Epidemiology, aetiology and the patient pathway in oesophageal and pancreatic cancers

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Consultant Medical Oncologist

What profession are you in?

1) Academic general practice
2) Non-academic general practice
3) Nursing
4) Managerial
5) Others

Put in order the commonest cause of cancer death worldwide

A) colorectal cancer
B) breast cancer
C) gastric cancer
D) lung cancer
E) hepatocellular carcinoma

Answers:
Vote 1 D, B, A, C, E
Vote 2 B, D, A, E, C
Vote 3 D, C, E, A, B
Vote 4 D, E, A, C, B
Match the five-year survival rate with the following cancer in the UK

A) colorectal cancer  
B) breast cancer  
C) oesophageal cancer  
D) lung cancer  
E) hepatocellular carcinoma  
F) pancreatic cancer

Answers:
Vote 1: 82% (CRC), 15% (Breast), 50% (Oesophageal), 7% (Lung), 5% (HCC), 3% (Pancreatic)
Vote 2: 50% (CRC), 82% (Breast), 13% (Oesophageal), 7% (Lung), 5% (HCC), 4% (Pancreatic)
Vote 3: 45% (CRC), 60% (Breast), 13% (Oesophageal), 10% (Lung), 10% (HCC), 15% (Pancreatic)
Vote 4: 45% (CRC), 60% (Breast), 5% (Oesophageal), 8% (Lung), 25% (HCC), 8% (Pancreatic)

Epidemiology of upper GI cancers

<table>
<thead>
<tr>
<th>Cancer</th>
<th>Oesophagus</th>
<th>Stomach</th>
<th>Pancreas</th>
<th>Liver</th>
</tr>
</thead>
<tbody>
<tr>
<td>World incidence</td>
<td>481,000</td>
<td>988,000</td>
<td>278,000</td>
<td>749,000</td>
</tr>
<tr>
<td>World mortality</td>
<td>406,000</td>
<td>736,000</td>
<td>266,000</td>
<td>694,000</td>
</tr>
<tr>
<td>World ranking of cancer-related deaths</td>
<td>6\textsuperscript{a}</td>
<td>2\textsuperscript{a}</td>
<td>7\textsuperscript{a}</td>
<td>3\textsuperscript{a}</td>
</tr>
<tr>
<td>UK incidence</td>
<td>8,477</td>
<td>7,266</td>
<td>8,463</td>
<td>4,241</td>
</tr>
<tr>
<td>UK mortality</td>
<td>7,610</td>
<td>4,960</td>
<td>7,901</td>
<td>3,789</td>
</tr>
<tr>
<td>UK 5-year survival</td>
<td>13%</td>
<td>17.9%</td>
<td>3.7%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

GLOBOCAN 2008 (IARC); Cancer Research UK CancerStats accessed July 2013

Oesophageal Cancer Epidemiology UK

- Incidence of oesophageal cancer rises with age
- More common in males than females
- Incidence in males continues to rise whereas incidence in female started to fall at the turn of the century

Cancer Research UK CancerStats accessed July 2013
### Percentage distribution of cases in oesophageal cancer, UK 2008-2010

![Graph showing percentage distribution of cases in oesophageal cancer, UK 2008-2010](image)

Cancer Research UK CancerStats accessed July 2013

### Risk factors for oesophageal cancer

- 2 types of cancer of the oesophagus: squamous cell carcinoma and adenocarcinoma.
- Adenocarcinoma of the oesophagus is increasing rapidly in Western populations but the underlying reasons for this are unclear.
- Tobacco use increases the risk of both types of oesophageal cancer.
- Alcohol consumption increases the risk of squamous cell carcinoma of the oesophagus.
- Some of the highest risks of squamous cell carcinoma of the oesophagus occur in people who combine a smoking habit with regularly drinking alcohol.
- Around two-thirds of oesophageal cancers in the UK are caused by smoking and around one-fifth are linked to alcohol.
- Being overweight or obese increases the risk of adenocarcinoma of the oesophagus.
- One of the strongest risk factors for adenocarcinoma of the oesophagus is the pre-cancerous condition known as Barrett's oesophagus.

