Nutritional Management of Pancreatic Cancer

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Learning outcomes

- Background – Incidence, survival, risk factors, symptoms of pancreatic cancer and treatment options
- Nutritional problems associated with Pancreatic Cancer
- How to address nutritional problems
- Case studies

Poll Question 1

- Have you been involved in the Dietetic care of a patient with pancreatic cancer?

YES

NO

Incidence and survival

- In 2020 Pancreatic Cancer was ranked the 12th most common cancer and 7th most common cause of cancer mortality worldwide (Globocan, 2020).
- Incidence and survival rates vary worldwide with higher incidences in more developed countries (Ferlay *et al.* 2018, Allemani *et al.* 2018).
- 5-15% the five year survival globally (Allemani *et al.* 2018).
- The UK has some of the poorest survival rates with approximately 24% surviving for 1 year and 7% surviving for 5 years or more (Pancreatic Cancer UK, 2021)
- NI Cancer Registry (2013) projects that by 2035, there will be a 76% increase in incidence in males and a 108% increased incidence for females

Risk factors

- **Age:**
- 47% of people diagnosed are over 75 years old (Pancreatic Cancer UK, 2021)
- **Obesity:**
- 47% higher risk of pancreatic cancer for individuals with a body mass index (BMI) of 30kg/m2 or more when compared with their counterparts within the normal BMI range (Genkinger *et al.* 2011).
- **Smoking:**
- believed to cause 22% of pancreatic cancer in the UK (Pancreatic Cancer UK, 2021).
- **Familial risk:** families with 2 or more first degree relatives OR three or more relatives on the same side OR families with a family cancer syndrome caused by genetic mutation (accounts for between 5-10% of cases). (Shi *et al.* 2009).
- **Blood group**
- **Chronic pancreatitis**
- **Diabetes**

Screening and Diagnosis

- Lifetime risk of pancreatic cancer around 1%, population-based screening would not be cost effective and is not recommended (Del Chiaro *et al.* 2014, Poley *et al.* 2009).

- Pancreatic adenocarcinoma has often spread beyond the pancreas by the time it is diagnosed, the majority of tumors originating in the head (60-70%) and the remainder found in equal proportions in the body and tail (Zeni *et al.* 2014).

- Pancreatic head tumors are often detected earlier than those in the body or tail and are therefore associated with increased survival rates (Birnbaum *et al*. 2019).

- Importance to promote awareness of the symptoms of pancreatic cancer to the public and GP's due to the non-specific and often late presentation of the disease

Symptoms of Pancreatic Cancer

- Abdominal pain
- Back pain
- Indigestion
- Recent diagnosis of Diabetes
- Jaundice
- Changes to bowel habit

Staging

- Pancreatic cancer is staged according to the American Joint Committee on Cancer Staging Manual, the 8th edition was published in 2018 revising the tumour/node/metastasis (TNM) system (Chun *et al.* 2018).
- T classification: classifies the size of the tumour
- N classification: classifies the number of nodes

  N0 (0 metastatic lymph nodes)

  N1 (1 -3 metastatic lymph nodes)

  N2 (4 or more metastatic lymph nodes)
- M classification: number of metastatic sites

Management of Pancreatic Cancer

- **Surgery**

20% 5 year survival with surgery (Hartwig *et al.* 2013)

- **Neo-adjuvant chemo / chemo-radiotherapy (prior to surgery)**

Median overall survival of 18.8 months in the neo-adjuvant group and 14.8 months in the surgery first group (Van Tienhoven *et al*. 2018)

- **Adjuvant chemo (after surgery)**

5 year survival rate of 20.7% with chemo *vs* 10.4% without (Neoptolemos *et al.* 2010)

- **Palliative chemo**

When comparing palliative chemos Folfirinox and Gemcitabine, median overall survival of 11.1 months with Folfirinox and 6.8months with Gemcitabine (Conroy *et al.* 2011).

- **Supportive care**

Aims of nutritional management

- Early intervention
- Management of treatment side effects
- Improve / maintain quality of life
- Management of symptoms of malabsorption
- Improving nutritional intake / minimising weight loss
- Reasonable glycaemic control (where endocrine dysfunction occurs)
- Support for patient and carers

Malnutrition and Pancreatic Cancer

- More than 80% of those with pancreatic cancer have significant weight loss at diagnosis and over time develop severe cachexia (Bye *et al.* 2016).
- Cachexia is associated with reduced quality of life, poorer treatment tolerance and decreased survival (*Zalite et al.* 2015).
- Management primarily: high energy and protein diet, food fortification and oral nutritional supplements

Type 3C Diabetes

Diabetes due to impairment in pancreatic endocrine function, caused by pancreatic exocrine damage.

- More relaxed blood glucose targets
- Identify sources of simple sugars in the diet
- Avoid over-restriction of diet
- Refer back to Diabetes Team / Diabetes Specialist Nurses to review pharmacological management

Pancreatic exocrine insufficiency and pancreatic cancer

Pancreatic exocrine insufficiency is defined as a reduction of pancreatic exocrine activity in the intestine at a level that prevents normal digestion. (Hoffmeister *et al.* 2015).

