Appendix J

GUIDELINES FOR CANCER IMAGING

Greater Manchester and Cheshire Cancer Network
Cancer Imaging Cross-Cutting Group

July 2011

Reviewed by OG CSG April 2012 – no changes; due for Review by Imaging CCG June 2012

INTRODUCTION

This document is intended as a ready reference for use within radiology departments in the Greater Manchester and Cheshire Cancer Network (GMCCN) to facilitate and standardise high quality cancer imaging and reporting. It includes the protocols for imaging of most of the common cancers as agreed by the Cancer Imaging Cross-Cutting Subgroup and the radiology representatives on the relevant Clinical Sub-Groups. In addition it includes some useful advice about reporting the staging examinations and a summary of the TNM (or FIGO) staging for each cancer site.

It should be read in conjunction with the Royal College of Radiologists booklet *Recommendations for Cross-Sectional Imaging in Cancer Management* which gives useful additional information.

CONTRIBUTORS

Ian Brett
Hugh Burnett
Maryna Brochwicz-Lewinski
Bernadette Carrington
Sharad Desai
Jane Hawnaur
Chris Keeling-Roberts
Mahesh Kumar
Stephen Lee
Anthony Maxwell (editor)
Sunil Mehta
Elspeth Partridge
Richard Sawyer
Sathi Sukumar
Ben Taylor
Paul Taylor
Salman Zaman

SOME BASIC PRINCIPLES

State all sites of tumour.

Measure marker lesions at two or three sites:

Bi-dimensional measurements:
(a) maximum long axis
(b) largest diameter perpendicular to the long axis

State section number/slice level at which measurements have been made.

Measure lung lesions on lung windows; all other lesions on soft tissue windows.

State all relevant normal findings, e.g. normal liver/lungs/bone/unobstructed kidneys.

Mention any equivocal lesions.

Lymph nodes – see next page.

If appropriate, give TNM (or FIGO) stage as part of conclusion. **This should be the norm for initial staging examinations.**

Reviewed by OG CSG April 2012 – no changes; due for Review by Imaging CCG June 2012

LYMPH NODE REPORTING

Lymph node size (in mm) at various anatomic sites: upper limits of normal for short axis diameter

Head and Neck	Facial		Not visible
	Cervical		10
			(<10 with necrosis)
Axilla			10
Mediastinum	Subcarinal		12
	Paracardiac		8
	Retrocrural		6
	All other sites	10	
Abdomen	Gastrohepatic ligament		8
	Porta hepatis	8	
	Portacaval		10
	Coeliac axis to renal artery	10	
	Renal artery to aortic bifurcation		12
Pelvis	Common iliac	9	
	External iliac		10
	Internal iliac		7
	Obturator		8
Inguinal			10

Notes

State short axis diameters for representative enlarged nodes.
Smaller nodes can contain metastases. Abnormal morphology, necrosis and MR.
Signal intensity similar to the primary may be helpful signs.
Report equivocal nodes and the full extent of nodal involvement.

Irrespective of size, local/regional clustering of lymph nodes and proximity to the primary site needs to be assessed and mentioned in the reports

No nodal disease is **N0**.
Regional nodal disease is **N1-3** (see definitions for individual tumour sites).
Nodal disease beyond the regional lymph nodes is **M1**.

Reviewed by OG CSG April 2012 – no changes; due for Review by Imaging CCG June 2012

OESOPHAGEAL CANCER (including oesophago-gastric junction tumours)

Comment
A tumour the epicentre of which is within 5.0 cm of the oesophagogastric junction and also extends in to the oesophagus is classified and staged according to the **Oesophageal** scheme.

All other tumours with an epicentre in the stomach greater than 5 cm from the oesophagogastric junction or those within 5 cm of the oesophagogastric junction without extension into the oesophagus are staged using the **Gastric** scheme.

DIAGNOSIS

The majority of oesophageal cancers are diagnosed on endoscopy. In the presence of an endoscopically malignant or highly suspicious lesion staging investigations should be instigated without waiting for histological confirmation.

STAGING

Modality:	CT
Body area:	Thorax (including supraclavicular region) Abdomen Pelvis
IV contrast medium:	Yes - liver in portal venous phase
Oral contrast medium:	Yes - negative or positive

Notes

A unified upper GI CT protocol for both oesophageal and gastric cancer is suggested, as many of these cancers are junctional. This is as follows:

- Oral water preparation. Optional IV hyoscine.
- Scan from supraclavicular fossa to inferior border of liver in arterial phase.
- Scan from dome of diaphragm to symphysis pubis in portal venous phase.

