



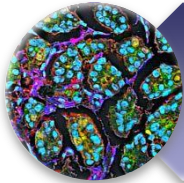
# NEUROENDOCRINE DIFFERENTIATED BREAST CARCINOMA



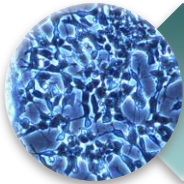
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# INTRODUCTION

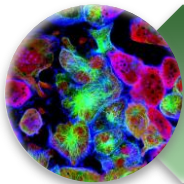
# + NEUROENDOCRINE FEATURES IN BREAST CARCINOMA



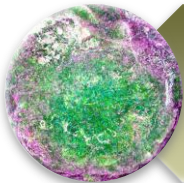
Incidence of 2-5%



Seen in various histopathological types of breast carcinoma

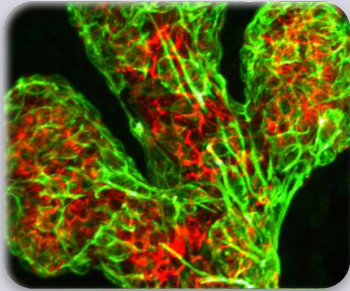


Seen in both in situ and invasive carcinoma

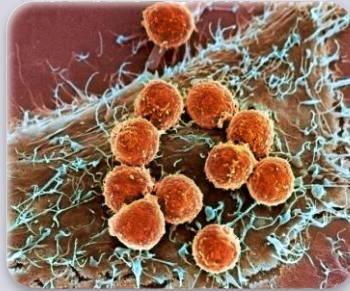


Mucinous carcinoma has the greatest association

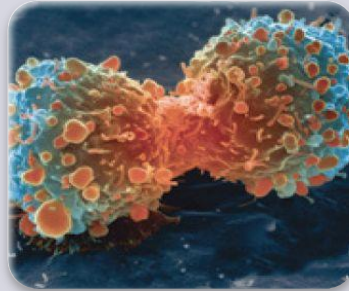
# + NEUROENDOCRINE CELLS IN BREAST



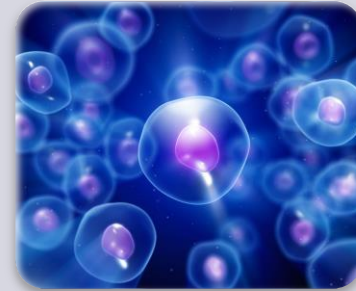
Focally scattered in normal breast



Detected in upto 50% of breast carcinoma



Differentiation directly from the breast carcinoma



Stem cell niches of the terminal end bud (TEB)

+

# 2012 WHO CLASSIFICATION OF CARCINOMA WITH NEUROENDOCRINE FEATURES

**NEURO-  
ENDOCRINE  
TUMOR-  
WELL  
DIFFERENTI  
ATED**

**SMALL CELL  
CARCINOMA  
/POORLY  
DIFFERENTI  
ATED**

**INVASIVE  
BREAST  
CARCINOMA  
WITH NEURO  
ENDOCRINE  
FEATURES**



+

# CASE REPORT

# + CASE REPORT



**Case report**

**Invasive Carcinoma  
Breast NST with  
neuroendocrine features**

# + CLINICAL PRESENTATION & INVESTIGATIONS

65-year-old elderly female

Mass in the upper outer quadrant of the left breast.

**FNAC**

Cytological atypia & pleomorphism suggestive of malignancy

**Ultrasonogram**

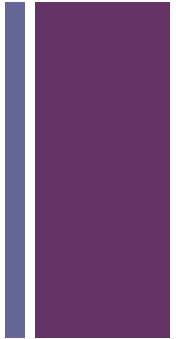
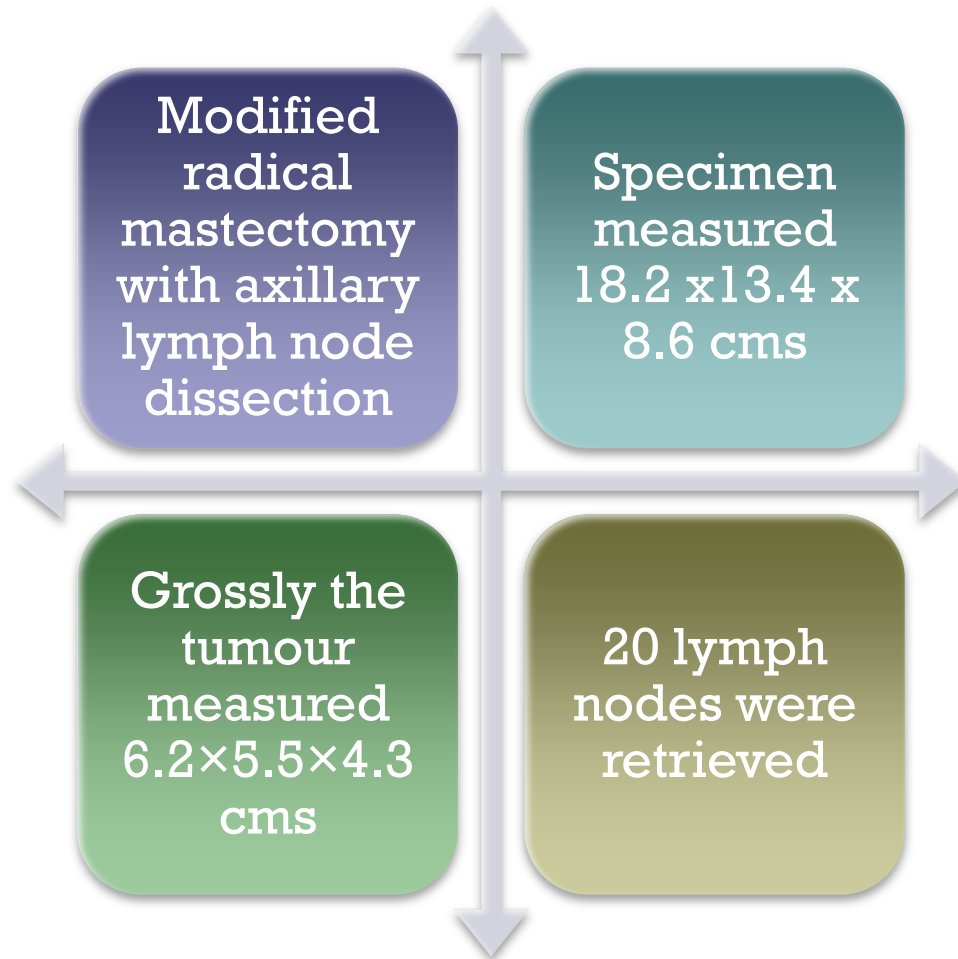
BIRADS –V.

