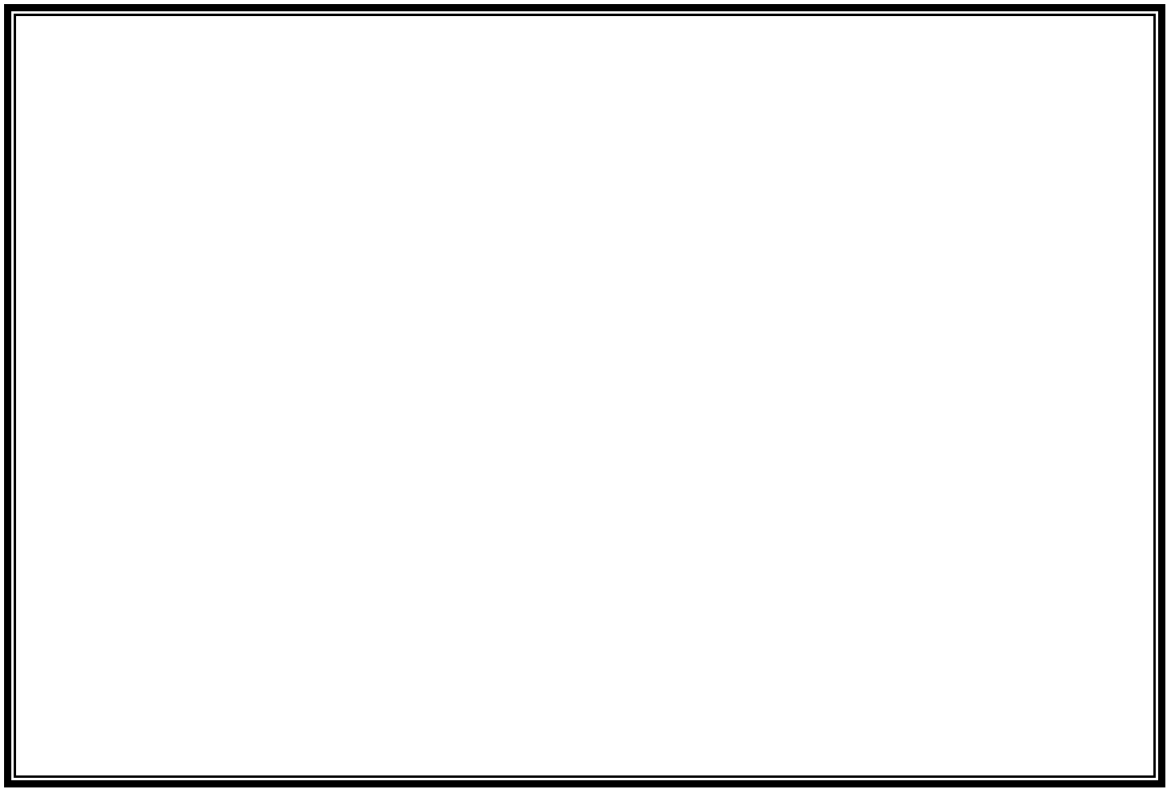


Fig. (38): CD34 in papillary carcinoma: show low MVD. (Streptavidin Biotin x200)

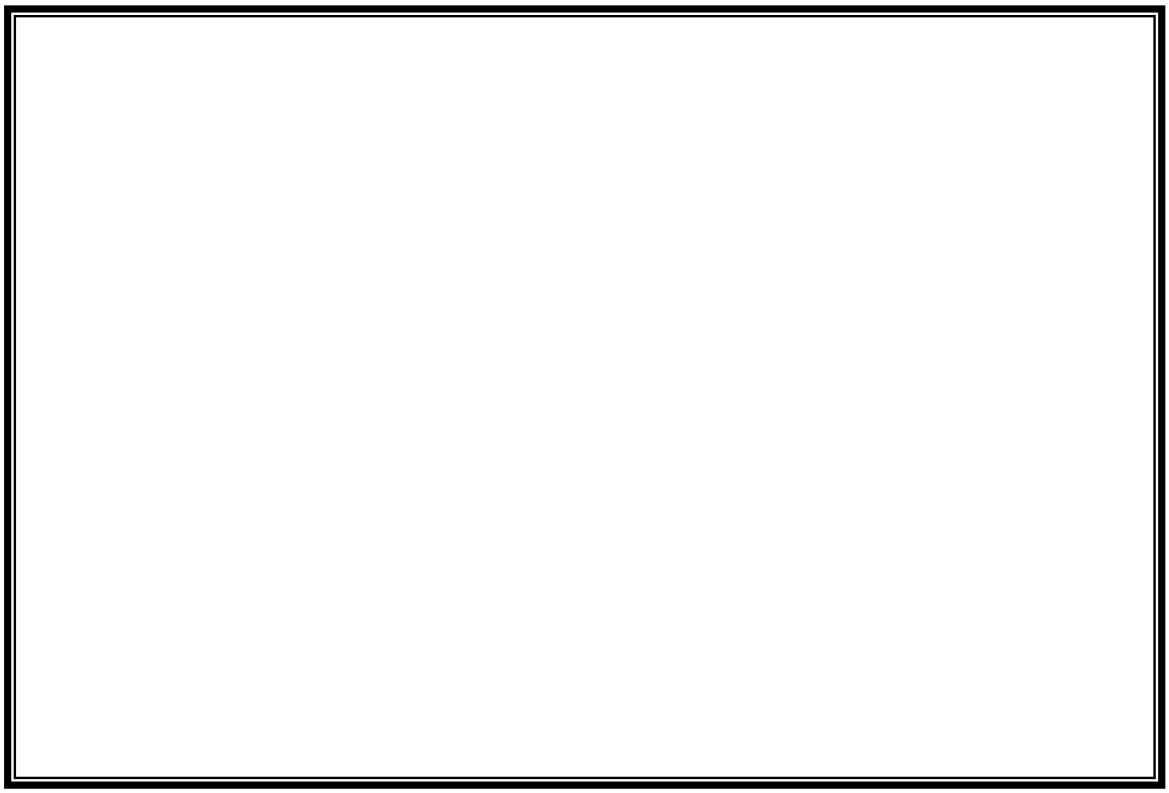


Fig. (39): CD34 in paget's disease: show high MVD. (Streptavidin Biotin x200)

Table (32): MVD in different breast cancer cases:

Type	No.	MVD			
		Low	%	High	%
DCIS	*7*	2	28.6	5	71.4
IDC	*39*	10	25.6	29	74.4
ILC	*20*	14	70	6	30
Medullary carcinoma	*6*	3	50	3	50
Mucinous carcinoma	*6*	4	66.7	2	33.3
Papillary carcinoma	*6*	3	50	3	50
IDC with pagetoid extension	*8*	1	12.5	7	87.5
Total	*92*	*37*	*40.2*	*55*	*59.8*

Graph (21): CD34 expression in different breast cancer cases.

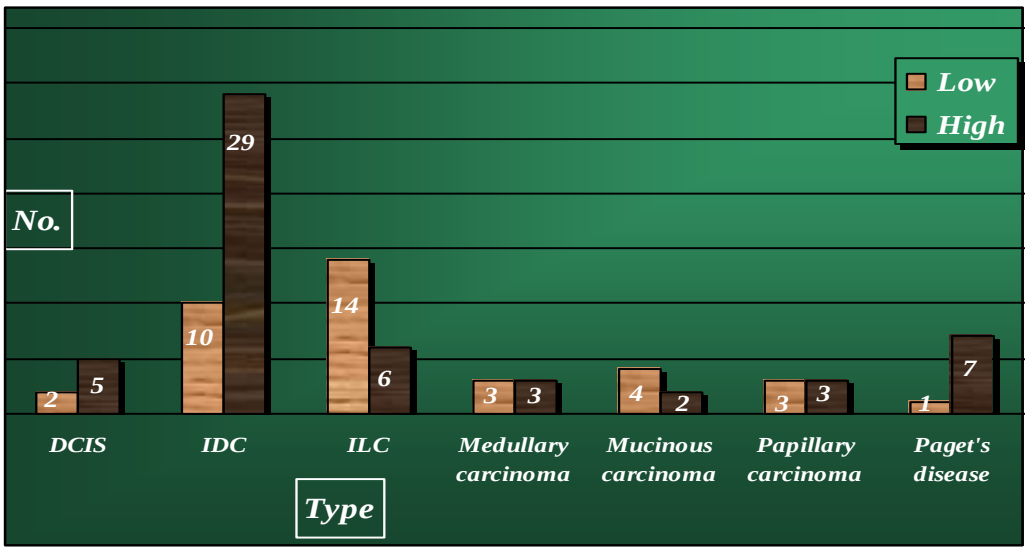
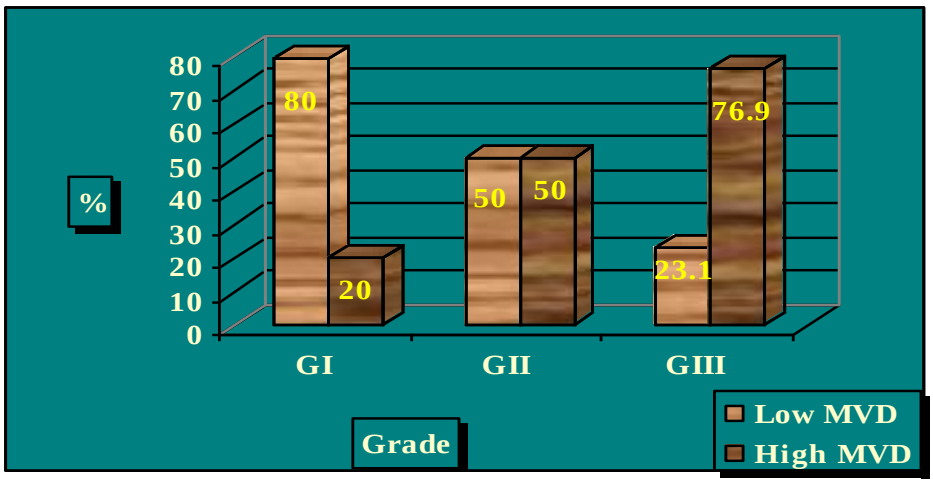


Table (33): MVD in different grades of breast cancer cases.

