Role of Histopathology in metastatic breast cancer

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Breast CANCER

- Breast cancer is the most common cancer in the UK and is the second most lethal cancer in women
- Around 55,000 people are diagnosed with breast cancer each year.
- About 400 cases of breast cancer annually are in men

Metastases

- Metastasis refers to the spread of cancer to different parts of the body, typically the bones, liver, lungs and brain.
- 20% to 30% of people initially diagnosed with early stage disease will develop metastatic breast cancer.
- About 6% to 10% of people are Stage IV from their initial diagnosis.

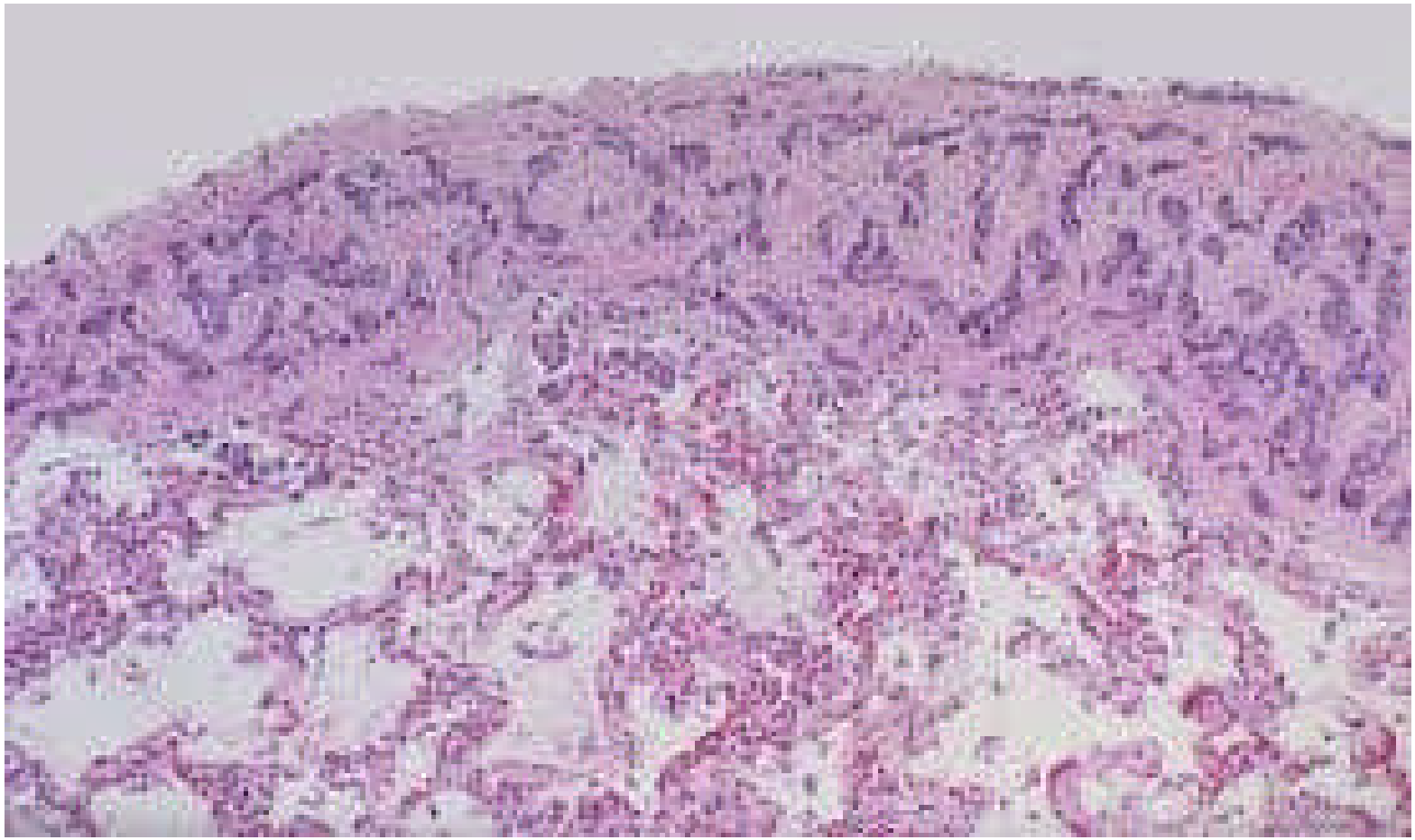
Metastases

- Metastatic breast cancer can occur 5, 10 or 15 years after a person’s original diagnosis and successful treatment checkups and annual mammograms.
- Treatment choices are guided by breast cancer type, location and extent of metastasis in the body, previous treatments and other factors.