**CT Head and neck, Chest, Abdomen**

Within Normal limits



# + GROSS



+ SPECIMEN Grey white

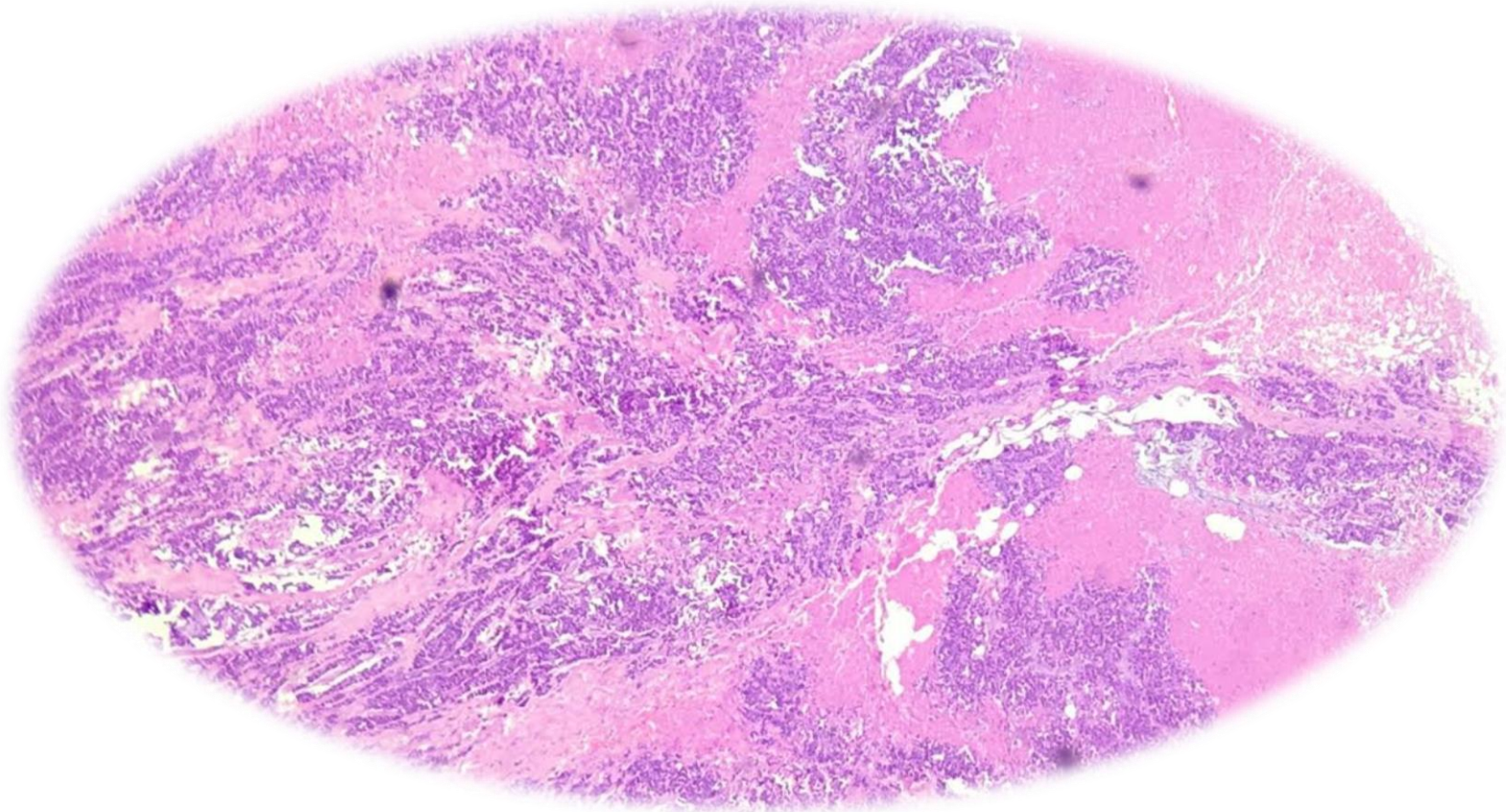
6.2 × 5.5 × 4.3 cms with areas of hemorrhage



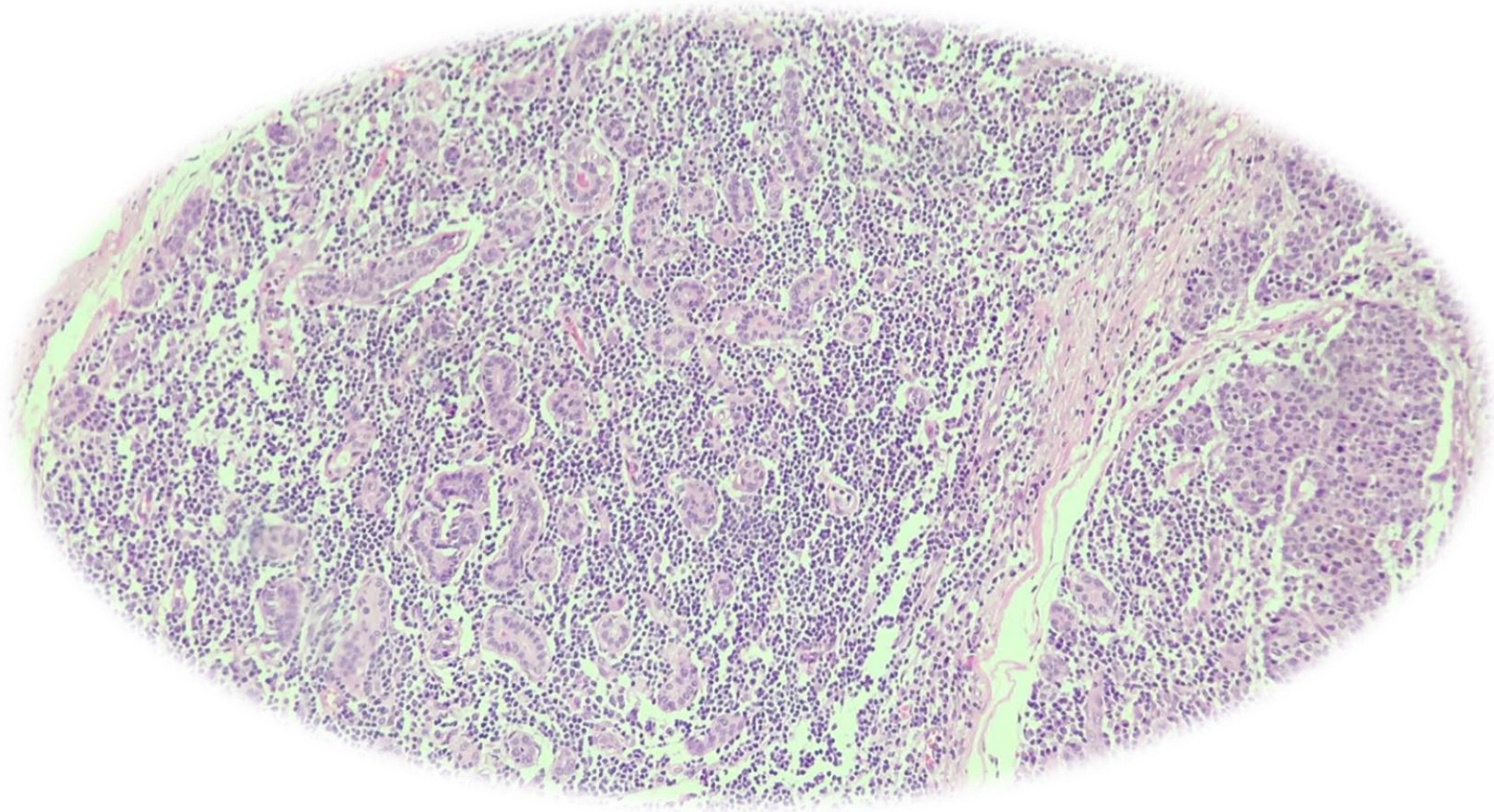
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# MICROSCOPY