TUMOR GRADE	MVD				TOTAL
	Low		High		
	No.	%	No.	%	
GI	4	80	1	20	5
GII	24	50	24	50	48
GIII	9	23.1	30	76.9	39
Total	37	40.2	55	59.8	92

N.B.: A highly significant correlation (P< 0.01) was found between MVD and the grade of breast carcinoma.

Graph (22): MVD in different grades of breast cancer cases:



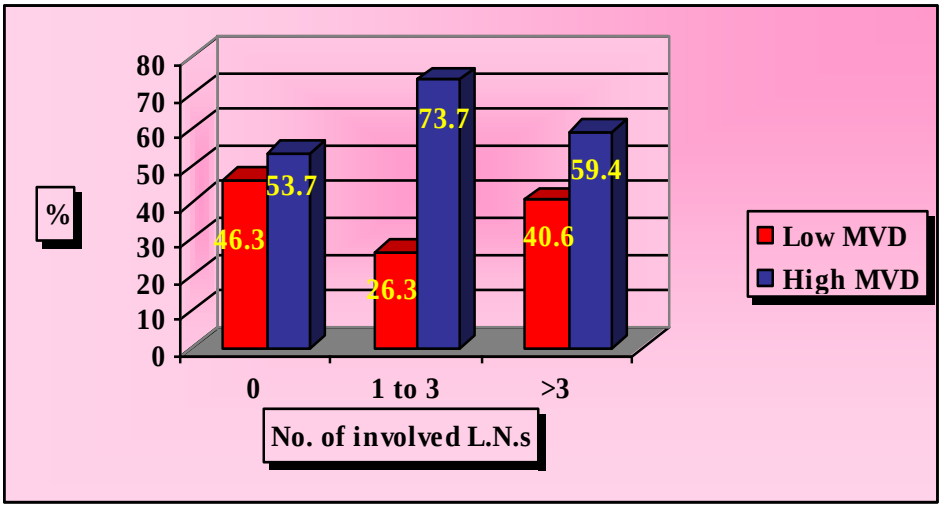
Relation between MVD; L.N. status, Tumor size and stage:

As regards lymph node status, 19 cases (46.3%) out of 41 without L.N. metastasis showed low MVD, 5 (26.3%) out of 19 with 1-3 L.N.s metastases show low MVD, and 13 (40.6%) out of 32 with >3 involved L.N.s showed low MVD ***(Table 34 & Graph 23).***

Table (34): MVD in relation to LN metastases:

No. of involved L.N.s	*MVD*				*Total*
	Low		*High*		
	No.	*%*	*No.*	*%*	
0	19	46.3	22	53.7	***41***
1-3	5	26.3	14	73.7	***19***
>3	13	40.6	19	59.4	***32***
Total	***37***	***40.2***	***55***	***59.8***	***92***

Graph (23): MVD in relation to L.N. metastases:

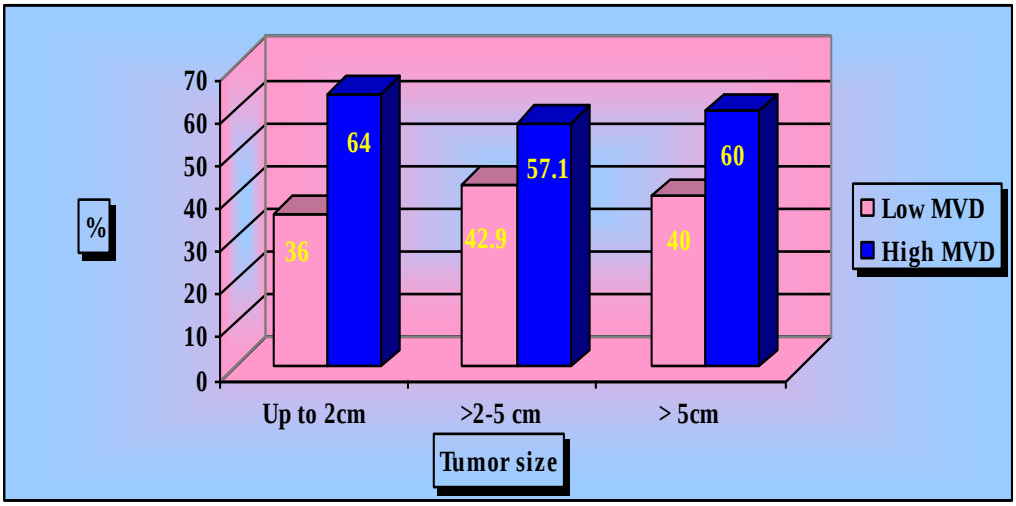


As regards tumor size, 9 cases (36%) out of 25 with tumor size up to 2cm showed low MVD, 18 (42.9%) out of 42 measuring >2-5 cm showed low MVD, while 10 (40%) out of 25 measuring >5 cm showed low MVD ***(Table 35 & Graph 24).***

Table (35): MVD in relation to tumor size:

Tumor Size	*MVD*				*Total*
	Low		*High*		
	No.	*%*	*No.*	*%*	
Up to 2cm	9	36	16	64	*25*
>2-5 cm	18	42.9	24	57.1	*42*
> 5cm	10	40	15	60	*25*
Total	*37*	*40.2*	*55*	*59.8*	*92*

Graph (24): MVD in relation to tumor size:

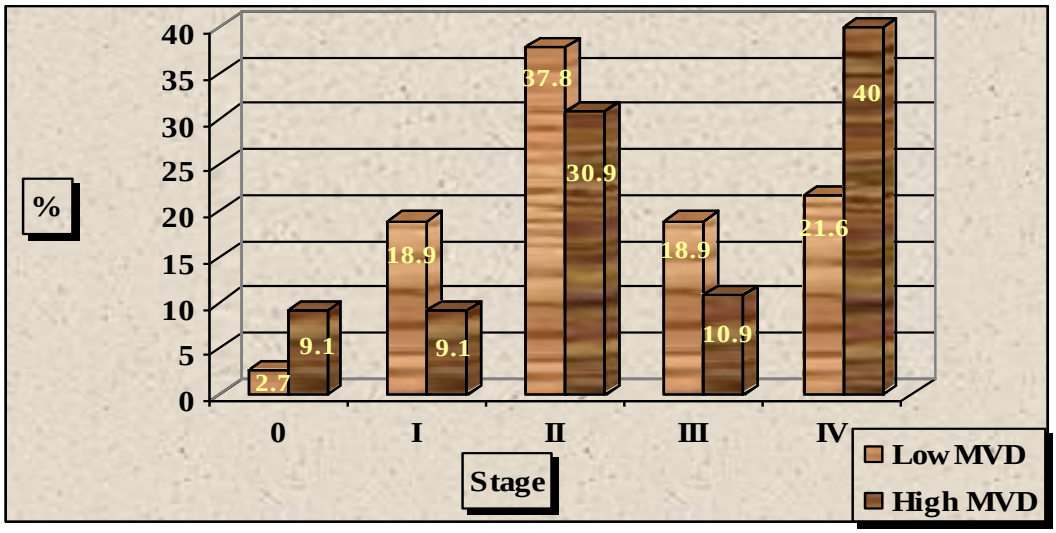


Regarding the stage, 5 cases (9.1%) out of 55 with high MVD were in stage 0, 5 (9.1%) were in stage I, 17 (30.9%) stage II, 6 (10.9%) stage III, while 22 (40%) were in stage IV ***(Table 36 & Graph 25).***

Table (36): MVD in relation to tumor stage:

MVD	No.	Stage									
		0		I		II		III		IV	
		No.	%	No.	%	No.	%	No.	%	No.	%
Low	37	1	2.7	7	18.9	14	37.8	7	18.9	8	21.6
High	55	5	9.1	5	9.1	17	30.9	6	10.9	22	40
Total	92	6	6.5	12	13	31	33.7	13	14.1	30	32.6

Graph (25): MVD in relation to tumor stage:



Relation between MVD, distant metastases (DM), 2-years recurrence, and 5-years OS:

The relation between MVD to distant metastasis, 2-years recurrence and 5-years O.S. is summarized in ***Table 37 and Graph 26:***

Table (37): MVD in relation to distant metastases, 2-years recurrence, and 5-years overall survival:

MVD	*No*	*Distant Metastases*		*2-ys Recurrence*		*5-ys Overall Survival*	
		No.	**%**	**No.**	**%**	**No.**	**%**
Low	***32***	4	12.5	5	15.6	28	87.5
High	***44***	17	38.6	20	45.5	25	56.8
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

N.B.: A significant correlation (P<0.05) is found between MVD, distant metastases, highly significant correlation (P<0.01) with 2-years recurrence; and highly inverse correlation (P<0.01) between MVD and 5-years overall survival.