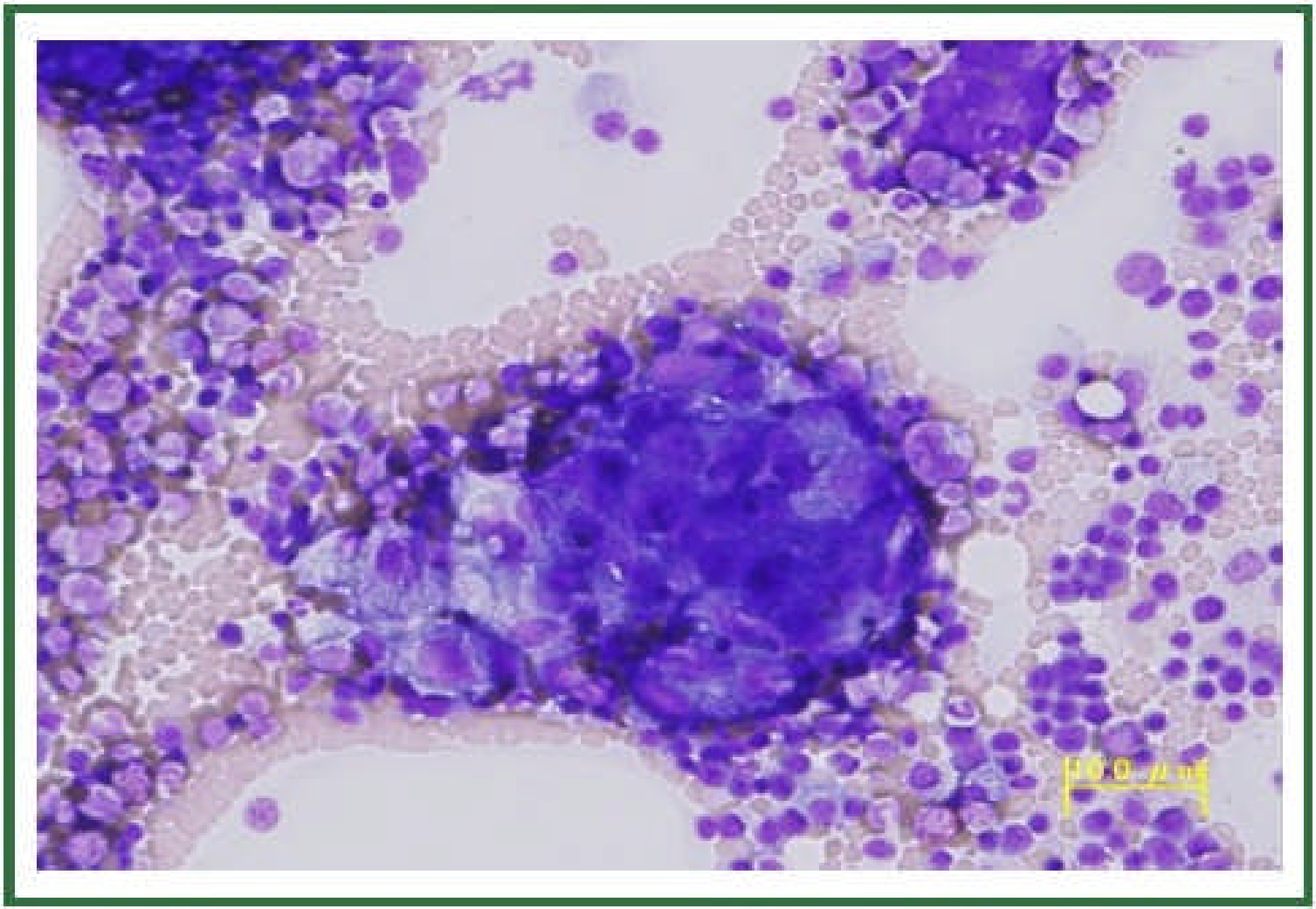
Role of Pathologist

- Confirm the diagnosis of recurrent/metastatic disease:
- Regional recurrence: Cytolology FNA
  Core biopsy
- Distant metastasis: Cytology: Pleural Fluid
  Biopsy: Pleural, Liver, brain

LUNG Mets



Breast mets Bone Marrow aspirate



Pathology

- Confirm type and grade
- Whether or not it is hormone sensitive
- Whether or not it is HER2 positive

Oestrogen Receptor

- All breast cancers metastases should be tested for oestrogen receptors
- Allred/Quick Score—a score (usually out of 8) is used to indicate a combination of the average amount of hormone receptors per cancer cell and the proportion of cells with receptors.
- A score of 3 and above is considered positive

Quick Score

Table: Guidelines for interpretation of ER results by Allred Method.

Proportion Score (PS)	Observation	Intensity Score (IS)	Observation
0	NONE	0	None
1	1%	1	Weak
2	1-10%	2	Intermediate
3	10-33%	3	Strong
4	33-66%		
5	66-100%		
Total Score			Interpretation