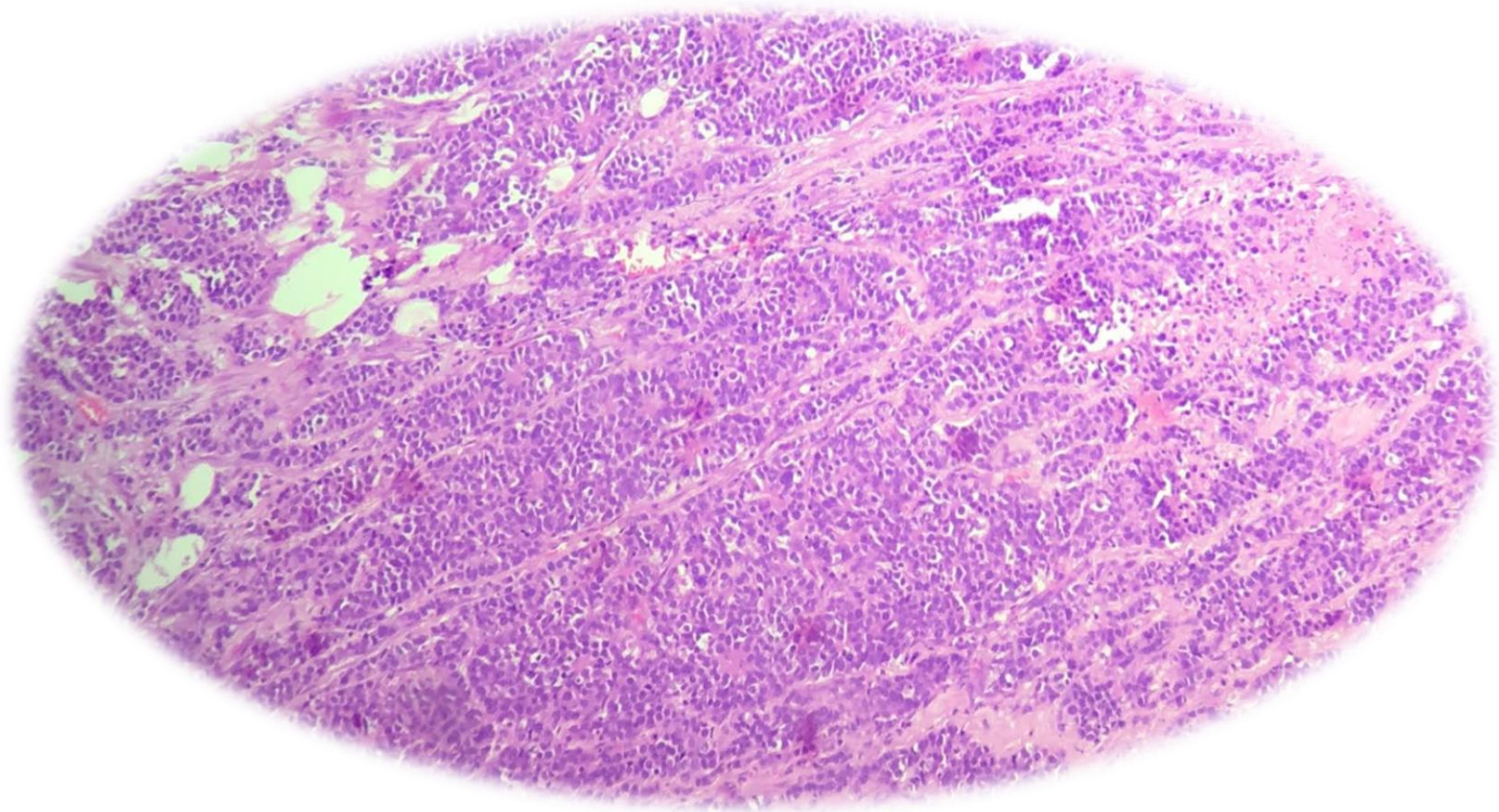
Neuroendocrine component & necrosis



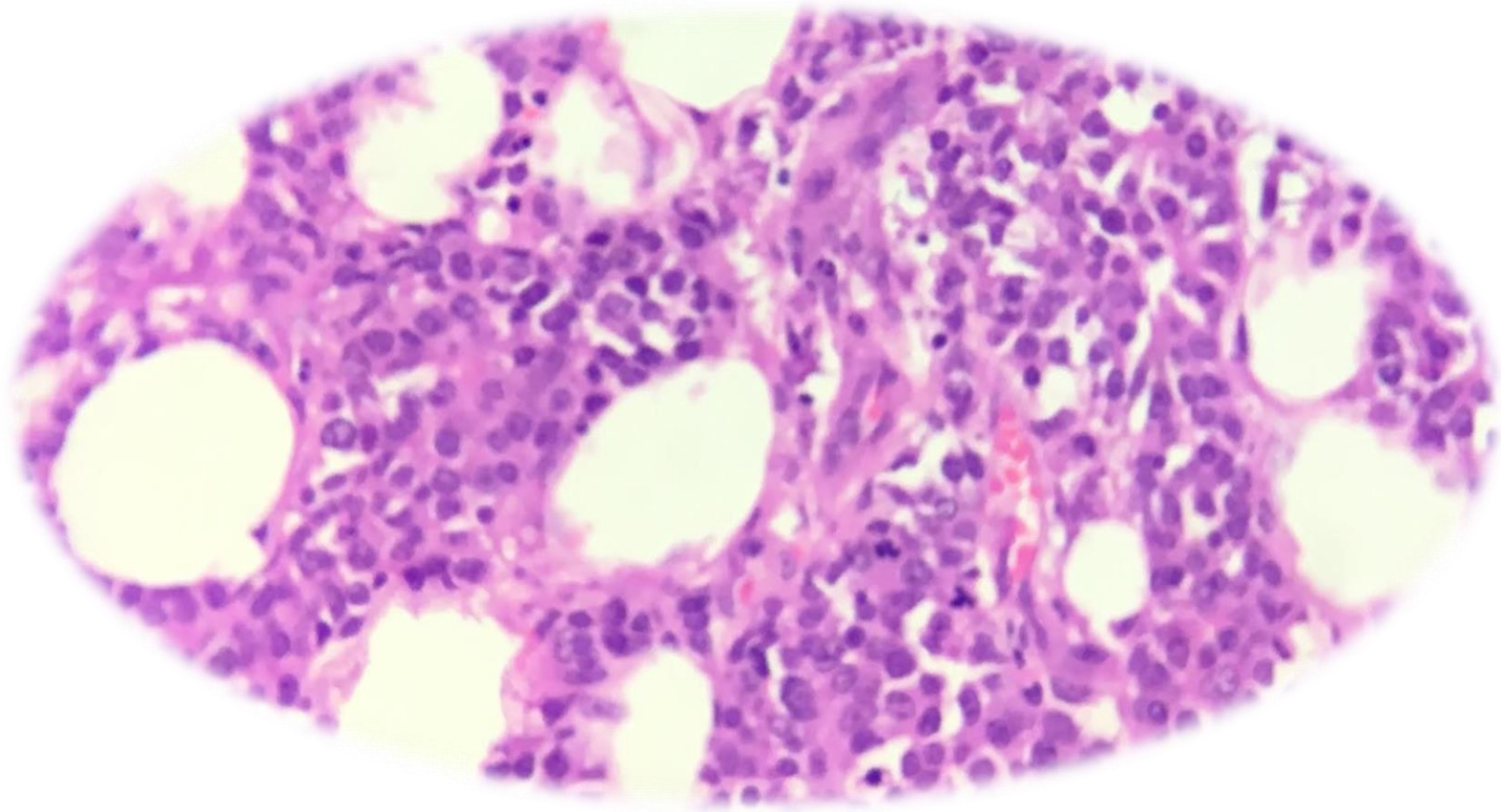
# + Ductal component



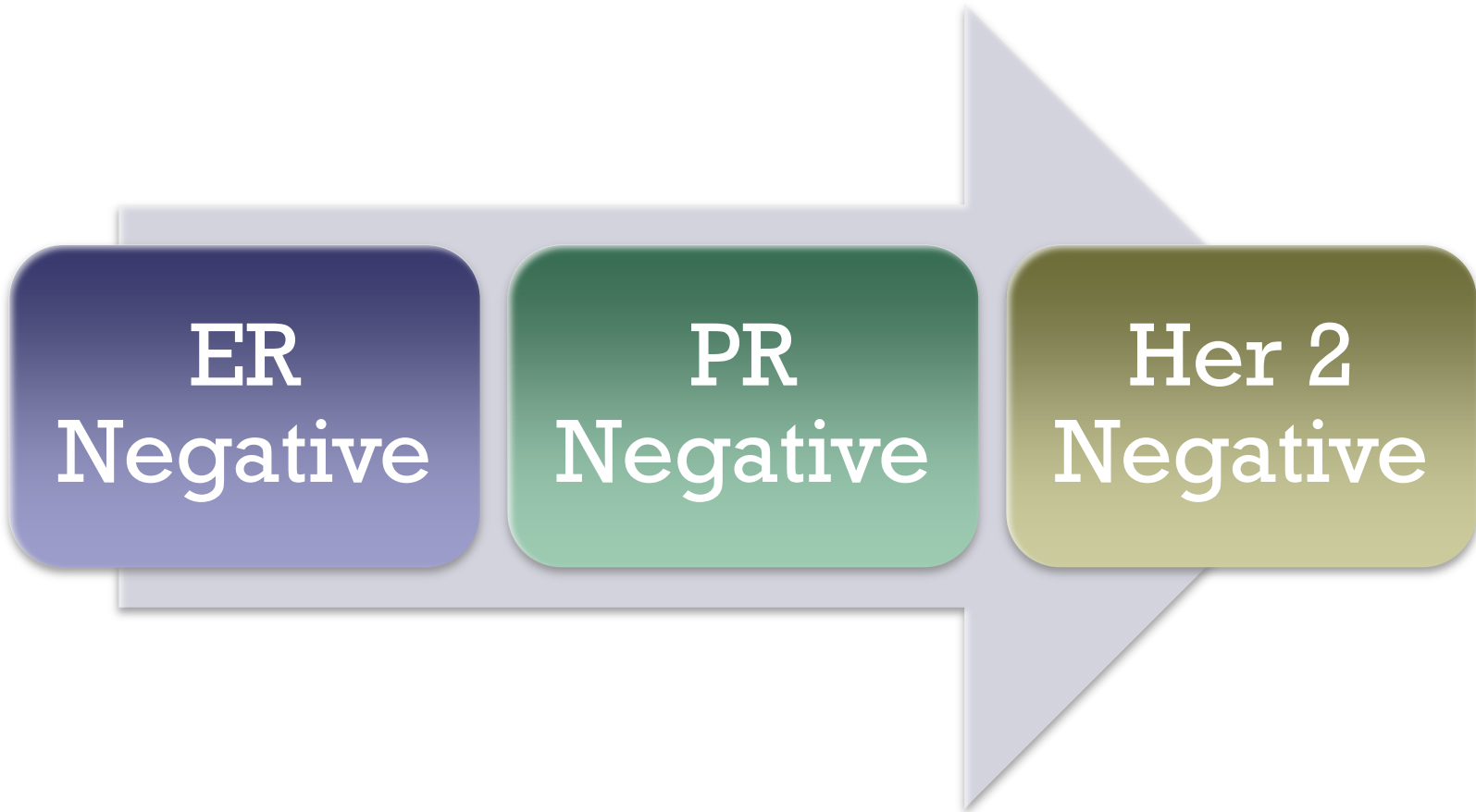