Graph (26): MVD in relation to distant metastases, 2-years recurrence, and 5-years overall survival:

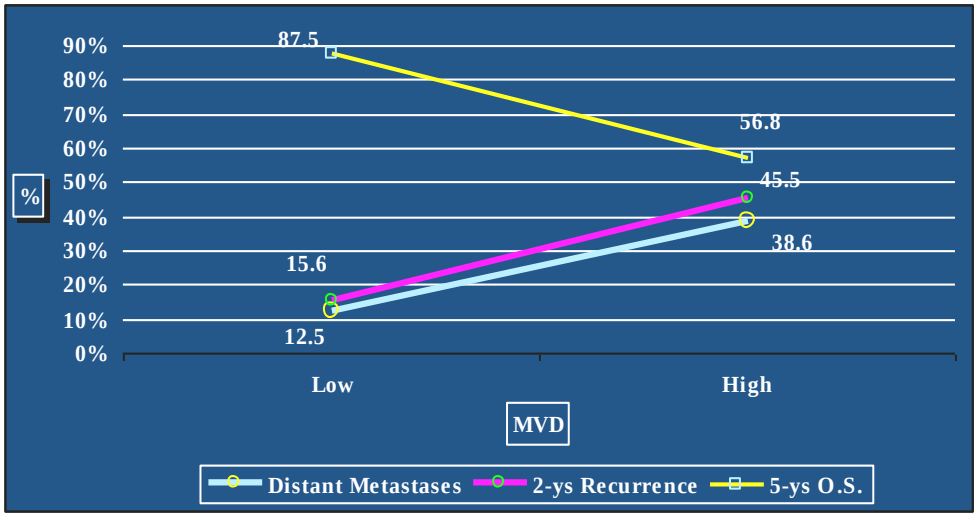


Table (38): MVD in relation to lymphocytic infiltrate:

LYMPHOCYTIC INFILTRATE	MVD				TOTAL
	Low		High		
	No.	%	No.	%	
Low	22	53.7	19	46.3	**41**
Moderate	5	25	15	75	**20**
High	10	32.3	21	67.7	**31**
Total	**37**	**40.2**	**55**	**59.8**	**92**

N.B.: A border line significant positive correlation (P<0.05) is found between MVD and lymphocytic infiltrate (P=0.054)

Graph (27): MVD in relation to lymphocytic infiltrate:

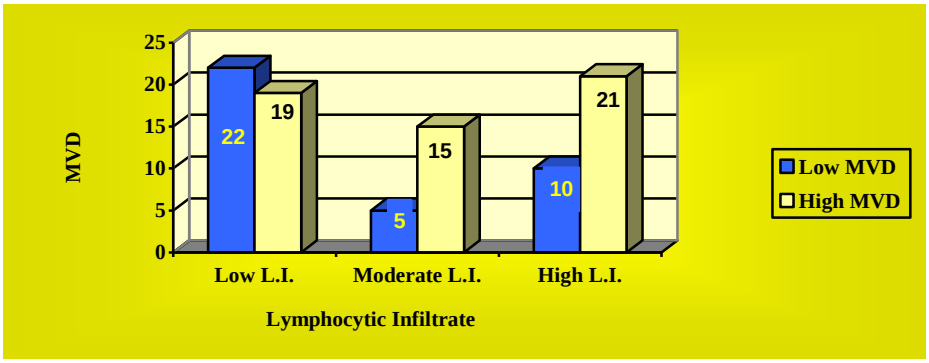


Table (39): MVD in relation to tumor necrosis:

TUMOR NECROSIS	MVD				TOTAL
	Low		High		
	No.	%	No.	%	
Negative	23	69.7	10	30.3	**33**
Positive	14	23.7	45	76.3	**59**
Total	**37**	**40.2**	**55**	**59.8**	**92**

N.B.: A highly significant correlation (P< 0.01) was found between MVD and the presence of tumor necrosis.

Graph (28): MVD in relation to tumor necrosis:

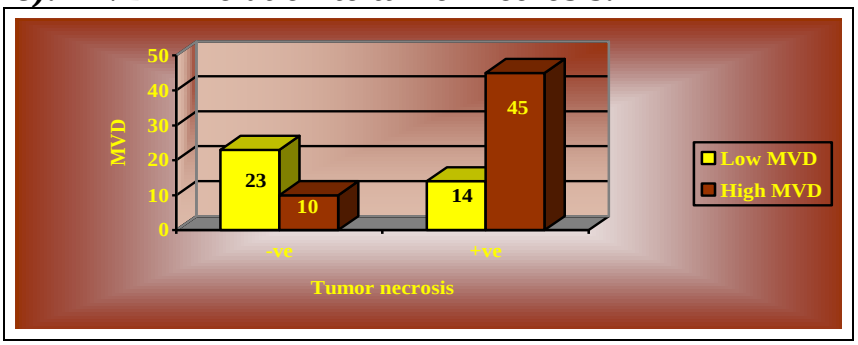
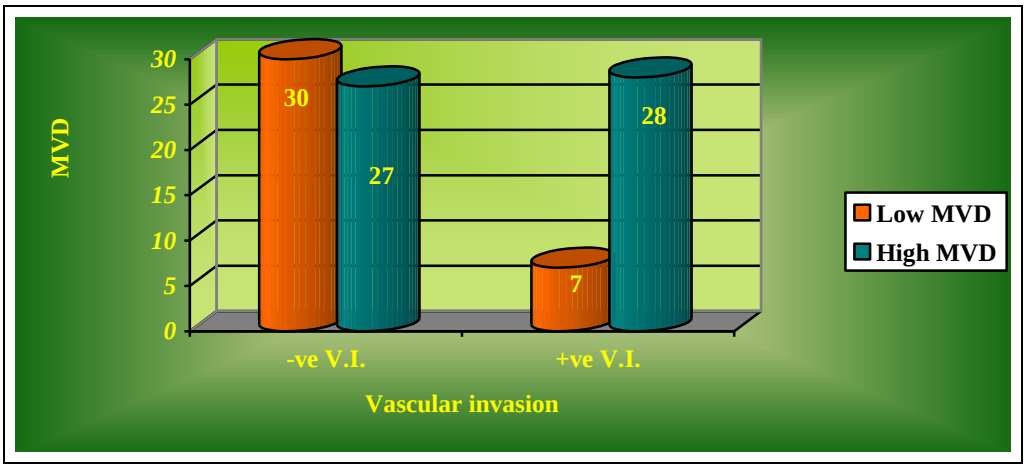


Table (40): MVD in relation to vascular invasion:

Vascular invasion	MVD				Total
	Low		High		
	No.	%	No.	%	
Negative	30	52.6	27	47.4	57
Positive	7	20	28	80	35
Total	37	40.2	55	59.8	92

N.B.: A highly significant correlation (P< 0.01) was found between MVD and the presence of vascular invasion.

Graph (29): MVD in relation to vascular invasion:



Evaluation of CD68 expression in different breast cancer cases:

All cases were stained for macrophages using CD68 antibody. It gives strong and distinct cytoplasmic granular staining of macrophages. The TAM density varied from 5.8 to 40.8 with a mean value of 20.87 per field (x400). Fifty cases (54.3%) showed high TAM density**.**

- **Control cases:**

  All normal breast tissues showed absence of macrophage infiltration.

- **Ductal Carcinoma In Situ *(Fig. 40)*:**

  - Three out of the 7 DCIS (42.9%) examined showed low TAM density ***(Table 41 and Graph 30).***

  One of them was of cribriform and papillary pattern, the second was of comedo and solid pattern and the last was comedo, cribriform and micropapillary.

  Two of them were negative for vascular invasion, one of these 2 was of high grade showing moderate lymphocytic infiltrate and positive for tumor necrosis, the other which was of low grade showing high lymphocytic infiltrate and was negative for tumor necrosis. While the case which was positive for vascular invasion was of high grade showing high lymphocytic infiltrate and positive for tumor necrosis.

  - Four cases (57.1%) showed high TAM density ***(Table 41 and Graph 30).***

  All were high grade ***(Table 42 and Graph 31).***

One showed high lymphocytic infiltrate ***(Fig. 41)*** and 3 showed low infiltrate ***(Table 47 and Graph 36).***

All were positive for tumor necrosis ***(Table 48 and Graph 37).***

All were negative for vascular invasion ***(Table 49 and Graph 38).***

All cases (100%) with high TAM density showed high MVD, while 2 out of 3 (66.7%) with low TAM density showed low MVD ***(Table 50 and Graph 39).***

- **Infiltrating Duct Carcinoma:**

- Twenty-six cases out of 39 (66.7%) showed high TAM density (14 cases 53.8% were of GII ***(Fig. 43)*** and 12 cases 46.2% of GIII ***(Fig. 44)***). The 3 cases of IDC GI ***(Fig. 42)*** showed low TAM density ***(Table 41, 42 and Graph 30, 31).***

Nine out of 16 cases (56.3%) with low lymphocytic infiltration showed high TAM density, 7 out of 9 (77.8%) with moderate infiltration showed high TAM density, and 10 out of 14 (71.4%) with high infiltration showed high TAM density ***(Table 47 and Graph 36).***

Twenty-two out of 30 cases (73.3%) with tumor necrosis showed high TAM density, while 4 out of 9 (44.4%) without tumor necrosis showed high TAM density ***(Table 48 and Graph 37).***

Fourteen out of 19 (73.7%) cases with vascular invasion showed high TAM density, while 12 out of 20 (60%) without vascular invasion showed high TAM density ***(Table 49 and Graph 38).***

Twenty-two out of 26 cases (84.6%) with high TAM density showed high MVD, while 6 out of 13 (46.2%) with low TAM density showed low MVD ***(Table 50 and Graph 39).***