Sum of proportion score and intensity score			
0-2			Negative
3-8			Positive

Progesterone Receptor

- Progesterone receptor are not routinely tested in all laboratories
- When it is tested it is scored the same as Oestrogen, using Allred/Quick Score
- About 75% of breast cancers are oestrogen receptor-positive (ER-positive, or ER+). About 65% of ER-positive breast cancers are also progesterone receptor-positive (PR-positive, or PR+)

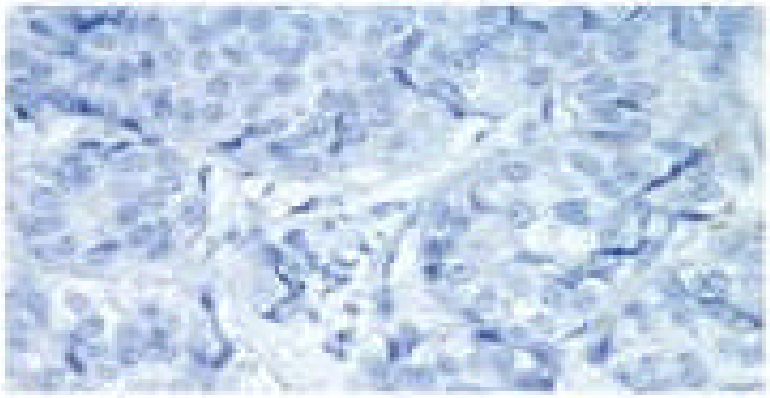
Impact or changes of ER and PR in Primary and Mets

- patients with tumors that changed from ER positive primary to negative metastasis (9.7%) (Positive/Negative) experienced significantly shorter median survival (669 days vs 1131 days).
- The changes in PR status (35%) which were mainly positive to negative, not associated with a change in survival.
- ER status of the metastatic lesion was a better predictor of survival. Therefore, optimal metastatic treatment cannot be determined solely on primary ER and PR analysis.