# + Neuroendocrine cells



+ Mitosis 8-10/HPF



# + IMMUNOHISTOCHEMISTRY

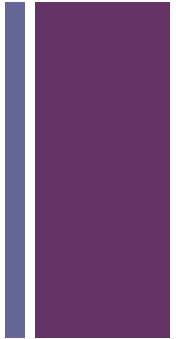


+ **CHROMOGRANIN**  
Weak patchy positivity

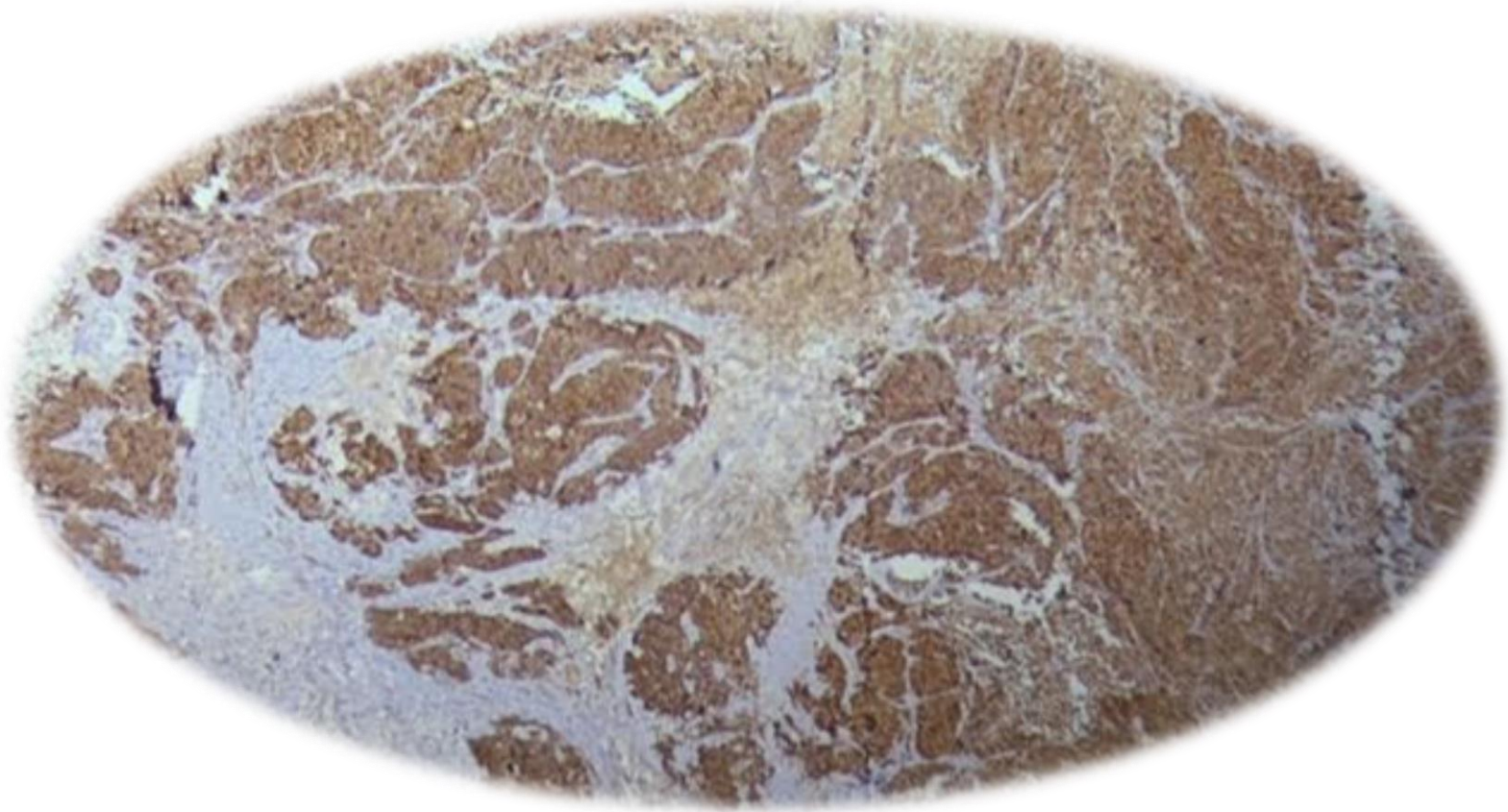




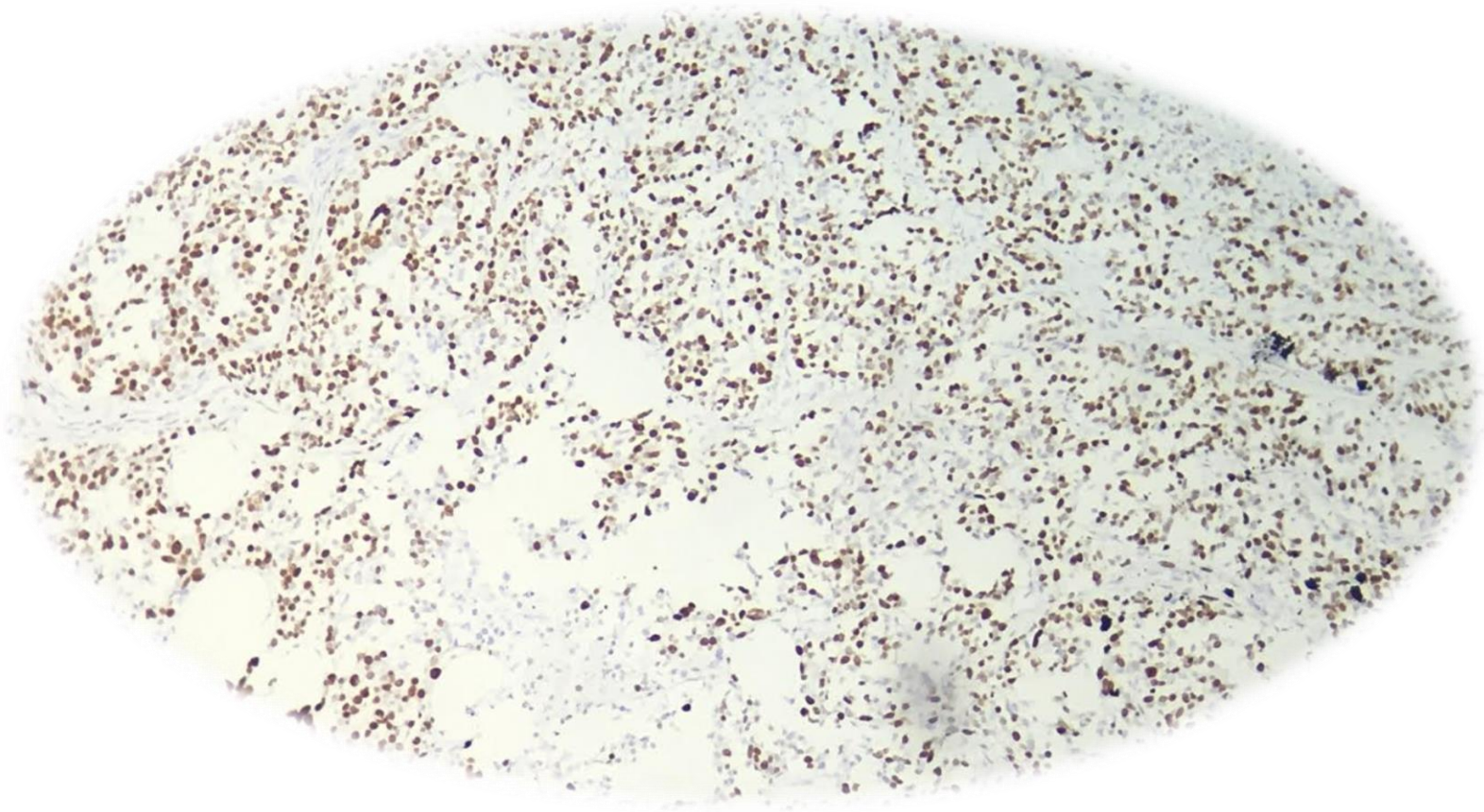
+ **SYNAPTOPHYSIN**  
**Weak patchy positivity**