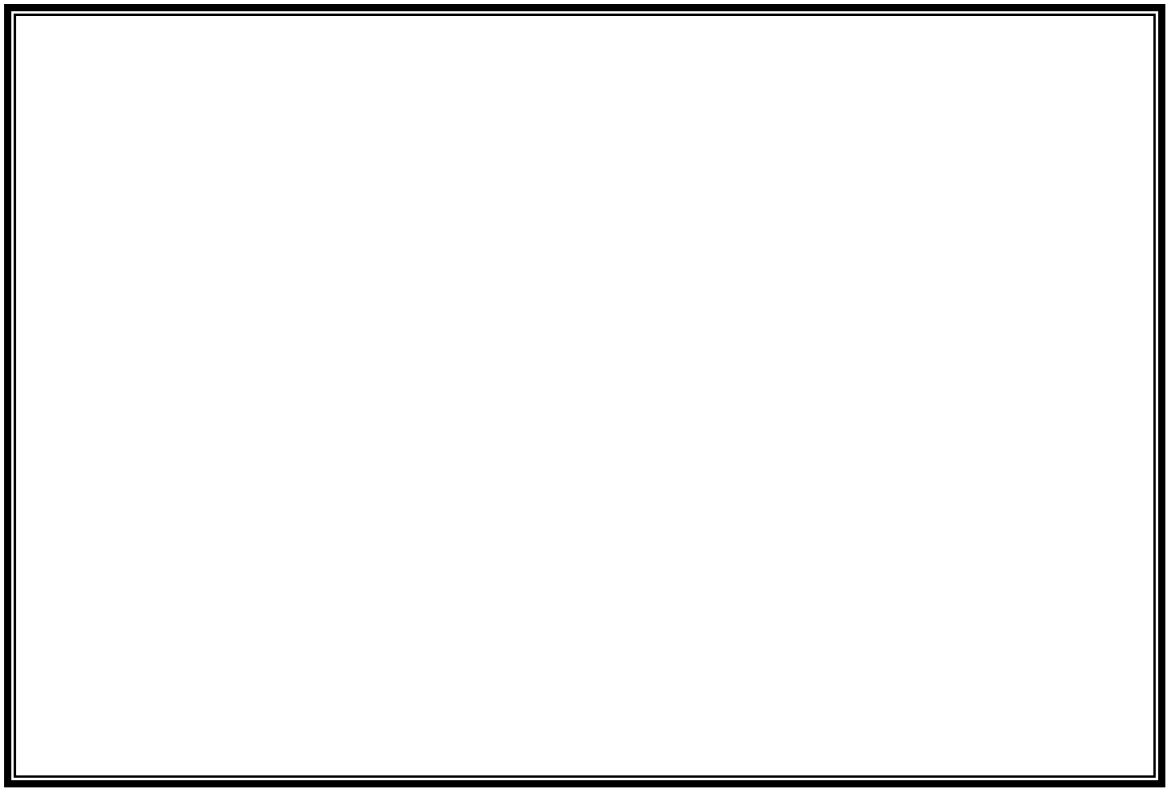


Fig. (40): CD68 in DCIS: show low TAM density. (Streptavidin Biotin x100)

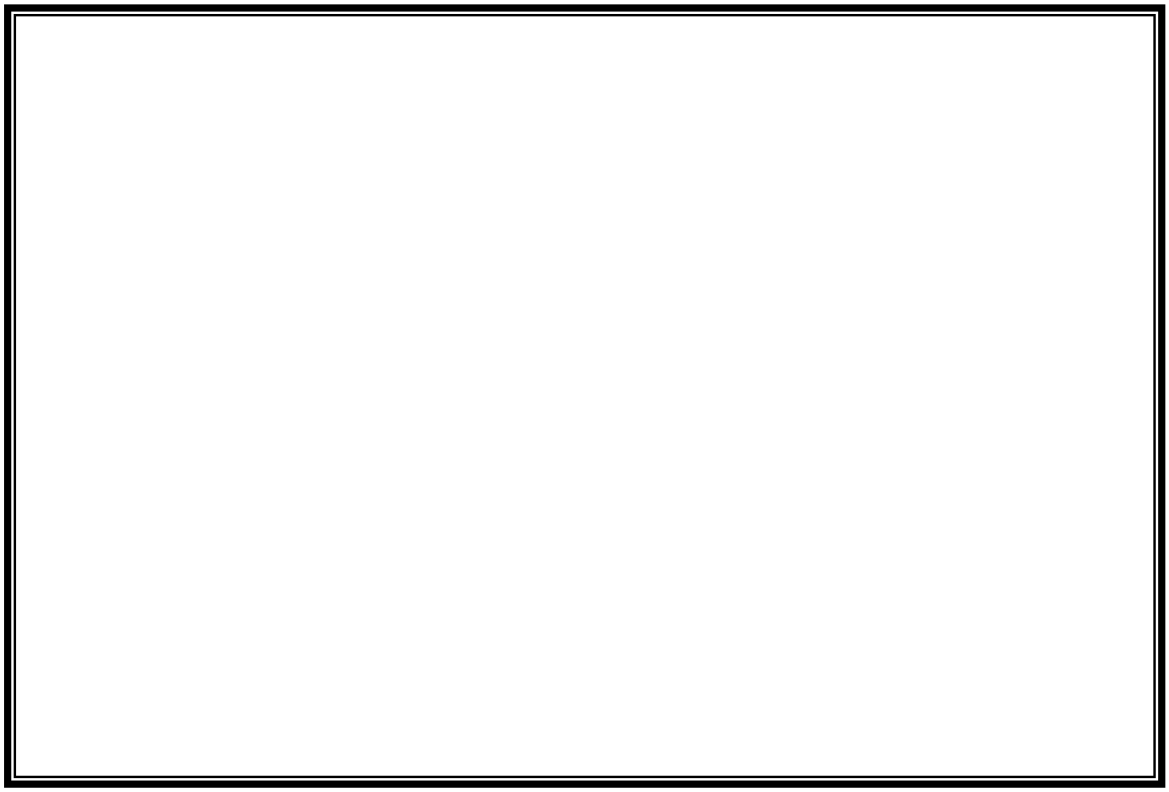


Fig. (41): CD68 in DCIS with high lymphocytic infiltration: show high TAM density. (Streptavidin Biotin x200)

Fig. (42): CD68 in IDC GI: show low TAM density. (Streptavidin Biotin x400)

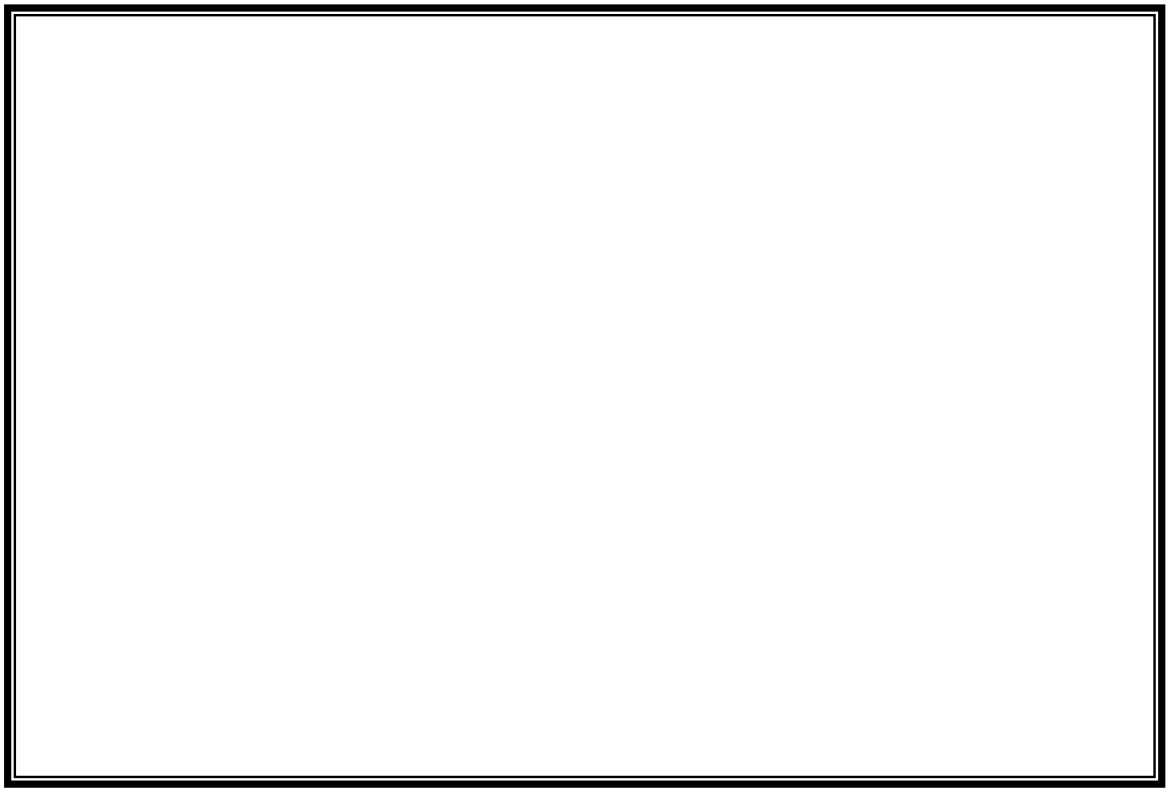


Fig. (43): CD68 in IDC GII: show higher TAM density than in GI. (Streptavidin Biotin x200)

Fig. (44): CD68 in IDC GIII: show high TAM density. (Streptavidin Biotin x200)

- **Infiltrating Lobular Carcinoma:**

Seven cases out of 20 (35%) showed high TAM density ***(Fig. 45)*** (3 cases 42.9% were of GII and 4 cases 57.1% of GIII) ***(Table 41, 42 and Graph 30, 31).***

Four out of 12 cases (33.3%) with low lymphocytic infiltration showed high TAM density, one case (25%) with moderate infiltration showed high TAM density, while 2 out of 4 (50%) with high infiltration showed high TAM density ***(Table 47 and Graph 36).***