### Pancreatic Cancer Epidemiology UK

- Incidence of pancreatic cancer rises with age
- Similar incidence in males and females
- Incidence generally stable although there is a small decline in males

Cancer Research UK CancerStats accessed July 2013
Which risk factor is the most important for pancreatic cancer in the UK?

1) Type 2 diabetes
2) Type 1 diabetes
3) Chronic pancreatitis
4) Smoking
5) Obesity

Risk factors for pancreatic cancer

- About 30% pancreatic cancers in the UK are caused by smoking.
- People with type I or II diabetes have roughly twice the risk of developing pancreatic cancer.
- Chronic pancreatitis is associated with increased risk of pancreatic cancer.
- Being overweight or obese increases the risk of pancreatic cancer, with around 1,000 cases in the UK each year linked to excess bodyweight.
- Eating processed meat may increase risk of pancreatic cancer.
- People with a family history of pancreatic cancer have a higher risk of developing the disease.

Case history 1

- 62 years old male
- Jan 09 presented with dyspepsia
- OGD showed malignant lesion from 39-46cm
- Biopsy → poorly differentiated signet ring adenocarcinoma
Case history 1 (cont’d)

- EUS → T3N1 type 1 OGJ adenocarcinoma with extension below the OGJ
- Laparoscopy → no peritoneal disease, no evidence of disease even at OGJ
- Mar to May 09 Randomised in OEO 5 study to have pre-operative ECX

Oesophago-gastric cancer: patient pathway

Typical symptoms: Dysphagia, dyspepsia, weight loss

- Upper GI endoscopy
- Cancer suspected
- Histology
- CT
- Localised disease
- Metastatic disease
- Endoscopic ultrasound
- PET
- Laparoscopy
- Palliative chemotherapy
- Peri-operative treatment + Surgery
The Royal Marsden

Multimodality treatment for resectable oesophageal cancer

Squamous cell carcinoma

Adenocarcinoma

Definitive chemoradiation

Pre-operative chemoradiation

Surgery

Pre-operative chemotherapy

Surgery

Pre-operative chemoradiation chemotherapy

Surgery

Post-operative chemotherapy

Post-operative chemoradiation

Oesophagus

Oesophago-gastric junction

Surgery

Pre-operative chemotherapy

Surgery

Pre-operative chemoradiation

Surgery

Post-operative chemotherapy

Post-operative chemoradiation

The Royal Marsden

Multimodality treatment in operable gastric cancer

Surgery

Pre-operative chemotherapy

Surgery

Pre-operative chemoradiation

Surgery

Post-operative chemotherapy

Post-operative chemotherapy

The Royal College of Surgeons, National Oesophago-Gastric Cancer Audit 2013

UK Second National Oesophago-Gastric Cancer Audit 2013

- National audit for all patients diagnosed between 1 Apr 2011 and 31 mar 2012 with OG cancer in England and Wales
- Data on 11,516 pts submitted
- Overall 35% of patients had curative treatment plan
Proportion of tumours diagnosed by location

- Oesophagus 47.3%
- OGJ 22.7%
- Stomach 30.0%

The Royal College of Surgeons, National Oesophago-Gastric Cancer Audit 2013

What proportion of patients with newly diagnosed oesophago-gastric cancer was referred initially by GP?

1) Two-thirds
2) Three-quarters
3) One-tenth
4) 100%

Of the patients with newly diagnosed oesophago-gastric cancer who was referred initially by GP, what proportion was referred in as an urgent suspected cancer?