+ NEURON SPECIFIC ENOLASE  
Strong diffuse positivity



+ **Ki-67 Labelling Index**  
**60% (counting 1000 cells)**





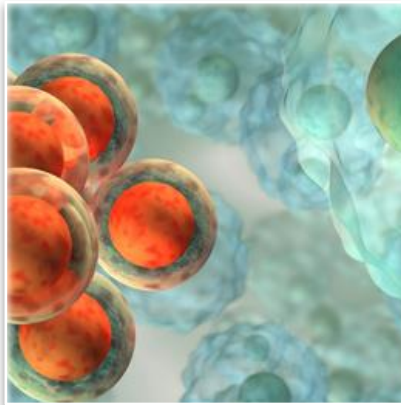
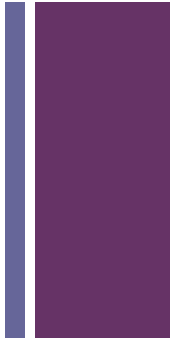
1/20 LN  
showed  
deposits

No  
vascular  
tumor  
emboli

No peri-  
neural  
invasion

All  
margins  
Free of  
tumor

No DCIS  
or LCIS  
noted

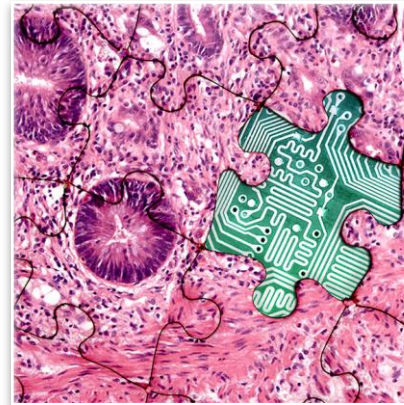


SCRAF BLOOM  
RICHARDSON SCORE- 6

NOTTINGHAM SCORE

Moderately  
differentiated

Intermediate grade





+

# DISCUSSION

# + HISTORY



## **1947- Volger**

Discovered presence of neuroendocrine cells in normal breast tissue



## **1977- Cubilla and Woodruff**

Reported case of Primary neuroendocrine carcinoma of the breast

# + NEUROENDOCRINE FEATURES

Cellular  
monotony

Nuclear  
palisading

Pseudorosette  
formation

Loss of cell  
cohesion

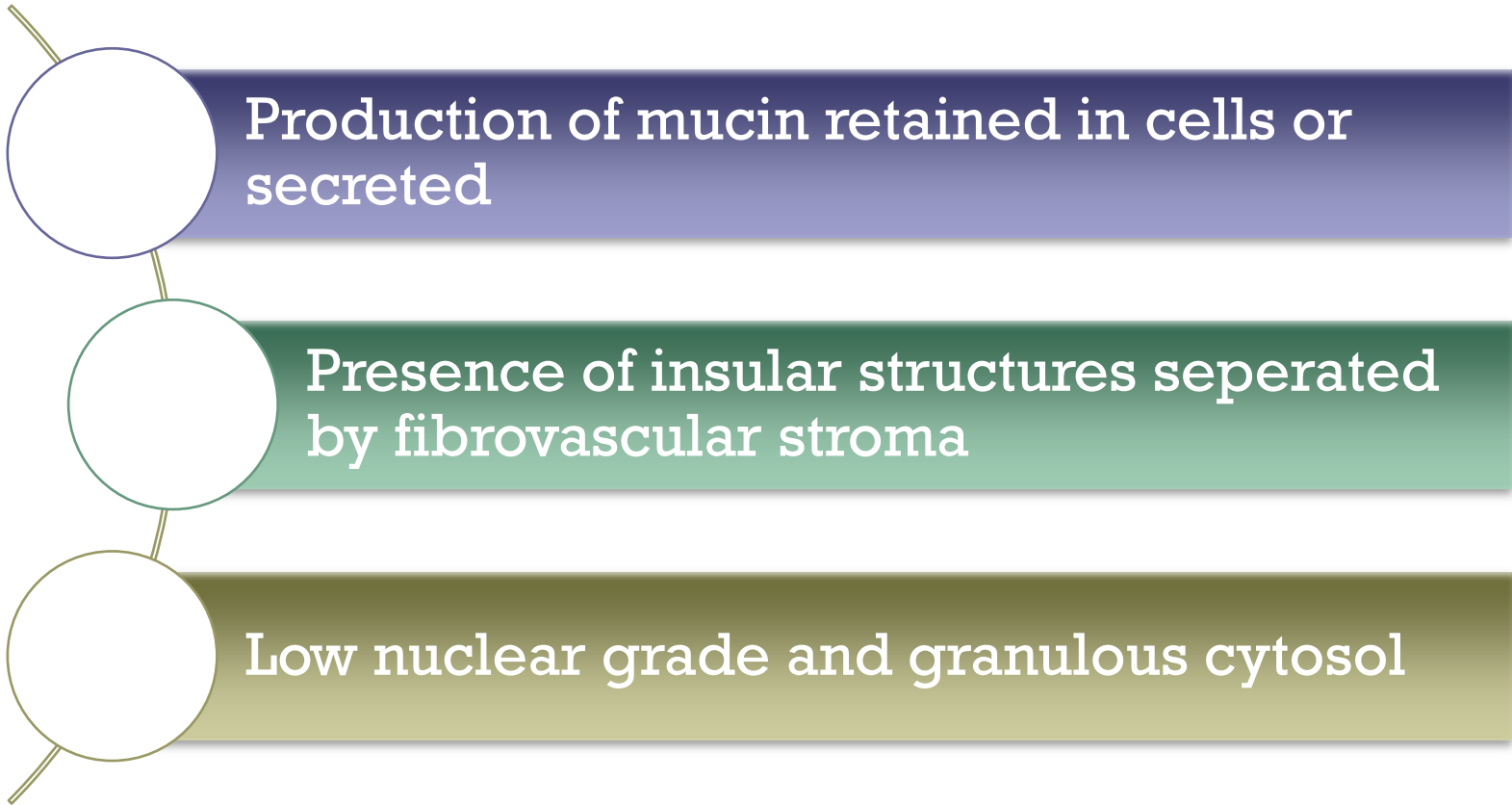
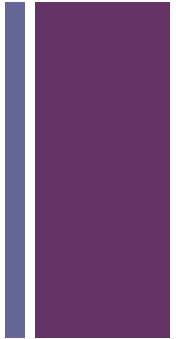
Eosinophilic  
cytoplasm

Stippled nuclei  
Salt and  
pepper  
chromatin



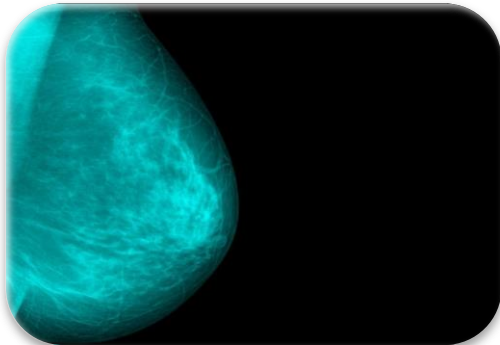
# + MORPHOLOGY

Main et al



# + CLINICAL FEATURES

## Bussolati et al



-No notable differences in presentation: palpable nodule circumscribed mass on mammogram or ultrasound