Five out of 7 cases (71.4%) with tumor necrosis showed high TAM density, while 2 out of 13 (15.4%) without tumor necrosis showed high TAM density ***(Table 48 and Graph 37).***

Three out of 5 (60%) cases with vascular invasion showed high TAM density, while 4 out of 15 (26.7%) without vascular invasion showed high TAM density ***(Table 49 and Graph 38).***

Five out of 7 cases (71.4%) with high TAM density showed high MVD, while 12 out of 13 (92.3%) with low TAM density showed low MVD ***(Table 50 and Graph 39).***

- **Medullary Carcinoma:**

Four cases out of 6 (66.7%) showed high TAM density ***(Fig. 46)*** (one case 25% was of GII and 3 cases 75% were of GIII) ***(Table 41, 42 and Graph 30, 31).***

The case with low lymphocytic infiltration showed low TAM density, the case with moderate infiltration showed high TAM density, and 3 out of 4 (75%) with high infiltration showed high TAM density ***(Table 47 and Graph 36).***

Four out of 5 cases (80%) with tumor necrosis showed high TAM density, while the case without tumor necrosis showed low TAM density ***(Table 48 and Graph 37).***

The 2 cases with vascular invasion showed high TAM density, while 2 out of 4 (50%) without vascular invasion showed high TAM density ***(Table 49 and Graph 38).***

Three out of 4 cases (75%) with high TAM density showed high MVD, while both cases (100%) with low TAM density showed low MVD ***(Table 50 and Graph 39).***

- **Mucinous Carcinoma *(Fig. 47)*:**

One case out of 6 (16.7%) showed high TAM density and was of GIII ***(Table 41, 42 and Graph 30, 31).***

None of cases with low or moderate lymphocytic infiltration showed high TAM density, while the case with high infiltration showed high TAM density ***(Table 47 and Graph 36).***

One out of 2 cases (50%) with tumor necrosis showed high TAM density, while all cases (100%) without tumor necrosis showed low TAM density ***(Table 48 and Graph 37).***

One out of the 6 cases (16.7%) without vascular invasion showed high TAM density ***(Table 49 and Graph 38).***

The case with high TAM density showed high MVD, while 4 out of 5 (80%) with low TAM density showed low MVD ***(Table 50 and Graph 39).***

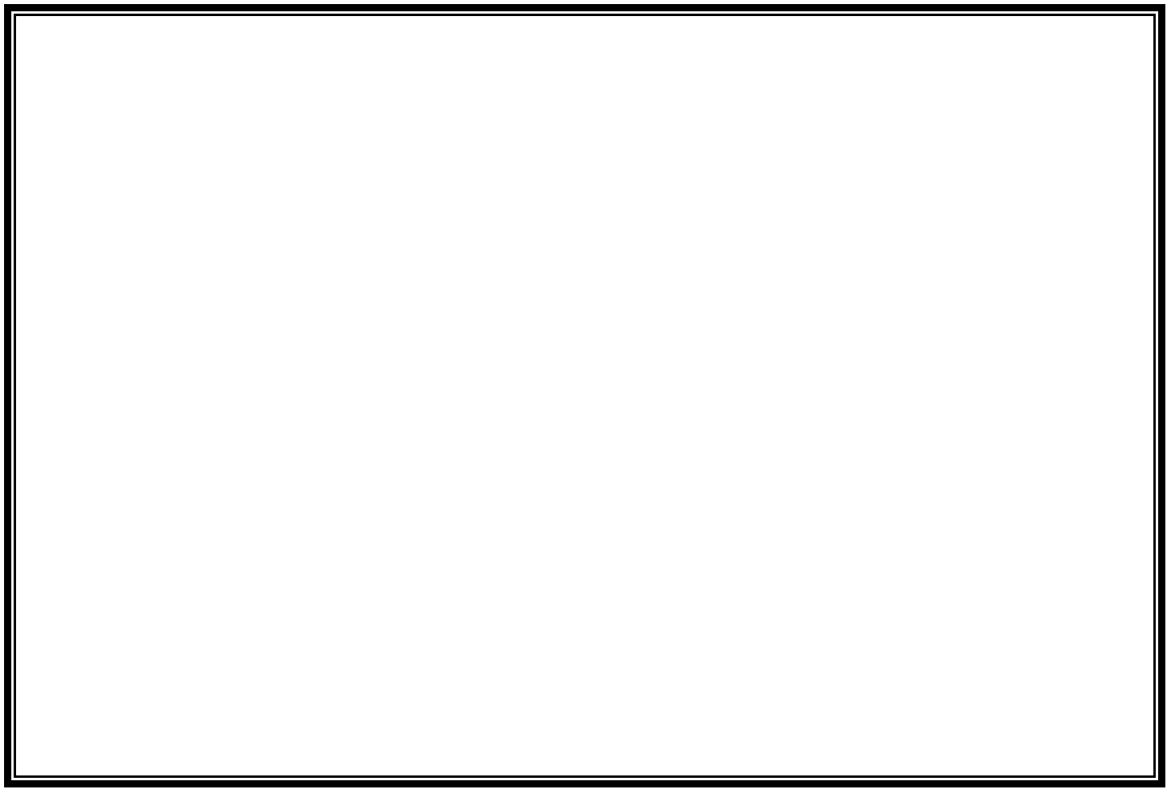


Fig. (45): CD68 in ILC: show high TAM density. (Streptavidin Biotin x200)

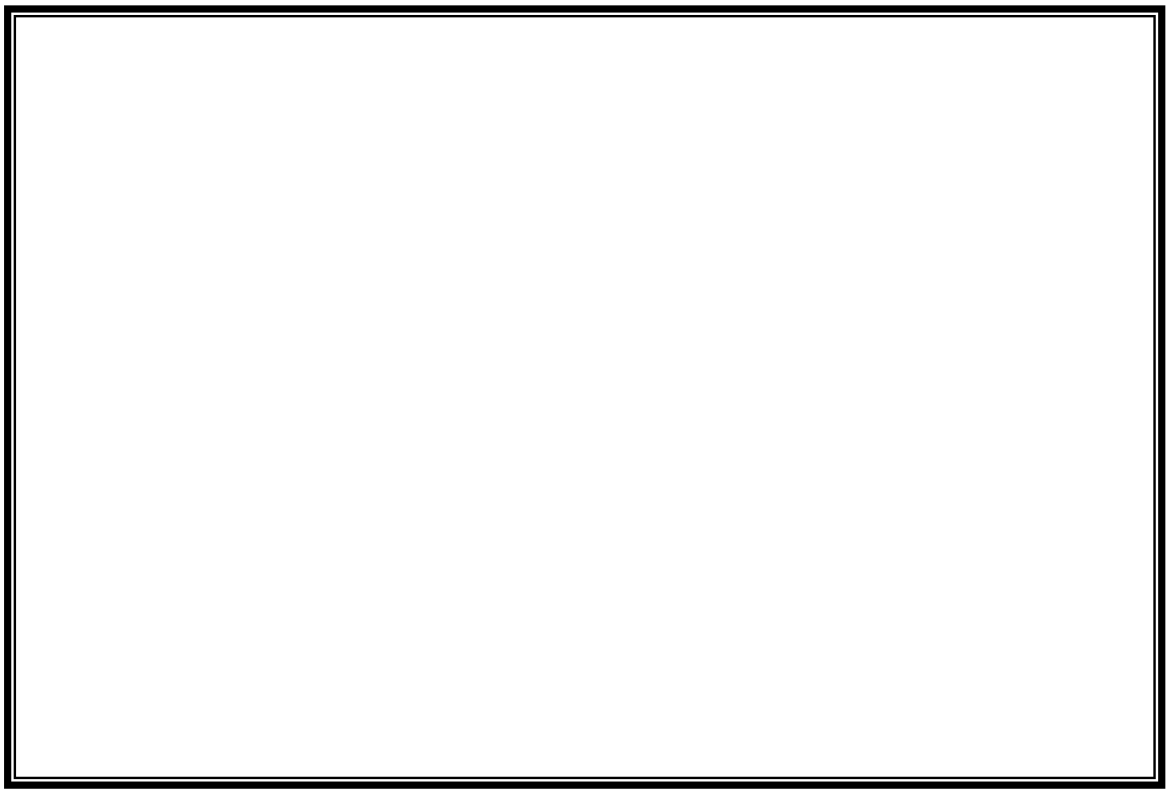


Fig. (46): CD68 in medullary carcinoma: show high TAM density. (Streptavidin Biotin x200)