1) 10%
2) 30%
3) 50%
4) 70%
5) 90%
The Royal College of Surgeons, National Oesophago-Gastric Cancer Audit 2013

Patterns of referral

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Oesophageal Stomach + OGJ</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP referral</td>
<td>67%</td>
<td>71%</td>
</tr>
<tr>
<td>Emergency admission</td>
<td>15%</td>
<td>11%</td>
</tr>
<tr>
<td>Referral from another hospital consultant</td>
<td>18%</td>
<td>18%</td>
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</tbody>
</table>

- Of the GP referrals, 71% were referred as USC: 74% oesophageal vs. 64% stomach; p<0.0001
- Patients presented as emergency admission were less likely to have a radical treatment plan

Oesophago-gastric cancer: patient pathway

Typical symptoms: Dysphagia, dyspepsia, weight loss

Upper GI endoscopy
Cancer suspected
Histology
HER 2 testing
CT
Localised disease
Metastatic disease
Endoscopic ultrasound
Palliative chemotherapy
PET
Laparoscopy
Peri-operative treatment + Surgery

National audit OG cancer: patient pathway (n=17,279)

Typical symptoms: Dysphagia, dyspepsia, weight loss

Upper GI endoscopy
Cancer suspected
Histology
HER 2 testing
CT
Localised disease (91%)
Metastatic disease
Endoscopic ultrasound (62%)
Palliative chemotherapy
PET
Laparoscopy (57%)
84% had either EUS or PET
Peri-operative treatment + Surgery
UK National Oesophago-Gastric Cancer Audit 2013: Curative treatment decisions

<table>
<thead>
<tr>
<th>Planned Rx</th>
<th>Oes SCC</th>
<th>Oeso Adeno Upper/Mid</th>
<th>Oeso Adeno Lower/S1</th>
<th>OGJ SIE/III</th>
<th>Stomach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery alone</td>
<td>12%</td>
<td>22%</td>
<td>18%</td>
<td>21%</td>
<td>47%</td>
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<td>(Total: 25%)</td>
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<tr>
<td>RT alone</td>
<td>10%</td>
<td>5%</td>
<td>4%</td>
<td>2%</td>
<td>1%</td>
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<tr>
<td>(Total: 4%)</td>
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<td></td>
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<tr>
<td>Chemo + surgery</td>
<td>35%</td>
<td>55%</td>
<td>62%</td>
<td>70%</td>
<td>46%</td>
</tr>
<tr>
<td>(Total: 54%)</td>
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<td></td>
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<tr>
<td>Definitive chemorad</td>
<td>38%</td>
<td>8%</td>
<td>8%</td>
<td>3%</td>
<td>2%</td>
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<tr>
<td>(Total: 11%)</td>
<td></td>
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<tr>
<td>ChemoRT + surgery</td>
<td>3%</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>(Total: 2%)</td>
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<td></td>
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<tr>
<td>EMR</td>
<td>2%</td>
<td>9%</td>
<td>6%</td>
<td>3%</td>
<td>4%</td>
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<tr>
<td>(Total: 4%)</td>
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</tbody>
</table>

