Clinical summary

• Male 30 year-old with past history of non-seminomous germ cell tumour.

• Presents with retroperitoneal lymphadenopathy on CT.

• For restaging PET/CT.
PET/CT findings

No significant FDG uptake in the large retroperitoneal lymphadenopathy seen on CT scan.
Clinical summary

- Male 35 year-old with past history of non-seminomous germ cell tumour.
- Presents with retroperitoneal lymphadenopathy on CT 5 years later.
- For restaging PET/CT.
PET/CT findings

No significant FDG uptake in the right sided retroperitoneal lymphadenopathy seen on CT scan.
Clinical summary

• Male 25 year-old with germ cell tumour post-orchidectomy.

• For evaluation of treatment response post-chemotherapy.
The PET scan is consistent with an incomplete metabolic response to treatment with residual FDG uptake in the retroperitoneal, left inguinal lymphadenopathy and new focal splenic activity.
Teaching point

• The primary role of FDG PET in the evaluation of seminoma testis remains in the evaluation of viability of abdominal lymphadenopathy on CT scan.

Clinical summary

- Female 8 year-old presents with large left pelvic mass diagnosed as ovarian germ cell tumour, with peritoneal and mediastinal metastatic disease.

- Post chemotherapy investigations revealed good response to therapy, followed by surgical excision of the left pelvic mass and the peritoneal and pelvic deposits.

- Histology consistent with mature cystic teratoma.

- Restaging PET/CT was performed 1 and 2 years post-treatment.
PET/CT findings – 1 year post-treatment

PET shows peritoneal nodules in the abdomen (A) and pelvis (B); and right paracardiac region (C). Brown fat activity in bilateral supraclavicular fossae & neck, with ureteric activity in the pelvis (D).
PET/CT findings – 2 years post-treatment

Mild persistent uptake in the paracardiac lesion (A) and peritoneal deposit (B). No abnormal uptake in the portal region mass (C). Reactive thymus & bone marrow seen (D).

http://humanhealth.iaea.org
Teaching points

- FDG PET/CT is appropriate for suspected recurrence in the setting of elevated tumour marker and negative/inconclusive conventional imaging.

- FDG PET/CT is potentially appropriate for confirmed recurrent disease, because there is potential impact on management.

- FDG PET activity in germ cell tumour is dependent on several factors, including tumour size, differentiation and proliferation.

- Mature teratomas may show poor or no FDG uptake, whilst some can demonstrate metabolic activity, hence the limited usefulness in this setting.


http://humanhealth.iaea.org
Clinical summary

- Female 17 year-old with known dermatomyositis, on steroid therapy.
- Found to have elevated serum CA-19-9.
- Has significant family history of rectal carcinoma.
- Referred for PET/CT to exclude occult malignancy.
PET/CT findings

PET/CT study showed no evidence of any FDG-avid tumour. However, the unenhanced CT scan showed non-metabolically active:

1) Large heterogeneous ovoid mass in the right pelvis, which had some tooth-like calcifications in its anteromedial aspect of the mass.
2) Large fluid-density left adnexal mass.
Clinical follow-up

Pelvic ultrasound:
• Right adnexal mass 5.8 x 5.5 x 3.9 cm - complex mass with bright echogenic component, compatible with right ovarian dermoid.
• Left adnexal mass 6.5 x 4.3 x 3.4 cm - completely anechoic, probably a left ovarian cyst.

The patient underwent laparoscopic right ovarian cystectomy. Surgical findings:
   (1) Right dermoid cyst, 8cm (sebum, hair, and teeth)
   (2) Left paraovarian cyst, 8cm.

Patient recovered well post-operatively.
**Laparoscopic right ovarian cystectomy**

**Surgical findings:**

1. Right ovarian dermoid cyst, 8 cm in size, showing sebum, hair, and teeth (A & B).

2. Left paraovarian cyst, 8 cm (C).
Teaching points

- In this patient with dermatomyositis & elevated CA 19-9, there is a high suspicion for occult malignancy, as was diagnosed here as PET-negative right ovarian dermoid (mature cystic teratoma).

- PET scan showed no FDG-avid malignancy, but it is important to look out for PET-negative CT abnormalities.