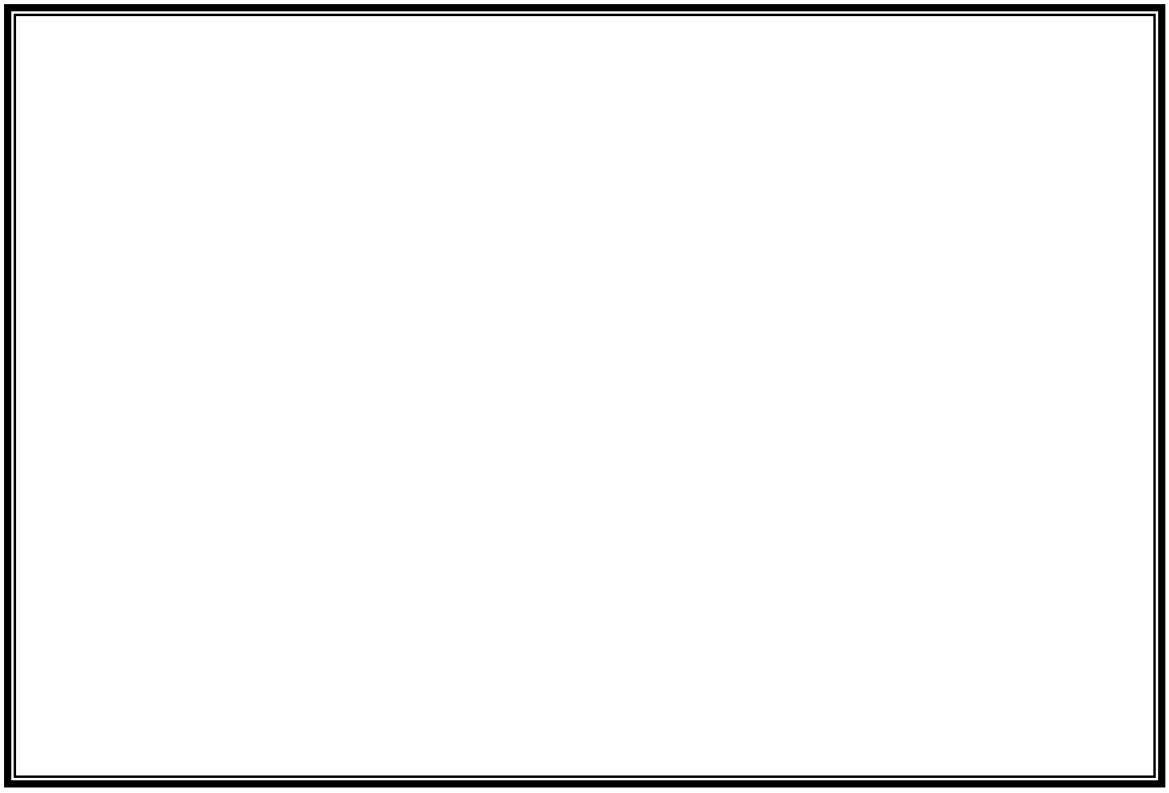


Fig. (47): CD68 in mucinous carcinoma: show low TAM density. (Streptavidin Biotin x200)

- **Papillary Carcinoma *(Fig. 48)*:**

Three cases out of 6 (50%) showed high TAM density. The 3 cases were of GII ***(Table 41, 42 and Graph 30, 31).***

The three cases with low lymphocytic infiltration showed low TAM density, while the 3 with high infiltration showed high TAM density ***(Table 47 and Graph 36).***

The three cases with tumor necrosis showed high TAM density, while the 3 without tumor necrosis showed low TAM density ***(Table 48 and Graph 37).***

Three out of 6 (50%) cases with vascular invasion showed high TAM density ***(Table 49 and Graph 38).***

The 3 cases (100%) with high TAM density showed high MVD. Also the 3 cases (100%) with low TAM density showed low MVD ***(Table 50 and Graph 39).***

- **Paget's disease:**

Five cases out of 8 (62.5%) showed high TAM density ***(Fig. 49)*** (3 cases 60% of GII and 2 cases 40% of GIII) ***(Table 41, 42 and Graph 30, 31).***

One out of 2 cases (50%) with low lymphocytic infiltration showed high TAM density, 3 out of 4 (75%) with moderate infiltration showed high TAM density, and One out of 2 cases (50%) with high infiltration showed high TAM density ***(Table 47 and Graph 36).***

Five out of 6 cases (83.3%) with tumor necrosis showed high TAM density, while both without tumor necrosis showed low TAM density ***(Table 48 and Graph 37).***

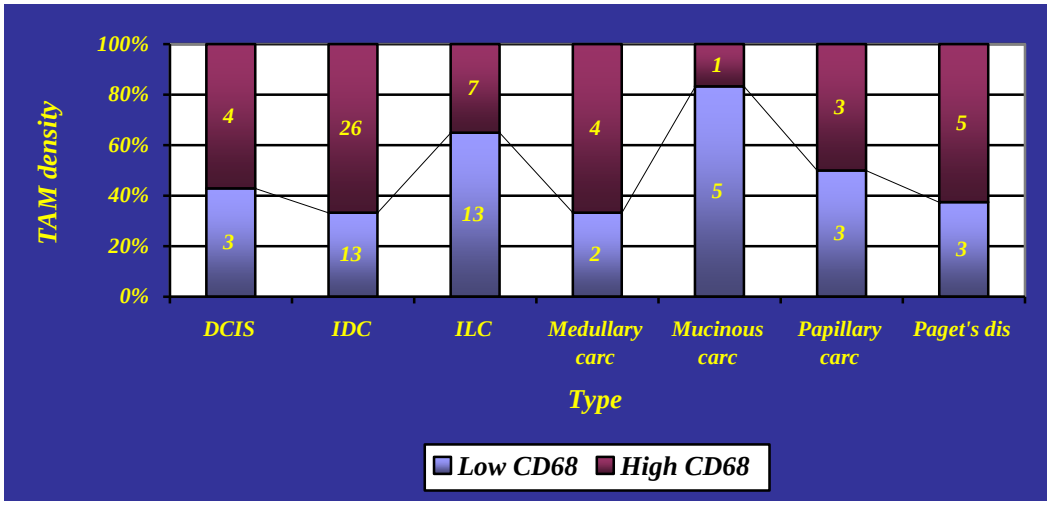
The 2 cases with vascular invasion showed high TAM density, while 3 out of 6 (50%) without vascular invasion showed high TAM density ***(Table 49 and Graph 38).***

The five cases (100%) with high TAM density showed high MVD, while one out of 3 (33.3%) with low TAM density showed low MVD ***(Table 50 and Graph 39).***

Table (41): TAM density in different histopathological types:

Type	No.	TAM density			
		Low	%	High	%
DCIS	***7***	3	42.9	4	57.1
IDC	***39***	13	33.3	26	66.7
ILC	***20***	13	65	7	35
Medullary carcinoma	***6***	2	33.3	4	66.7
Mucinous carcinoma	***6***	5	83.3	1	16.7
Papillary carcinoma	***6***	3	50	3	50
Paget's disease	***8***	3	37.5	5	62.5
Total	***92***		***45.7***	***50***	***54.3***

Graph (30):TAM density in different breast cancer cases.



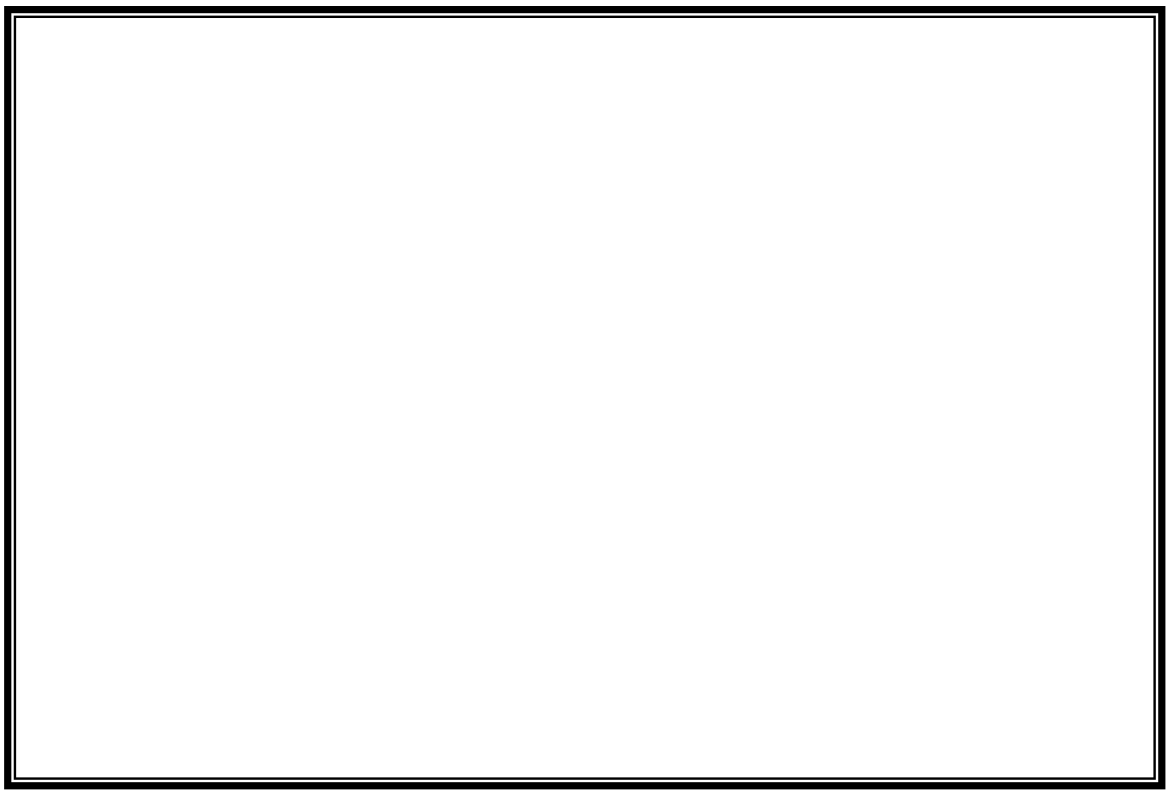


Fig. (48): CD68 in papillary carcinoma: show low TAM density. (Streptavidin Biotin x200)

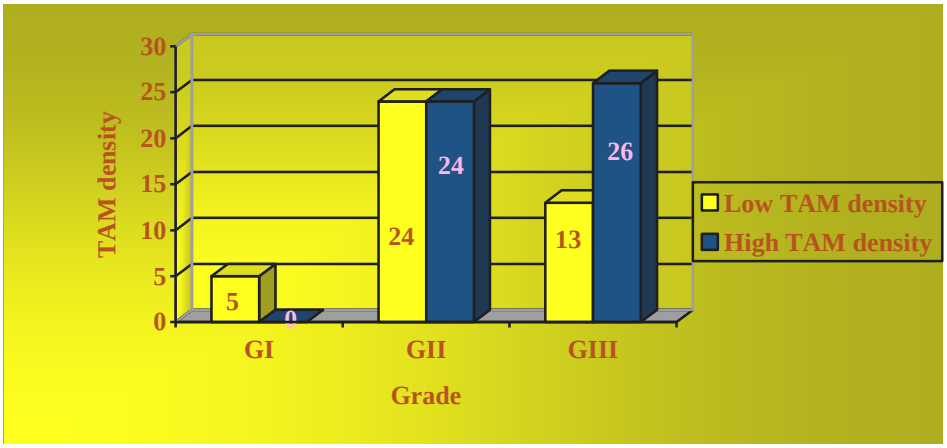
Fig. (49): CD68 in paget's disease: show high TAM density. (Streptavidin Biotin x100)

Table (42): TAM density in different grades of breast cancer cases.

