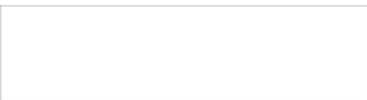


# Surgical Oncology

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Colorectal & surgical oncology

- A neoplasm or new growth consists of a mass of transformed cells that does not respond in a normal way to growth regulatory systems.
- These transformed cells serve no useful function and proliferate in an atypical and uncontrolled way to form a benign or malignant neoplasm.
- In normal tissues, cell replication and death are equally balanced and under tight regulatory control.

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- However, when a cancer arises, this is generally due to genomic abnormalities that either
    - Increase cell replication
    - Decreased programmed cell death (apoptosis)
    - A combination of the two.

- The concept of tumour progression from a benign to malignant phenotype provides the rationale behind screening and early detection programs ; i.e. if benign or pre-invasive lesions are removed, this will prevent invasive disease.

In breast and colorectal cancers, we believe they start as benign lesion ثم تتحول الى انفيزف كانسر

كيف تثبت هذا الكلام؟

The colon has adenoma to carcinoma sequence which means the transformation of normal mucosa of colon to malignant mucosa lasts from 5-10 years

فلو قدرنا نلحق بالسكرينغ كولونوسكوبي ونشيل هذي الابنورم ميوكوزا قبل تتحول ما يصير عندي انفيزف كانسر بإذن الله

وهذي نفس فكرة الماموقرام بسرطان الثدي

- Neoplasms may be benign or malignant; the essential difference is the capacity to invade and metastasize. An adjuvant structure
- Metastases are cancer deposits similar in cell type to the original cancer found at remote (secondary) sites in the body. نفس تيشيو الكولون كانسر موجودة بالرئة
- The cells of benign tumours do not invade surrounding tissues but remain as a local conglomerate. Mass
- Malignant tumours are invasive and their cells can directly invade adjacent Peritonuem tissues or enter blood and lymphatic channels, to be deposited at remote sites.

- The process of invasion and metastasis is complex and is dependent on the biology of the tumor. يعني انا عندي ملقننت ركتال كانسر يجلس بنفس المحل أو عندي ملقننت ريكثال كانسر صغير بس يصير له متاستسز. إلى الآن احنا مو عارفين أي واحد بيصير له ميتاستسز وأي واحد بيقتد نفس مكانه
- For metastases to occur it would appear that further mutations need to occur in the cancer cells. لكننا نتوقع إن فيه ميوتيشن إضافي حتى الخلايا هذي تنتشر لبقية أعضاء الجسم بعيد عن المكان الأساسي
- These extra mutations can be called the metastatic signature.

- Some tumours metastasize earlier in their clinical course than others.
- This variation may depend on the tissue of origin of the primary tumour, but can also vary widely according to the phenotype of individual tumours.
- For example, cancer of the breast is thought to metastasize early, and micrometastases are often present but not detectable when the patient first presents. على سبيل المثال البريست كانسر ينتشر بدري وعلى شكل micrometastasize لكن ما نقدر نطلعها لا بالمأموقرام ولا بالCT ولا بالMRI
- Some patients with apparently localized colorectal cancer are cured by radical surgery, but others receiving the same treatment deteriorate rapidly with metastatic disease.

على سبيل المثال: قبل فترة عندي مريض سويت له ماسف ريسكشنان عنده كانسر IVC and right ureter and right colon invading

So we have to take the whole right colon and part of the right ureter and reimplant and during surgery we clamped IVC and remove part of it then repair IVC. We also removed 2 metastatic Liver lesions. After 6 weeks from surgery he came back to us with 8 liver lesions

بينما مريض آخر عنده نفس الشيء وأموره زي الوردة مافيه اي مشاكل

- Benign tumours rarely threaten life but may cause a variety of cosmetic or functional abnormalities.
- In contrast, malignant tumours invade and replace normal tissues, destroying supporting structures and disturbing function; they can spread to distant tissues (metastasize), eventually causing death.



- Clumps of cancer cells can then embolize to distant tissues and form metastases.
- The location for the development of metastases could be a simple mechanical property with organs that have fine capillary beds, such as liver and lung, trapping circulating malignant cells which then develop into metastases.