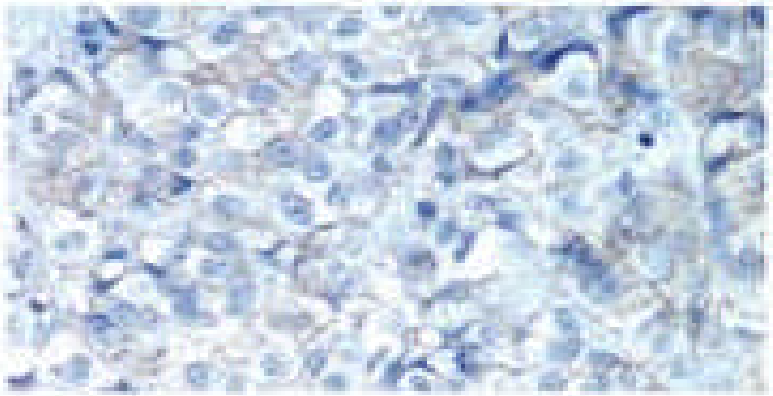
Her 2

- 15–20% of invasive breast cancers are HER2 positive
- IHC is usually carried out first. This is reported as a score ranging from 0–3. Score 0 and 1+ is negative, 3+ is positve.
- Breast cancers with borderline IHC (+2) results should be retested with FISH or CISH to confirm if they are truly HER2 positive.
- It is important to reassess the HER2 status of recurrent disease, as discrepancy between the primary and recurrent cancer occurs at least five percent of the time.

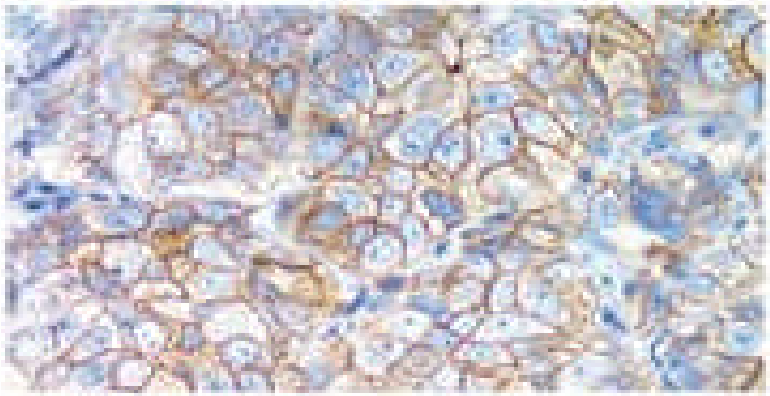
Her 2 IHC



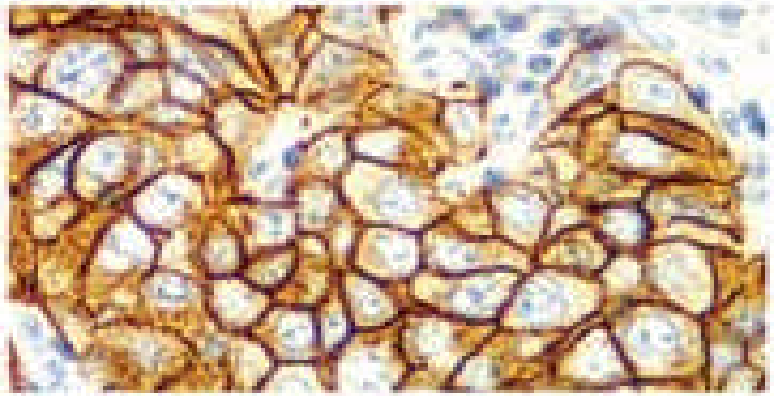
Score: 0 (40x)



Score: 1+ (40x)