Tumor grade	TAM density				Total
	Low		High		
	No.	%	No.	%	
GI	5	100	0	0	5
GII	24	50	24	50	48
GIII	13	33.3	26	66.7	39
Total	42	45.7	50	54.3	92

N.B.: A highly significant correlation (P<0.01) was found between TAM density and the grade of breast carcinoma.

Graph (31): TAM density in different grades of breast cancer cases:



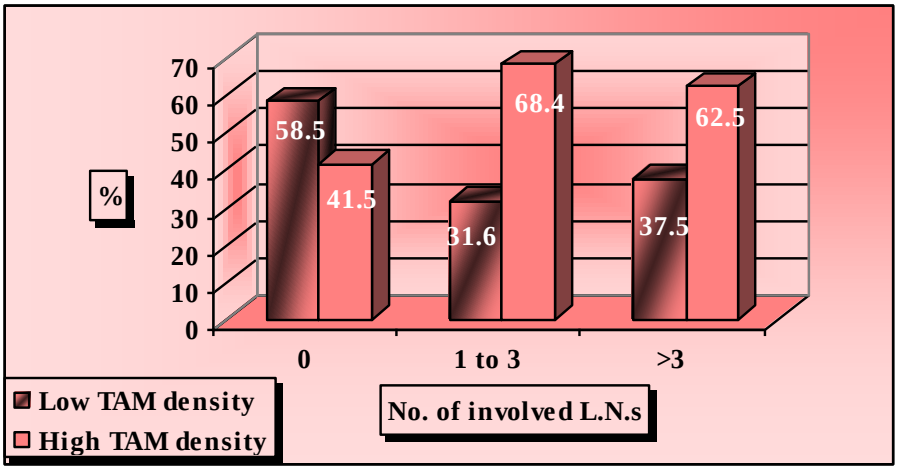
Relation between TAM density, L.N. status, Tumor size, and stage:

As regards lymph node status, 24 cases (58.5%) out of 41 without L.N. invasion showed low TAM density, 6 (31.6%) out of 19 with 1-3 L.N.s metastases show low TAM density, and 12 (37.5%) out of 32 with >3 involved L.N.s showed low TAM density ***(Table 43 and Graph 32).***

Table (43): TAM density in relation to LN metastases:

No. of involved L.N.s	*TAM density*				*Total*
	Low		*High*		
	No.	*%*	*No.*	*%*	
0	24	58.5	17	41.5	***41***
1-3	6	31.6	13	68.4	***19***
>3	12	37.5	20	62.5	***32***
Total	***42***	***45.7***	***50***	***54.3***	***92***

Graph (32): TAM density in relation to LN metastases:

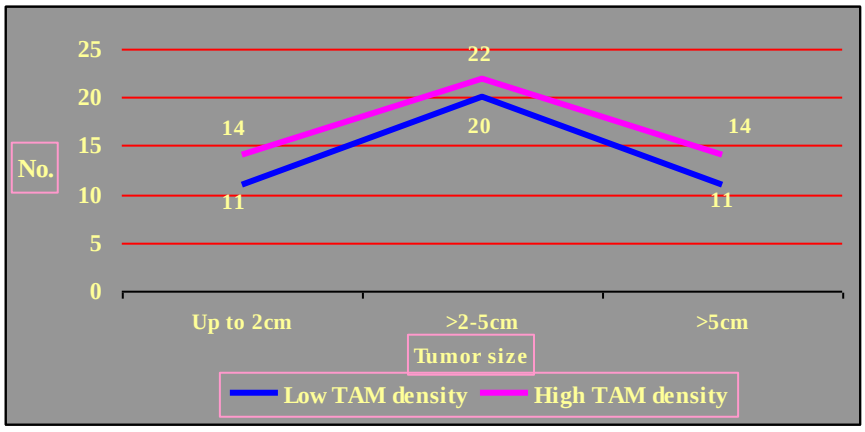


As regards tumor size, 11 cases (44%) out of 25 with tumor size up to 2cm showed low TAM density, 20 (47.6%) out of 42 measuring >2-5cm showed low TAM density, while 11 (44%) out of 25 measuring >5cm showed low TAM density ***(Table 44 and Graph 33).***

Table (44): TAM density in relation to tumor size:

Tumor Size	***TAM density***				*Total*
	Low		***High***		
	No.	***%***	***No.***	***%***	
Up to 2cm	11	44	14	56	***25***
>2-5cm	20	47.6	22	52.4	***42***
>5cm	11	44	14	56	***25***
Total	***42***	***45.7***	***50***	***54.3***	***92***

Graph (33): TAM density in relation to tumor size:

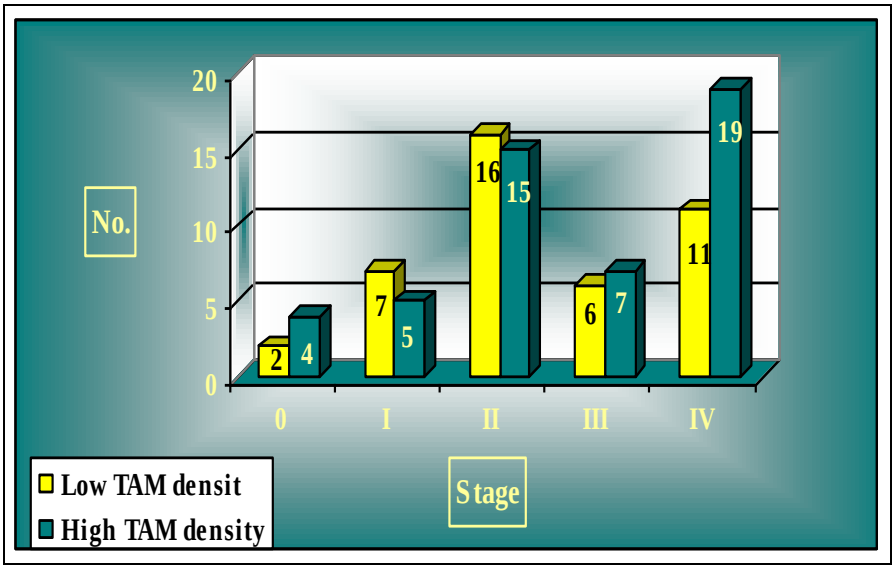


Regarding the stage, 4 cases (8%) out of 55 with high TAM density were in stage 0, 5 (10%) were in stage I, 12 (30%) stage II, 7 (14%) stage III, while 19 (40%) were in stage IV ***(Table 45 & Graph 34).***

Table (45): TAM density in relation to tumor stage:

TAM density	*No.*	*Stage*									
		0		*I*		*II*		*III*		*IV*	
		No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Low	***42***	2	4.8	7	16.7	16	38.1	6	14.3	11	26.2
High	***50***	4	8	5	10	12	30	7	14	19	38
Total	***92***	***6***	***6.5***	***12***	***13***	***31***	***33.7***	***13***	***14.1***	***30***	***32.6***

Graph (34): TAM density in relation to tumor stage:



Relation between TAM density and distant metastases (DM), 2-years recurrence, and 5-years OS:

The relation between TAM density to distant metastasis, 2-years recurrence and 5-years O.S. is summarized in ***Table 46 and Graph 35:***

Table (46): TAM density in relation to distant metastases, 2-years recurrence, and 5-year OS:

TAM density	*No.*	*Distant Metastases*		*2-ys Recurrence*		*5-ys O.S.*	
		No.	*%*	*No.*	*%*	*No.*	*%*
Low	***36***	7	19.4	8	22.2	31	86.1
High	***40***	14	35	17	42.5	22	55
Total	***76***	***21***	***27.6***	***25***	***32.9***	***53***	***69.7***

N.B.: A significant correlation (P<0.05) is found between TAM density and 2-years recurrence; and high significant inverse correlation (P<0.01) between TAM density and 5-years overall survival.

Graph (35): TAM density in relation to distant metastases, 2-years recurrence, and 5-year OS:

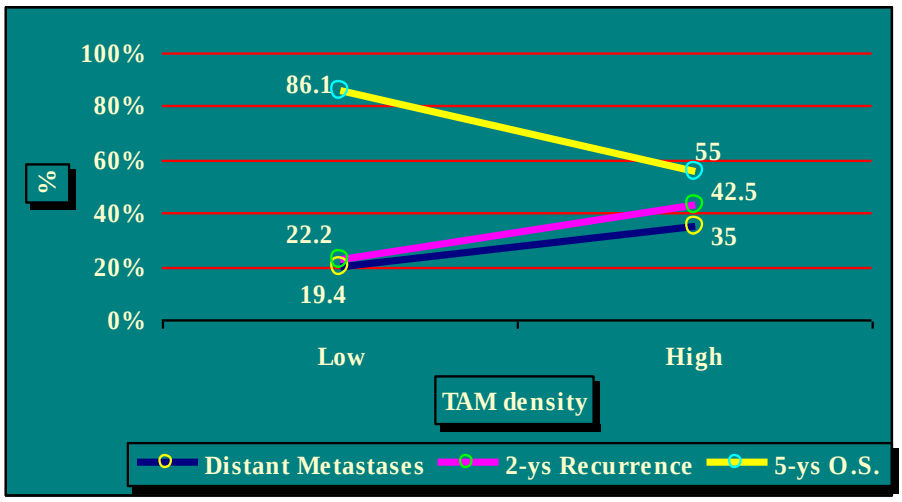


Table (47): TAM density in relation to lymphocytic infiltrate:

Lymphocytic infiltrate	*TAM density*				*Total*
	Low		*High*		
	No.	*%*	*No.*	*%*	
Low	24	58.5	17	41.5	***41***
Moderate	8	40	12	60	***20***
High	10	32.3	21	67.7	***31***
Total	***42***	***45.7***	***50***	***54.3***	***92***

N.B.: A significant correlation (P<0.05) was found between TAM density and lymphocytic infiltrate.

