LONDON CANCER
NORTH AND EAST

London Cancer

Guidelines for the management of Carcinomas of the Pancreas

June 2014

Contents

Staging (AJCC 7th Edition)

Primary Tumor:

T1 - confined to pancreas, 2 cm or less
T2 - confined to pancreas, > 2 cm
T3 - extends beyond pancreas
T4 - invades SMA or coeliac axis (unresectable primary tumor)

Regional Lymph Nodes:

N0 - no
N1 - yes
NX - regional lymph nodes cannot be assessed

Distant Metastases:

M0 - none
M1 - yes

Stage Grouping:

IA - T1 N0
IB - T2 N0
IIA - T3 N0
IIB - T1-3 N1
III - T4 Any N
IV - M1

Indications

- Primary chemoradiotherapy of local / locally advanced pancreatic carcinoma where the patient has medically or surgically inoperable disease.
- Neoadjuvant chemoradiotherapy of locally advanced pancreatic carcinoma where the tumour could be down-staged to enable a potentially curative operation to be performed.
- Chemoradiotherapy is usually preceded by 3-4 months of chemotherapy to shrink disease to reduce treatment volumes. Patients who have stable disease or response after induction chemotherapy may proceed with chemoradiotherapy. Patients who progress on chemotherapy may be judged as unsuitable for this treatment.
- Palliative radiotherapy of locally advanced or metastatic pancreatic cancer may be delivered for symptom relief and local control.

Pre-Treatment Assessment

- All patients should be discussed in the Hepatobiliary multidisciplinary team meeting and assessed as potentially suitable for one of the above treatments pathways
- All patients should have a histologically confirmed diagnosis.
- All patients should have staging with CT chest abdomen and pelvis. Information from a laparotomy or laparoscopy may also be available as may PET-CT.
- Patients who have laparotomy or laparoscopy should be considered for placement of fiducial markers.
- The patient should be seen in the Friday morning HPB GI Oncology clinic with CNS support if possible. Written information sheets will be given to the patient and informed consent should be sought after the patient has had opportunity to read these and to ask questions.
- Patients undergoing chemoradiotherapy should have baseline FBC, U&E, LFT and CA 19-9 checked

before treatment. Patients also require EDTA GFR and a MAG3 renogram. GFR must be greater than or equal to 50mls/min.

- Those undergoing chemoradiation need height and weight measurements.
- All chemoradiation patients should have a baseline dietetic review
- A radiotherapy management plan form (F 6.3.1) should be completed fully and delivered as per booking policy.
- For patients under going chemoradiation, this should be indicated on the management plan form (F 6.3.1). The radiotherapy review specialists should be informed of the likely start dates of treatment.

Radiotherapy Planning

- All patients should be CT planned. Intravenous contrast is required for all patients receiving radical and high-dose palliative treatments.
- Patients should be advised to not have a large meal for 4 hours before scanning or treatment. Medication, a small snack and fluid is allowed. All patients should drink 200ml of water prior to CT scanning to reduce artefact from gastric air.
- The patient should be treated supine, arms above head and immobilised with chest board and knee fix or a vac-bag. Anterior, right and left lateral permanent marks should be made to aid set up.
- Breath coaching and breath hold techniques may be employed during treatment delivery to minimise tumour motion during respiration and improve reproducibility. The choice of respiratory control will depend on patient compliance but will most commonly involve scanning and treatment in and breath hold, usually mid or end-expiratory.
- The treatment plan produced by physics must be approved and signed by the consultant or authorised registrar prior to starting treatment. The dose to organs at risk should be calculated and approved by the clinician.
- The radiotherapy treatment card must be completed and signed or countersigned by the consultant or authorised registrar.

Radical Radiotherapy

Target volume definition

Gross tumour volume (GTV)
Tumour as visualised on contrasted planning CT scan along with lymph nodes > 1cm diameter (the diagnostic CT or MRI scan must be available during GTV definition). PET/CT may also be useful in defining the GTV.

Clinical Target Volume (CTV)
GTV + 5mm, trimmed to patterns of spread.

Planning target Volume (PTV)
CTV + 15mm margin in superior –inferior direction and 10mm margin in the anterior-posterior and lateral directions.

Dose volume constraints

The following structures must be outlined:

- Spinal cord: 2cm above and below the PTV.
- Spinal cord Planning Risk Volume (PRV): Spinal cord +5mm.
- Liver: whole liver to be volumed
- Kidneys: right and left kidney to be volume

Organ at Risk	Dose constraint
PTV	V95% > 99.0%
D_{MAX}	< 107%
Spinal Cord PRV	V40 Gy < 0%
Liver	V30 Gy < 40%
Ipsilateral kidney (or for central tumours, kidney receiving the higher dose)	V20 Gy < 40%
Combined kidney	V20 Gy < 30%

Dose Prescription

50.4Gy in 28# over 5 ½ weeks
OR
45Gy in 25# over 5 weeks

The dose is prescribed to the pinnacle reference point.

Chemotherapy

- Weekly gemcitabine 300mg/m^2 (capped at 2.1m^2) is given as an outpatient in the chemotherapy suite
- Radiation should be delivered between 30 minutes and two hours of the gemcitabine infusion.
- The times of the infusion and of the radiation dose must be recorded.
- Patients may be treated with radical dose radiotherapy alone if there are clinical concerns regarding concurrent chemotherapy due to toxicity or comorbidity.

Palliative Treatment

- One phase treatment planned conventionally using CT simulator or a CT plan
- 30Gy in 10 fractions over 2-3 weeks to be delivered to macroscopic disease
- Divide treatment with one week gap in frail patients.

Assessment during radiotherapy

- The patient must be seen weekly by a Radiotherapy Review Specialist or clinician.
- Patients should be imaged according to the departmental imaging procedure.
- CBCT images may be used to quality assure the set-up of patients with pancreas patients and identify those patients with significant inter-fraction internal margin variations.
- The patient should be weighed weekly and have weekly FBC, U&E and LFTs. Where dietetic intervention has been required, continued dietetic support is essential during and after radiotherapy.

Side- Effects

- Acute : Nausea and vomiting, diarrhoea, fatigue, bone marrow suppression
- Long term : Radiation colitis, fibrosis, renal impairment if significant dose to kidney, liver dysfunction

Follow-up

- 6-8 weeks after treatment in Dr Stewart Friday morning HPB Clinic