وش معناته؟ الخلايا السرطانية مرة صغيرة وتروح مع الفينس بلود فلو وتوصل للبورتل سيركيوليشن (الكبد) والكبد فيها small vessels trapping these small cells

بينما الركتل كانسر يروح عن طريق الانتيرنال ايلياك للكومن ويوصل للIVC ومنها للقلب لكن القلب مافيه small capillaries بالتالي تعبر من خلاله للرئة ولأن الرئة فيها small capillaries تنشب الخلايا هناك

بالنسبة لسرطان الثدي تروح خلاياه للعظام Breast = Bone عن طريق شيء اسمه batson venous plexus that connect breast venous plexuses to Spinal venous plexuses

Definition of cure

- Calculations based on an exponential model of tumour growth suggest that three-quarters of the lifespan of a tumour is spent in a 'pre-clinical' or occult stage, and that the clinical manifestations of the disease are limited to the final quarter.
- For cure, every malignant cell must be eradicated But I cannot guarantee this
- There should be no recurrent tumour during the patient's lifetime, or evidence of residual tumour at death. This rigid definition of cure is rarely attainable. So they came up with this definition: ↴
- Instead, a normal duration of life without further clinical evidence of disease is generally accepted as evidence of cure, even though microscopic deposits of tumour may still be present.

# Screening

- Detecting benign lesions with malignant potential, pre-invasive cancer, and invasive malignancy before it becomes symptomatic.
- The screening test should be
  - Be sensitive
  - Be specific
  - Be acceptable
  - Detect cancer at a stage when early treatment is beneficial
  - Be cost-effective.

Mammogram every one accept it, but for colon some countries says colonoscopy is expensive so instead they do sigmoidoscopy (to check left colon since it's most common site) + Fecal accult test (to check the right side of colon). These 2 screening modalities are acceptable and less expensive

# Surgery

- Cure
- Palliative ( Treat complications)
  - Local effect *Mass obstructing the ureter or very large mass in the abdomen* كتشكل مو حلوة
  - Systemic

# Local effect

- A tumour that lies on the surface of the body may become
  - visible, change in shape or pigmentation, bleed, or discharge mucus or pus.
- A hollow viscus or duct may be obstructed by a tumour
  - Bronchus (causing pulmonary collapse),
  - Segment of bowel (causing intestinal obstruction) or
  - The bile duct or pancreatic duct (causing jaundice, or pancreatitis).
- A tumour within a closed space may cause pressure symptoms.
  - Increased intracranial pressure may complicate intracerebral tumours, and paraplegia may arise from a spinal cord tumour.

- Invasion of an organ by a tumour may compromise its normal functions and cause organ failure.
- Invasion of tissues such as the pancreas, bone or nerves can cause severe pain.
- A cancer can also mimic the pain of benign disease: for example, dyspeptic symptoms in stomach cancer.

# Systemic effects

- Weight loss Due to loss of appetite
  - Some patient becomes emaciated that they appear to die of starvation.
  - This syndrome is known as cancer cachexia, and is clinically characterized by anorexia, severe weight loss, lethargy, anemia and edema. Cancer cachexia syndrome مهمة مرة
- The secretory products of some tumors
  - Adrenal cortex tumor may secrete excess corticosteroid and cause Cushing's syndrome;
  - Parathyroid tumour may secrete excess parathormone and cause hypercalcaemia;
  - Islet cell tumour of the pancreas may secrete excess insulin and cause hypoglycaemia .

Pt who has insulinoma develop hypoglycemia.

Pt with neuroendocrine tumor metastasis, causes paraneoplastic syndrome (flushing, bronchospasm, diarrhea

So sometimes we do palliation to decrease these symptoms not only curative



# Symptoms that needs work up

- Weight loss
- Rectal bleeding/melaena
- Haemoptysis/persistent cough
- Haematuria
- Breast lump
- <sup>Persistent</sup> Dysphagia/dyspepsia
- Persistent headache
- Persistent non-specific symptoms.

جانبي مريض بالعيادة يقول يا دكتور عندي قرحة في لساني لها شهر ونص عيت تطيب مع  
اني حظيت لها كل شئ، حولته على head and neck doc وطلع عنده tongue cancer

# Investigation

- Base line for the patient Hb, Liver function, kidney function, creatinine
- Reaching the diagnosis Biopsy, CT
- Staging

- CXR
- US
- CT
- MRI
- PET CT
- Laparoscopy
- FNA
- Tru cut

## Staging:

# TNM

- T tumor size or level of invasion
- N node involvement
- M metastasis
  
- pTNM this is the pathological TNM ie post operative which is more accurate than radiological one AKA preoperative
  - Large LN may be reactive while small one may be metastatic

لان ممكن نشوف لارج لف نود لكن لما نجى نشيلها بالعملية تطلع نقتف

# Grading اللي نشوفه تحت المايكروسكوب

- Based upon the microscopic appearance of a neoplasm with H&E staining.
- In general, a ***higher grade*** means that there is a **lesser degree of differentiation** and the worse the biologic behavior of a malignant neoplasm will be.