Graph (36): TAM density in relation to lymphocytic infiltrate:

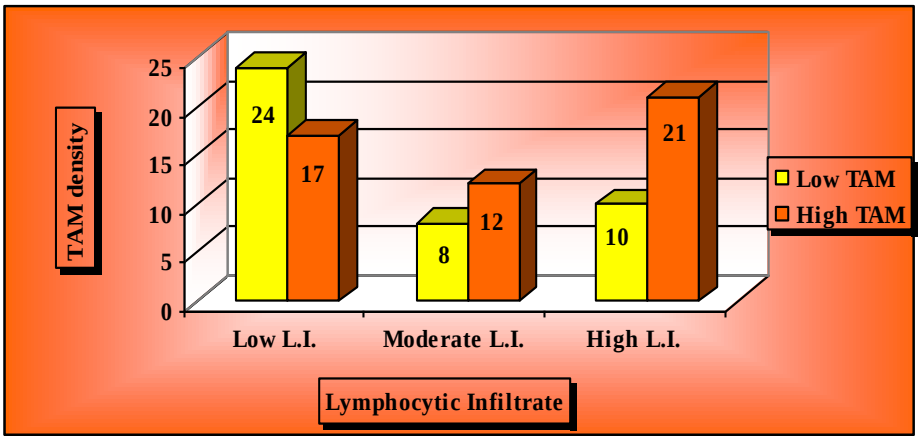


Table (48): TAM density in relation to tumor necrosis:

Tumor necrosis	*TAM density*				*Total*
	Low		*High*		
	No.	*%*	*No.*	*%*	
Negative	27	81.8	6	18.2	**33**
Positive	15	25.4	44	74.6	**59**
Total	***42***	***45.7***	***50***	***54.3***	***92***

N.B.: A highly significant correlation (P<0.01) is found between TAM density and positive tumor necrosis.

Graph (37): TAM density in relation to T.N.:

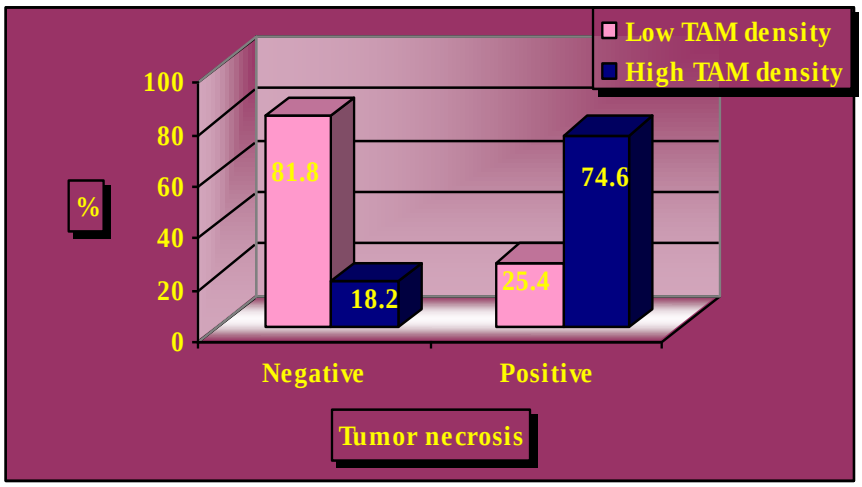


Table (49): TAM density in relation to vascular invasion:

Vascular invasion	TAM density				Total
	Low		High		
	No.	%	No.	%	
Negative	31	54.4	26	45.6	**57**
Positive	11	31.4	24	68.6	**35**
Total	**42**	**45.7**	**50**	**54.7**	**92**

N.B.: A significant correlation (P<0.05) was found between TAM density and positive vascular invasion.

Graph (38): TAM density in relation to vascular invasion:

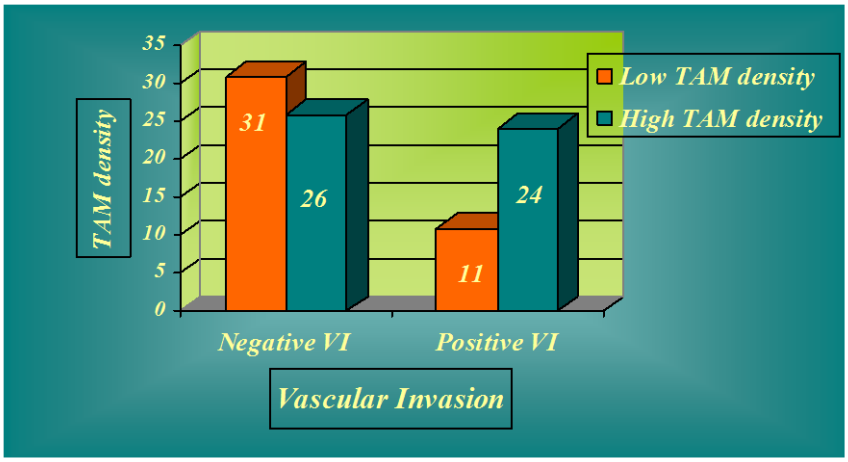


Table (50): Correlation between MVD and TAM density:

MVD	TAM density				Total
	Low		High		
	No.	%	No.	%	
Low	30	81.1	7	18.9	***37***
High	12	21.8	43	78.2	***55***
Total	***42***	***45.7***	***50***	***54.3***	***92***

N.B.: A highly significant correlation (P<0.01) is found between MVD and TAM density.

Graph (39): Correlation between MVD and TAM density:

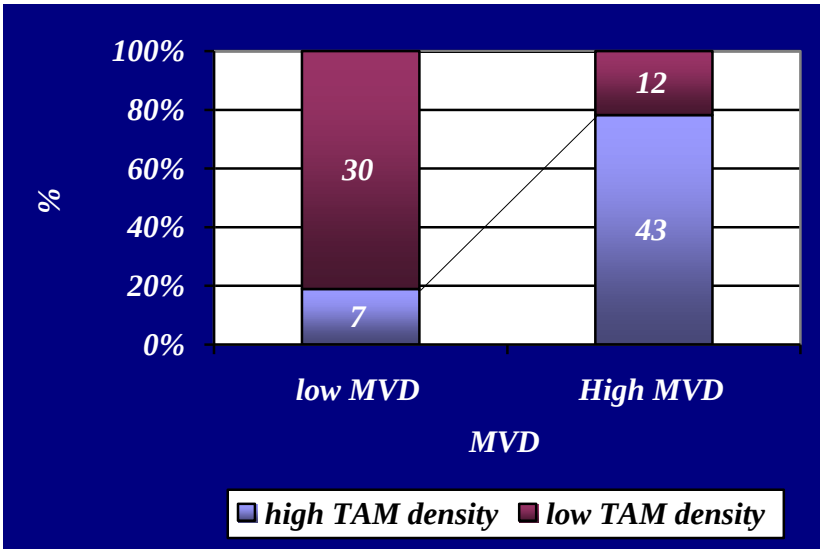


Table (51): Clinicopathological characteristic, microvessel density (MVD), and tumor-associated macrophages (TAMs) of patients studied:

	5-YS OS	P-VALUE	MVD (MEAN)	P-VALUE	TAMS	P-VALUE
Histologic grade						
I	100%	**<0.01*** **	42	**<0.01*** **	46.8	**<0.01*** **
II	83.3%		48		81.4	
III	48.7%		52		90.8	
Tumor size						
Up to 2cm	92%	**<0.01*** **	48.4	**-0.6**	84.6	**0.8**
>2-5cm	61.9%		50.5		79.9	
>5cm	60%		48.4		88.4	
Lymph node status						
Negative	87.8%	**<0.01*** **	48	**0.6**	77.8	**0.06***
1-3 +ve L.N.s	73.7%		51.5		89.7	
>3 +ve L.N.s	43.8%		50		87.1	
Tumor stage						
0	100%	**<0.01*** **	55.1	**0.3**	91.5	**0.4**
I	100%		43.4		80.8	
II	83.9%		48.9		77.3	
III	76.9%		47.1		89.4	
IV	33.3%		52.1		86.8	
Lymphocytic infiltrate						
Low	78%	**-0.2**	47.6	**0.054***	74.9	**<0.05****
Moderate	60%		50.5		90	
High	64.5%		51		90.7	
Tumor necrosis						
Negative	87.9%	**<0.01*** **	45	**<0.01*** **	64.9	**<0.01*** **
Positive	59.3%		51.8		93.9	
Vascular invasion						
Negative	91.2%	**<0.01*** **	46.4	**<0.01*** **	79.2	**<0.01*** **
Positive	34.3%		54.2		90.5	

P value >0.1 = insignificant correlation

*P value 0.05-0.1 = border-line significant correlation

**P value <0.05 = significant correlation

***P value <0.01 = high significant correlation