Overall 35% of patients had radical treatment plan

UK National Oesophago-Gastric Cancer Audit 2013: Palliative treatment decisions

<table>
<thead>
<tr>
<th>Planned Rx</th>
<th>Oes SCC</th>
<th>Oeso Adeno Upper/Mid</th>
<th>Oeso Adeno Lower/S1</th>
<th>OGJ SIE/III</th>
<th>Stomach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best supportive care</td>
<td>36%</td>
<td>40%</td>
<td>36%</td>
<td>36%</td>
<td>55%</td>
</tr>
<tr>
<td>(Total: 42%)</td>
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<tr>
<td>Palliative Oncology (chemotherapy or radiotherapy)</td>
<td>49%</td>
<td>45%</td>
<td>52%</td>
<td>57%</td>
<td>38%</td>
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<tr>
<td>(Total: 47%)</td>
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<td></td>
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<tr>
<td>Palliative chemotherapy</td>
<td>44%</td>
<td>56%</td>
<td>64%</td>
<td>73%</td>
<td>80%</td>
</tr>
<tr>
<td>(Total: 64%)</td>
<td></td>
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<tr>
<td>Palliative radiotherapy</td>
<td>46%</td>
<td>35%</td>
<td>28%</td>
<td>23%</td>
<td>16%</td>
</tr>
<tr>
<td>(Total: 29%)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Palliative chemoradiation</td>
<td>10%</td>
<td>9%</td>
<td>8%</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>(Total: 7%)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Stenting</td>
<td>14%</td>
<td>15%</td>
<td>11%</td>
<td>7%</td>
<td>4%</td>
</tr>
<tr>
<td>(Total: 9%)</td>
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The Royal College of Surgeons, National Oesophago-Gastric Cancer Audit 2013

Of the patients with newly diagnosed oesophago-gastric cancer who could not be treated with curative intent, what proportion were treated with palliative care alone?

1) 20%
2) 40%
3) 60%
4) 80%
5) 100%
Case history 2
- 77 years old male
- Sep 11 presented with obstructive jaundice
- ERCP and plastic stent inserted
- Biliary brushing negative for malignancy

Staging CT and PET/CT scan

Case history 2 (cont’d)
- CT and PET/CT showed locally advanced pancreatic cancer and suspicious liver metastases
- (Diffusion weighted) MRI scan confirmed low volume liver metastases
- Metal biliary stent inserted and further biliary brushing negative
Case history 2 (cont’d)

- CT guided percutaneous biopsy of the pancreas confirmed adenocarcinoma
- Patients commenced on palliative chemotherapy with gemcitabine plus capecitabine

Pancreatic cancer: patient pathway

Typical symptoms: Obstructive jaundice, pain, weight loss

- Ultrasound
- Cancer suspected
- CT/ERCP
- Biliary brushing/cytology

Localised operable
- PET
- Laparoscopy
- Surgery
- Histology
- Chemotherapy
- Palliative chemotherapy
- Adjuvant treatment (Chemoradiation)

Metastatic
- Histology
- Chemotherapy alone
- Palliative chemotherapy

Locally advanced
- Chemoradiation alone
- Chemotherapy alone
- Chemotherapy alone

Pancreatic cancer treatment paradigm

Localised
- Surgery
- Chemoradiation

Locally advanced
- Chemoradiation alone
- Chemotherapy alone

Metastatic
- Chemotherapy alone

*Considered to be unresectable based on at least one of the following:
 i) extensive peripancreatic lymph node involvement
 ii) encasement or occlusion of SMV or SMV/portal vein confluence
 iii) direct involvement of SMA, celiac axis, IVC or aorta
Case history 3

- 81 years old male
- Aug 11 presented with obstructive jaundice
- ERCP and plastic stent inserted
- Biliary brushing negative for malignancy

Staging CT

Case history 3 (cont’d)

- Serum CA19-9 = 6,073 U/ml
- US guided biopsy showed cholangiocarcinoma
- Commenced on reduced dose gemcitabine plus cisplatin
The Royal Marsden

Bile duct cancer: patient pathway

Typical symptoms: Obstructive jaundice, pain, weight loss

- Ultrasound
- Cancer suspected
- ERCP
- Biliary brushing/cytology
- CT
- Localised disease
  - MRI/MRCP
  - PET
  - Laparoscopy
  - Surgery
- Multiple liver mets of unknown origin
- Locally advanced disease
  - Metastatic disease
  - Histology

Surgery

- Palliative chemotherapy
  ± Consolidation radiotherapy

Conclusions

- Upper GI cancers are highly lethal cancers
- Two-thirds of newly diagnosed OG cancer patients are referred by GP
- Curative treatment plans are only possible in 35% of patients
- Multi-disciplinary approach is required for these cancers
- Enrolment into clinical trials would be paramount to improve survival of these patients