Reviewed by OG CSG April 2012 – no changes; due for Review by Imaging CCG June 2012

REPORTING OF STAGING CT

Primary tumour

State: site
Cervical oesophagus – lower border of cricoid to suprasternal notch - upper
thoracic oesophagus – sternal notch to carina
mid-thoracic – upper half of oesophagus between carina and oesophago-gastric junction (OGJ)
lower thoracic - lower half of oesophagus between carina and OGJ.
OCJ tumours- See comment above.
length of segment involved
circumferential or eccentric thickening
cranial and caudal extent
single wall thickness if possible, else max transverse diameter
margin –smooth, irregular, nodular
oesophago-aortic interface – convex or concave; < or >90◦ of aortic circumference
presence of hiatus hernia

Tis Carcinomainsitu/High grade dysplasia
T1 lamina propria or submucosa
T1a lamina propria or muscularis mucosa
T1b submucosa
T2 muscularis propria
T3 adventitia
T4 adjacent structures
T4a pleura, pericardium, diaphragm or adjacent peritoneum
T4b other adjacent structures, e.g. aorta, vertebral body, trachea

N – Regional Lymph Nodes

Regional Lymph Nodes

The regional lymphnodes, irrespective of the site of the primary tumour, are those in the oesophageal drainage area including celiac axis nodes and paraoesophageal nodes in the neck, but not supraclavicular lymphnodes.

N0 No regional lymph node metastasis
N1 1 to 2 regional lymphnodes
N2 3 to 6
N3 >6

M- Distant Metastasis
M0 No distant metastasis
M1 Distant metastasis

State final TNM stage

OTHER INVESTIGATIONS

Endoscopic ultrasound is recommended in oesophageal cancer if the CT suggests the patient may be operable. EUS useful for T staging and lymphnode chracterisation. EUS also useful for guided biopsy of nodes for more accurate nodal staging.

PET is indicated preoperatively to detect occult metastases in patients otherwise considered suitable for radical surgery.

FOLLOW-UP

Repeat CT may be required for monitoring of disease response to chemotherapy.

IMAGING OF RECURRENCE

CT is generally indicated when recurrence is suspected from symptoms, signs or other radiological investigations.

GASTRIC CANCER

DIAGNOSIS

The majority of gastric cancers are diagnosed on endoscopy. In the presence of an endoscopically malignant or highly suspicious lesion staging investigations should be instigated without waiting for histological confirmation.

STAGING

Modality:	CT
Body area:	Thorax (including supraclavicular region) Abdomen Pelvis
IV contrast medium:	Yes - liver in portal venous phase
Oral contrast medium:	Yes (negative)

Notes

Intravenous hyoscine may be useful for obtaining optimal gastric distension.

A unified upper GI CT protocol for both oesophageal and gastric cancer is suggested, as many of these cancers are junctional. This is as follows:

- Oral water preparation. Optional IV hyoscine.
- Scan from supraclavicular fossa to inferior border of liver in arterial phase.
- Scan from dome of diaphragm to symphysis pubis in portal venous phase.

REPORTING OF STAGING CT

TNM Classification of Malignant Tumours Seventh Edition

Primary tumour

State: site – OGJ/cardia; fundus; body; antrum; pylorus

Comment

Tmours with an epicentre in the stomach greater than 5 cm from the oesophagogastric junction or those within 5 cm of the oesophagogastric junction without extension into the oesophagus are staged using the **Gastric** scheme.

Circumferential or eccentric thickening
Cranial and caudal extent
Tumour thickness
Margin –smooth, irregular, nodular, extra mural tongues of tumour
Presence of hiatus hernia

Primary tumour

T1 Lamina propria, submucosa
T1a Lamina propria
T1b Submucosa
T2 Muscularis propria
T3 Subserosa (*previously was T2b)*
T4a Perforates serosa *(peviously was T3)*
T4b Adjacent structures

Nodal status -Regional nodes*:*

OGJ carcinoma: paracardial; left gastric; coeliac; diaphragmatic;lower mediastinal para-oesophageal.

Reviewed by OG CSG April 2012 – no changes; due for Review by Imaging CCG June 2012

Other gastric carcinoma:	perigastric; left gastric; common hepatic; splenic; coeliac; hepatoduodenal
(Abdominal oesophageal carcinoma:	perigastric, left gastric, common hepatic, splenic, coeliac, hepatoduodenal)

N1 1 to 2 nodes

N2 3 to 6 nodes *(was N1)*

N3a 7 to 15 nodes *(was N2)*

N3b 16 or more *(was N3)*

Metastases

State specifically: non-regional nodes, lung, liver, bone, ascites, peritoneum, other **M1**

State final TNM stage

OTHER INVESTIGATIONS

Endoscopic ultrasound may be useful in local staging.

Laparoscopy is the most sensitive test for the detection of small peritoneal deposits.

FOLLOW-UP

Repeat CT may be required for monitoring of disease response to chemotherapy.

IMAGING OF RECURRENCE

CT is generally indicated when recurrence is suspected from symptoms, signs or other radiological investigations.

Gastrointestinal Stromal Tumour (GIST)

- There should be histological confirmation of the disease
- The following are the procedures for assessing the T, N and M categories
    - **T categories** Physical examination, imaging, endoscopy, and/or surgical exploration

- **N categories** Physical examination, imaging, and/or surgical exploration

- **M categories** Physical examination, imaging, and/or surgical exploration

All sites:

T1 < 2 cm

T2 > 2-5 cm

T3 >5-10 cm

T4 >10 cm

Stage grouping depends on TNM staging and mitotic rate

Prognostic factors: site, size, mitotic rate

Ref; TNM Classification of Malignant Tumours

Seventh Edition

Modified July 2011

Dr S A Sukumar
Consultant Radiologist
University Hospital of south Manchester