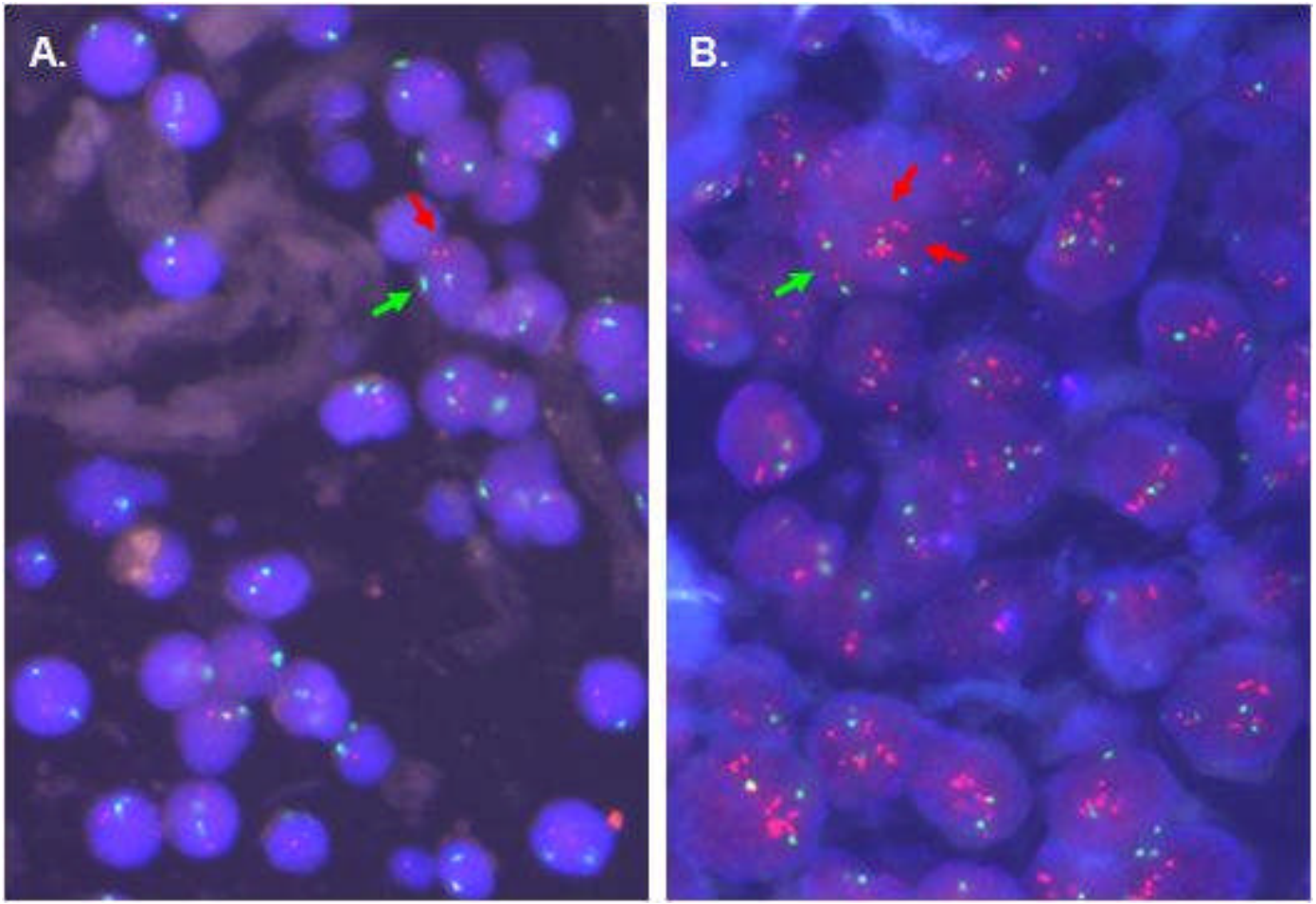


Score: 2+ (40x)



Score: 3+ (40x)

Her 2 FISH



Gene Expression Profiling

- Gene expression profiling tests (Oncotype DX) examine a set of genes in tumor tissue to determine the likelihood of breast cancer recurrence.
- These tests are also used to help determine whether adjuvant (following surgery) drug treatments should be given
- Gene expression profiling tests are recommended to newly diagnosed patients with node-negative, estrogen-receptor-positive breast cancer.

Thank you

For listening