- **G I Well differentiated** الخلايا منقسمة الى شكل قريب من شكل الخلايا الطبيعية
- **G II Moderately differentiated** نص ونص
- **G III Poorly differentiated** ما تشابه الخلايا الطبيعية
- **G IV Nearly anaplastic** ما نعرف وش هي الخلايا هذي اصلا Undifferentiated

مثلا كلهم نفس الستيجنق، لكن فيه امور اخرى تؤثر باللاوتكوم

- Prognosis is also affected by the biological characteristics of a tumour.
  - Its degree of nuclear and cellular atypia and the extent of lymphocytic infiltration, inflammatory response, and perineural and vascular invasion all influence outcome.
- Biochemical indices (e.g. oestrogen receptor status in breast cancer), can all be used in the planning of a patient's treatment.

Treatment



# Benign

- Local Excision

# Malignant Depends on each tumor

- A radical cancer operation implies complete removal of the tissue bearing the tumour, together with a margin of unaffected surrounding tissue along with the locoregional lymph nodes (known as 'en bloc resection').  
يعني أي حاجة فيها الورم لازم تتشال
- The removal of local lymph nodes is important in some cases to provide information for the stage of the cancer, rather than being of true therapeutic benefit.

en bloc resection: Means if i have a tumor invading small bowl and sigmoid, i have to resect the sigmoid and small bowl invaded by this tumor.

Sigmoid Cancer invading the bladder? I have to remove the bladder

ليه لازم اسوي كذا؟ عشان ما اكسر الكانسر سلز بالنص وتنتشر ببطن المريض

- *'Laparoscopic surgery for colorectal cancer allows for shorter hospital stay and is as good as the open technique in terms of short-term survival and recurrence rates.'*

# Adjuvant Therapy

- Sometimes not possible to remove all the local disease.  
بس لازم نعرف اذا جيت بشيل الكانسر ما ينفع اخلي جزء منه، الا لو ابي اسوي بالتق ريسكشن
- Early systemic dissemination may have occurred.
- Thus, an adjuvant to surgery is needed to provide both local and systemic control .

- Achieving a balance between the relief of symptoms and the morbidity induced by radical cancer therapy is often difficult, and it is important to remember that the quality of life is as important as the duration of survival.

- chemotherapy may help prevent both local recurrence and distant metastasis, and this is commonly used in patients with colorectal or breast cancer and who have lymph node involvement.
- Results in colorectal and breast cancer suggest that the likelihood of death from recurrent cancer is reduced by about 20–30% in patients with evidence of lymph node metastasis

# Radiotherapy

- It is administered to reduce the chances of local recurrence rather than of distant metastasis. **MCQs:**
- May be given prior to surgery to try to 'down-stage' or shrink a bulky and fixed tumour (e.g. rectal cancer) and thus make surgery easier to perform. this is termed neoadjuvant radiotherapy.
- Alternatively, it may be given to the postoperative patient in whom the chances of local recurrence are thought to be high (e.g. a patient in whom the margins at the edge of the resection specimen are involved with tumour). Like in breast cancer we remove the lump then do chemo to the whole breast because we dont want to remove the entire breast We call this **adjuvant**
- When tumours are relatively radiosensitive, radiotherapy can reduce the need for radical surgery and a more cosmetically acceptable conservative operation is then possible (e.g. lumpectomy and radiotherapy, as opposed to mastectomy in breast cancer).

لما اجيب لكم بالاختبار ريكتال كانسر نعطيه راديشن فور **لوكل كونترول** = نيوآدجيوڤيننت!!!!!!  
كررها الدكتور كثير

- Surgical excision must be adequate, and adjuvant radiotherapy or chemotherapy must not be regarded as a safety net for careless surgical practice.



- Metastatic disease now are treated for cure.
- Intense follow up is a must to ensure early detection for any recurrence.

# Palliation For decent life

- The management of patients with incurable disease involves the relief of distressing symptoms (palliative care).
- The terminal stages of malignancy can be prolonged, and pain and other distressing symptoms are common.
- Effective palliation is achieved by a variety of means. Local and/or systemic adjuvant therapy can be used to induce tumour regression: for example, to reduce the pressure effects of cerebral metastases. Surgery can be employed to resect symptomatic metastases or bypass a malignant obstruction.

- When a palliative operation is performed, the patient and his or her relatives should understand that its object is to prevent additional suffering, and not to attempt cure. نقول له ونعطيه الخيار اذا يبي او لا

نسويها عشان نخفف الأعراض اللي مآزمة المريض ومزعجته  
كم يقدر يعيش المريض بعدها؟ أنا ما يهمني الله سبحانه وتعالى يقول ومن أحيها فكأنما أحيأ الناس جميعا .  
ربما المريض عاش ثلاث اربع ايام وصلا وسبح وحلل تاخذ أجره والمريض ياخذ اجر ويتوب لله سبحانه وتعالى  
أكثر، ما تعرف  
هذا فرق المسلم عن غير المسلم وترجون من الله ما لا يرجون يا دكتورات.

Thank U