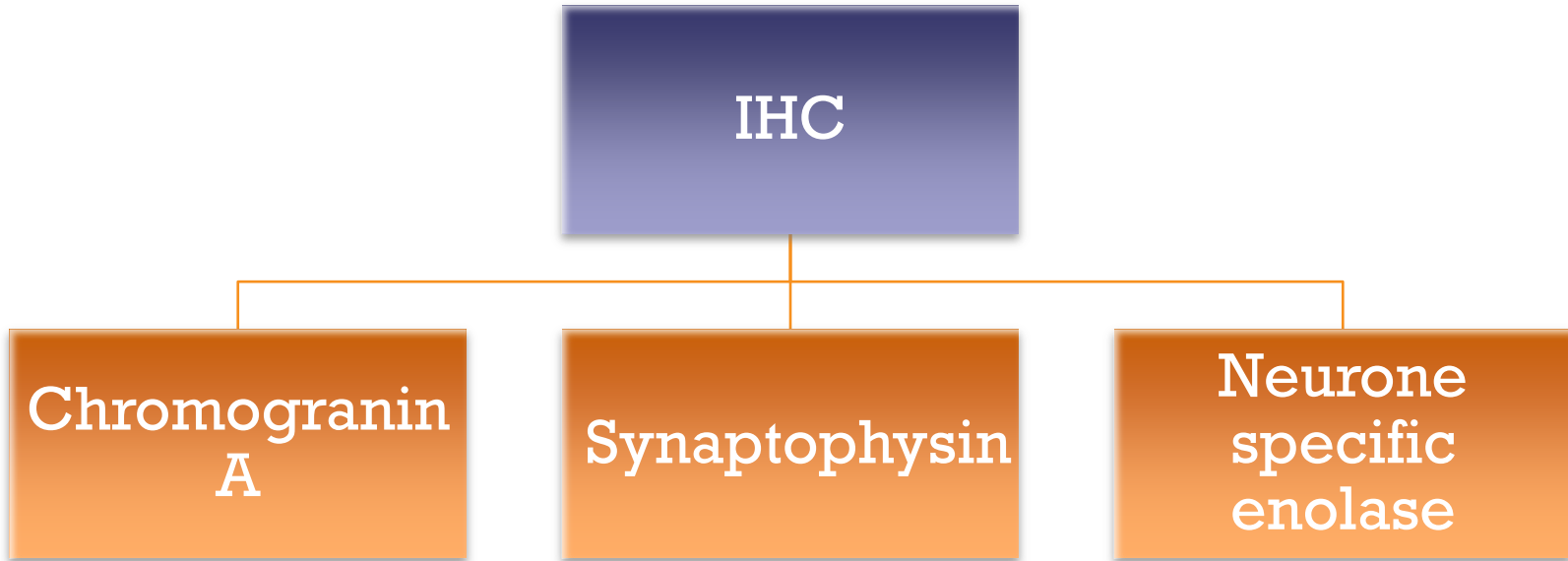


-Endocrine hormone related syndromes is exceptionally rare



-Increase in blood levels of neuroendocrine marker –  
**CHROMOGRANIN A**

+ **DIAGNOSIS OF  
NEUROENDOCRINE FEATURES**  
Gary et al- Any 1 of 3 positivity



# + IMMUNOPROFILE

## Bussolati and Badve



**LOW OR  
INTERMEDIATE  
GRADE**

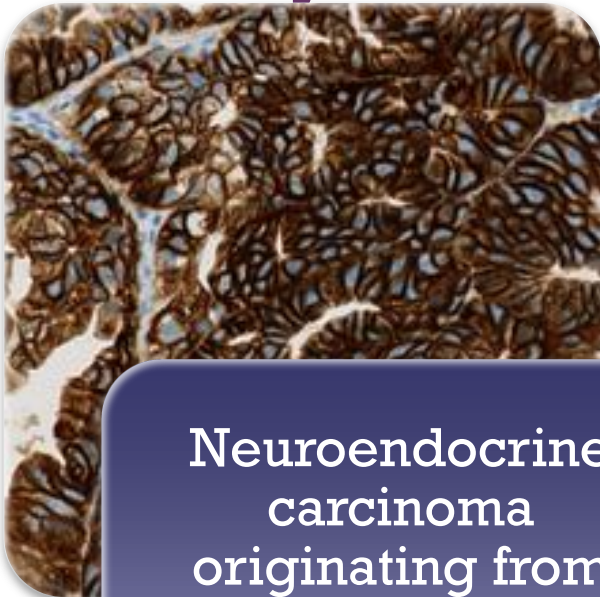
- **CHROMOGRANIN B or A- 50%**
- **SYNAPTOPHYSIN- 16%**

**POORLY  
DIFFERENTIATED**

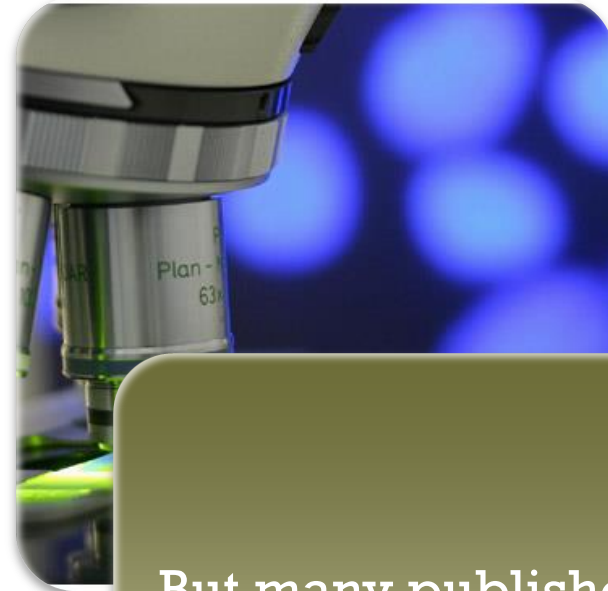
- **NON SPECIFIC ENOLASE- 100%**
- **CHROMOGRANIN/SYNAPTOPHYSIN- 50%**

# + HORMONE RECEPTORS

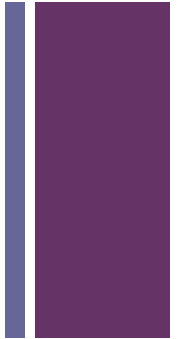
Murthy et al



Neuroendocrine carcinoma originating from breast: confirmed by an in-situ component & immunostaining for ER and PR positivity.

