Neoplasia 2020
answers to activities

Neoplasia 2020/21
Lecture 1 activities

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Test yourself: Match the lesions in column A with their best description in column B

A	B
A mass in the upper oesophagus composed of normal-looking gastric mucosa.	Adenoma
A testicular tumour composed of a cyst lined by respiratory mucosa. The cyst wall contains neural tissue.	Choristoma
A brain tumour composed of disorganized neural and glial cells.	Sarcoma
A colonic mass forming rounded structures lined by mucin secreting cells .	Teratoma
An invasive tumour composed of malignant smooth muscle cells.	Hamartoma

Activity

- We said that cancer trends can change.
- In the past oesophageal tumours were mainly squamous cell carcinomas. Nowadays adenocarcinoma is the most common oesophageal tumour. Do a search to find why this change happened.
- Answer:.
- Normal esophageal mucosa is squamous so only squamous cell carcinoma arises from it. This was the most common type of esophageal cancer.
- With increased reflux due to changes in food habits, the incidence of Barrett mucosa increased. Barrett mucosa is glandular (it is metaplasia from squamous to glandular mucosa) and glandular mucosa if becomes malignant will cause adenocarcinoma.
- Message: each type of tissue causes only tumor originating from that tissue. Squamous epithelium for example transforms only to squamous cell carcinoma and will never transform into adenocarcinoma. (an apple tree will only grow apples) (refer to Kung Fu Panda! A nice film by the way)

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Lecture 2 activities

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Which of the following statements are correct regarding dysplasia.. you can choose more than one

- A colonic adenoma with low grade dysplasia carries a low risk of malignant transformation. Correct, low grade dysplasia can transform to malignancy
- High grade dysplasia of the cervical epithelium can become neoplastic upon acquiring genetic mutations. correct
- Sun exposure can cause epidermal damage with dysplastic lesions that can progress to squamous cell carcinoma. correct
- Dysplastic lesions in esophageal mucosa can progress to squamous cell carcinoma. correct
- Esophageal metaplastic glandular epithelium is pre-neoplastic and can progress to adenocarcinoma correct
- Low grade dysplasia of gastric mucosa can regress. correct

These are microscopic descriptions of certain lesions. Decide if they are benign, malignant, dysplastic , in situ or microinvasive:

- 1. A mass composed of squamous epithelial cells with a high mitotic rate and atypical mitoses. There is nuclear pleomorphism, hyperchromasia and prominent nucleoli. malignant
- 2. A well circumscribed lesion composed of proliferation of smooth muscle cells with occasional mitotic figures. There is no cellular atypia or pleomorphism. benign
- 3. Cervical biopsy showing loss of maturation of the lower two thirds of the epithelium with several basal mitoses. There is superficial maturation and the basement membrane is intact. dysplasia
- 4. Cervical biopsy showing full thickness atypia and superficial mitoses. Occasional atypical cells are seen within the submucosa. microinvasive

Neoplasia 2019/20 lecture 3 activity

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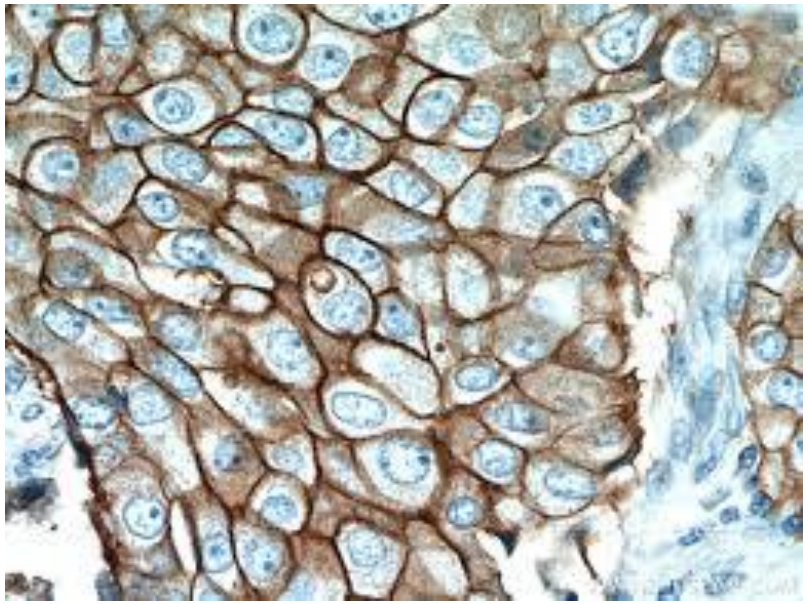
Case study: Application of today's lecture

- A 66 year old lady had a breast lump.
- A biopsy was taken and examined histologically.
- The biopsy reported as follows: the breast biopsy shows infiltration by glandular structures lined by epithelial cells showing large hyperchromatic nuclei.
- Questions:
- 1. Does this description indicate a benign or malignant tumor? maignant
- 2. Can you indicate the type of this malignancy from the description??adenocarcinoma

- EGFR is a receptor, so it is expressed on the cell membrane
- In the pic below you see brown color around the cells (membrane staining). This means this tumor has high level of this receptor.
- How this increase happened?
- Overexpression of growth factor receptor



- EGFR is a protein.. So in this tumor its production is increased.
- This increase was found to be due to amplification of the gene encoding this protein (HER2/neu)
- This is an example of an increased oncoprotein due to amplification of an oncogene.
- Patients with this mutation can be treated by a drug that targets and inhibits this gene which will decrease the EGFR production. This will deprive the tumor cells from the receptor which increases the proliferation.