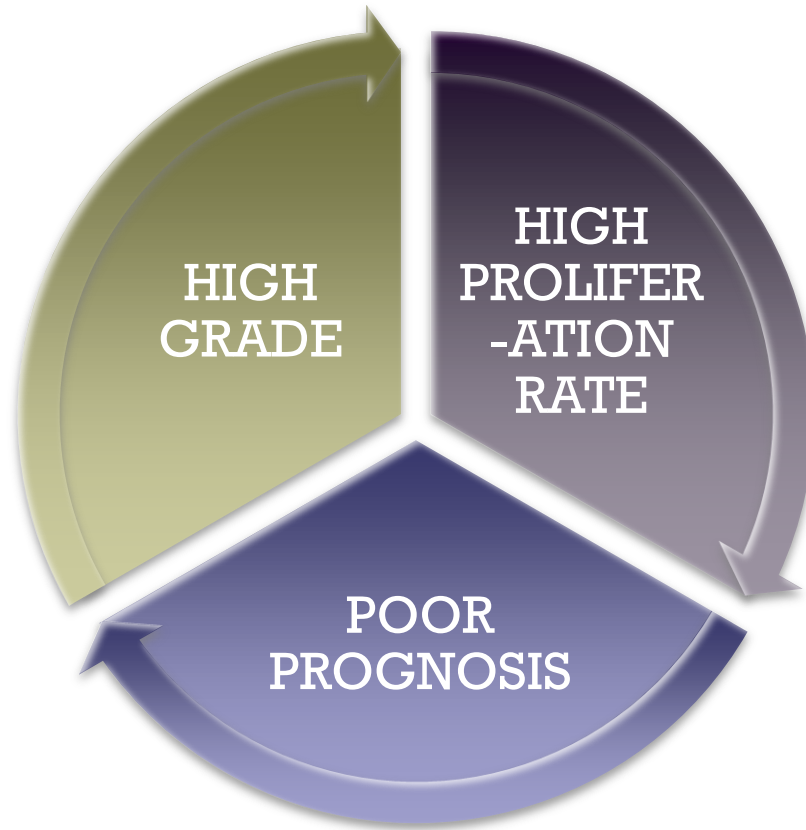


But many published cases lacked this finding.



# + HISTOLOGICAL GRADE

Noccioli et al



# + MUCIN PRODUCTION

Sapino et al



# + DIFFERENTIAL DIAGNOSIS

## METASTATIC CARCINOID

- DCIS with similar features supports breast origin
- ER, PR and GCDFP-15 support primary breast carcinoma
- Small cell carcinoma
  - LUNG: CK7- CK20-
  - BREAST CK7 + CK20-

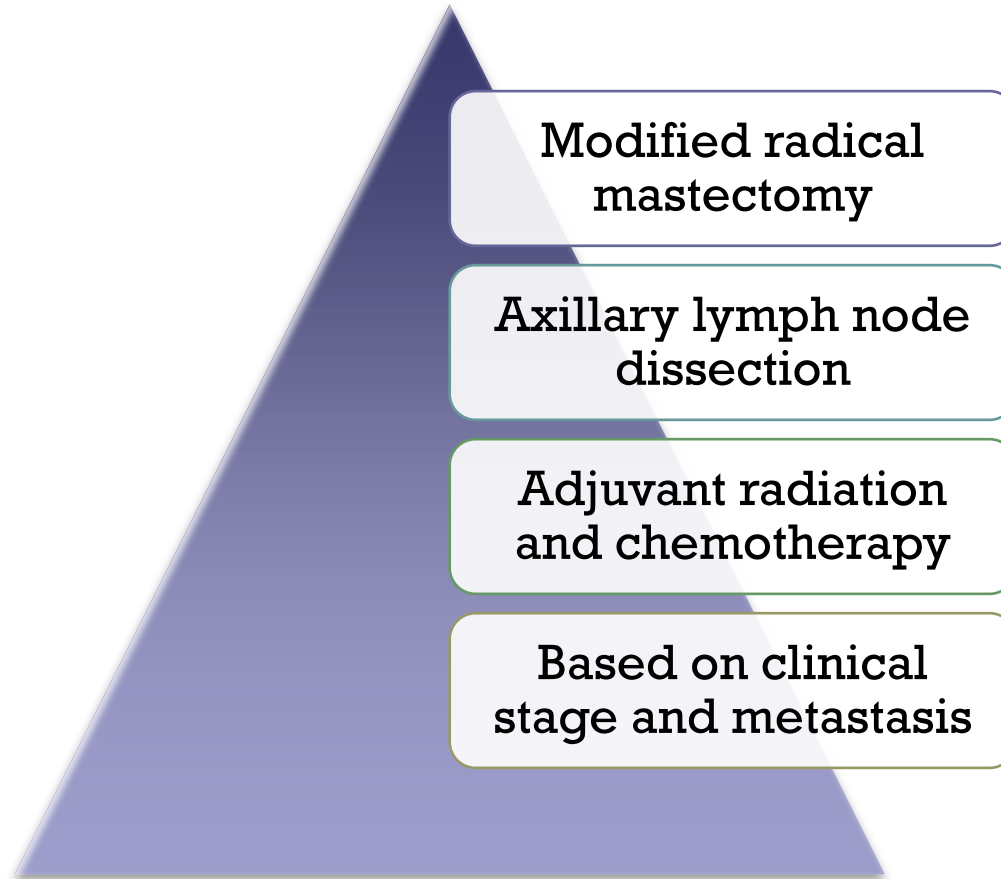
## LOBULAR CARCINOMA

- Small cell carcinoma can be confused with Lobular carcinoma
  - SMALL CELL CARCINOMA E-Cadherin+ in 100% of cases
  - LOBULAR CARCINOMA E-Cadherin negative



# + TREATMENT

## Tanwani et al

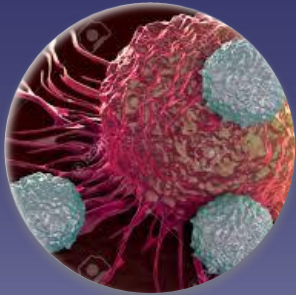




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**CONCLUSION**

# + CONCLUSION



Neuroendocrine component in composite tumours has to be reported



Diagnosis-  
Neuroendocrine marker positivity



Prognosis-  
Small cell carcinoma has worse prognosis





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# REFERENCES



# REFERENCES

1. G. Bussolati and S. Badve, “Carcinomas with neuroendocrine features,” in *WHO Classification of Tumours of the Breast*, S. R. Lakhani, I. O. Ellis, S. J. Schnitt, P. H. Tan, and M. J. van de Vijver, Eds., pp. 62–63, IARC Press, Lyon, France, 2012.
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4. Gajender Singh, Pansi Gupta, S.K.Mathur, Sant Prakash Kataria, Sanjay Kumar, 2014. Invasive mammary carcinoma with neuroendocrine differentiation: a diagnostic challenge. *Int. J. Healthcare Biomed. Res.* 2 (3), 42–46.
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7. Gary MK Tse, Tony KF Ma, Winnie CW Chu, Wynnie WM Lam, Cycles SP Poon, Wing-Cheong Chan. Neuroendocrine differentiation in pure type mammary mucinous carcinoma is associated with favorable histologic and immunohistochemical parameters. *Mod Pathol* 2004; 17(5):568-72.



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**THANK YOU**