- This is an example of why we need to know the genetic mutations in cancers.. We can develop specific treatments that target the mutation.

- The pathologist then mentions that they did a stain for EGFR(epidermal growth factor receptor) which is an epidermal growth receptor. And in this patient the EGFR was positive.
- What does this mean????
- The patient has EGFR mutation and we can treat with anti EGFR drugs

Neoplasia 20 lecture 5 Activity

Dr Heyam Awad

Test your understanding: read this pathology report and spot the mistake there

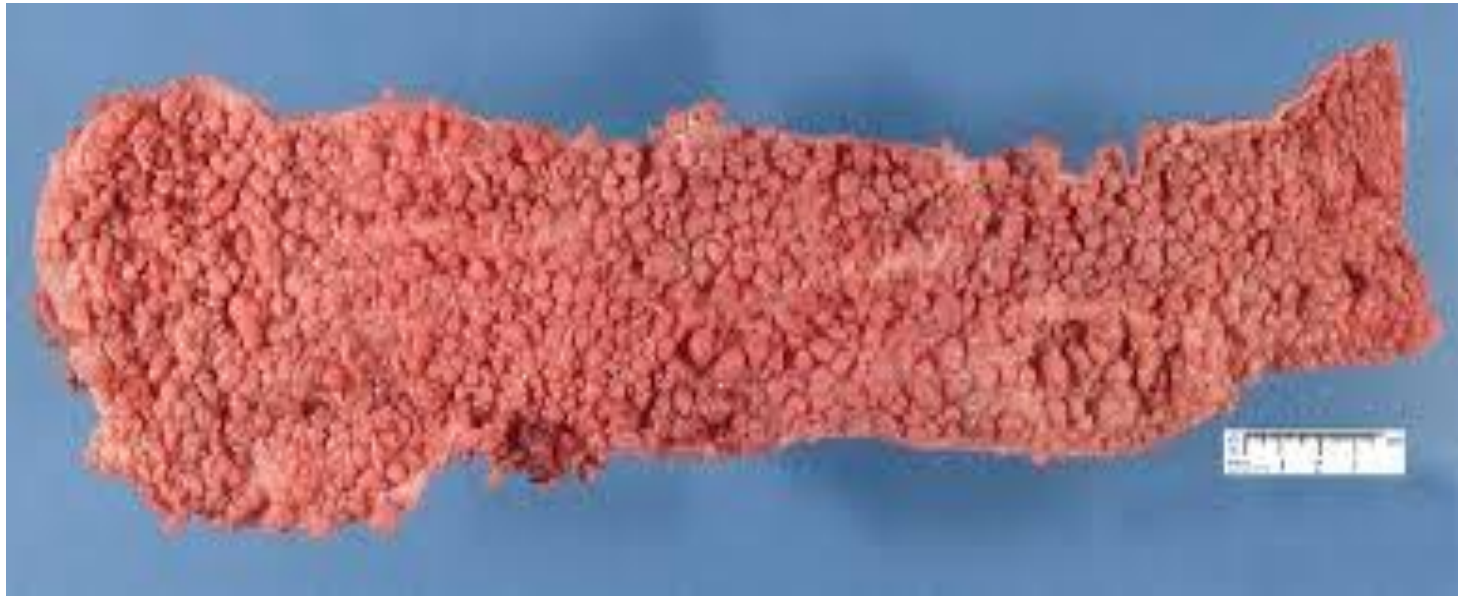
- Sections taken from the breast mass show a tumor forming glandular structures lined by atypical cells with a high mitotic rate. The tumor cells are are negative for E cadherin stain. The features are those of an invasive lobular carcinoma.
- see next slide for the answer

answer

- This is a strange report that doesn’t make sense!
- If the cells form glands then this is a ductal not lobular carcinoma.
- Negative E cadherin means that the cells lost the protein that glues them together, so they should grow in an individual cell pattern rather than in glandular structures.
- Note: if the E cadherin is really negative then the tumor is a lobular carcinoma.. But in this case it will not form glands.

- TAKE HOME MESSAG: always read histopathology reports carefully. Phone your pathologist if you need an explanation of any point or to question any findings or results… being able to correctly interpret these reports and to keep good communication with the pathologist is important to give your patients the correct management.

This picture shows FAP syndrome



adenomatous polyposis coli

- FAP (familial adenomatous polyposis coli) syndrome is similar to inherited retinoblastoma, both are inherited in an autosomal dominant fashion, but in both the gene responsible for the syndrome is a recessive, tumor suppressor gene.
- In FAP syndrome :one APC allele lost in germ line. Patients with this single loss develop intestinal polyps (adenomatous polyps= adenoma).. Hundreds of adenomas.
- These patients acquire a second mutation in the other APC gene, and this homozygous loss results in colonic adenocarcinoma.
- Patients have 100% risk of malignancy, so prophylactic total colectomy is performed
- 70-80% of sporadic colon cancers have APC mutation
- Colonic cancers with normal APC have mutated beta catenin making them undegradable by APC


Good Luck