Enzyme	Role
Amylase	Digestion of carbohydrate
Protease	Digestion of protein
Lipase	Digestion of fats

Deficiency in these enzymes can cause steatorrhoea, nausea, diarrhoea, post-prandial abdominal pain and bloating, weight loss, vitamin deficiencies and hypoglycaemia (if Diabetic).

When to start pancreatic enzyme replacement therapy (PERT) for pancreatic cancer

- Any patient with a diagnosis of unresectable pancreatic cancer

(NICE, 2018)

- Any patient with a diagnosis of pancreatic head cancer
- Pre surgery for pancreatic head cancer
- Pre total pancreatectomy
- In patients with cancer of the pancreatic body or tail, in the presence of steatorrhoea or malabsorptive symptoms

(Phillips *et al.* 2021)

How to take and store enzymes…

- **Take with a cold drink** **
- **Take capsules at the beginning and middle of a meal** (or beginning of a snack)
- **Store below 25 degrees Celsius**
- **Avoid taking with hot drinks or storing in warm environments** (heat denatures the enzymes)
- **Avoid chewing capsules / opening capsules and sprinkling over food –** enzymes can erode the soft tissue and cause mouth ulcers
- **In the presence of swallowing difficulties –** capsules can be opened, and enzymes mixed with acidic food e.g. fruit puree, yoghurt, mashed banana, jam or tomato ketchup. Mouth must be rinsed after with water.
- Enzymes work for approx. 15 mins – may require more enzymes with a longer meal / additional courses

Poll 2

- What is the starting dose of pancreatic enzyme replacement therapy with meals?

25,000 units of lipase

25,0000-50,000 units of lipase

50,000 – 75,000 units of lipase

When to take enzymes…

	Starting dose (units of lipase)
Meals	50,000-75,000
Snacks	25,000-50,000
Additional courses	25,000-50,000
Sip feeds	50,000



Enzymes are required with:

- All meals
- Most Snacks
- Supplement drinks
- Milky/ creamy drinks

Enzymes are not required with:

- Small portions of fruit or veg
- Fizzy drinks / squash / drinks with a dash of milk
- Sugary sweets e.g. jellies / boiled sweets

How to monitor enzymes

Starting dose 50,000-75,000 units with meals, 25-50,000 units with snacks

Request Proton-pump inhibitor to be started

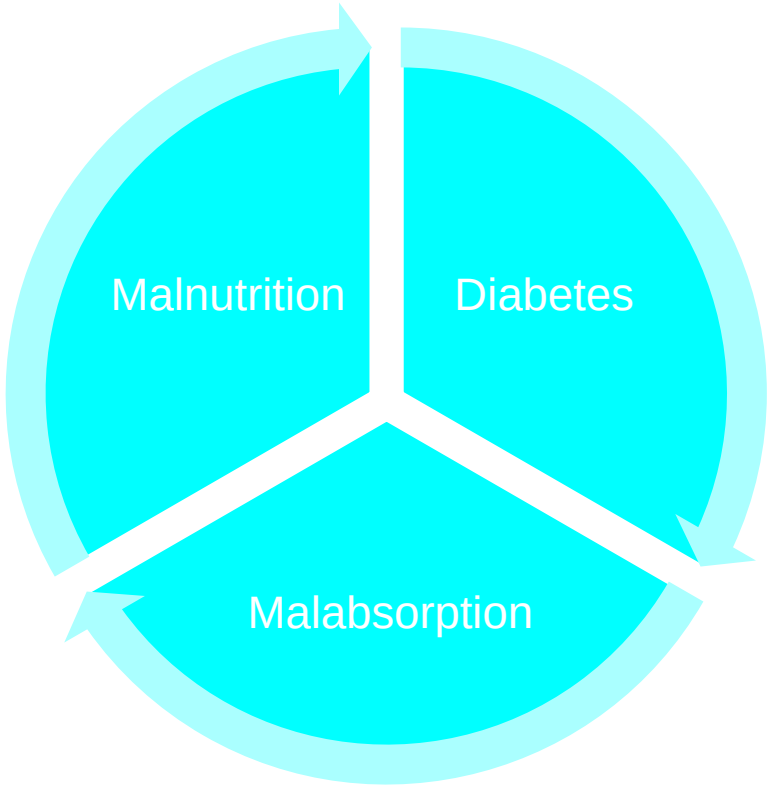
Increase dose

Consider other causes of malabsorption / alternative product

Other nutritional problems

Issue	Management
Delayed gastric emptying	Pro-kinetics, good glycaemic control, small frequent meals / snacks / nutritional supplements
Gastric outlet obstruction	Duodenal stenting / palliative bypass surgery
Duodenal stent	Liquid / soft moist diet initially. If gastric emptying normalises, dietary advice for duodenal stent i.e. avoidance of bread, seeds, skin, nuts, husks
Micronutrient deficiencies	Micronutrient screening, supplementation when serum levels low, compliance with pancreatic enzyme replacement therapy
Ascites	Little and often approach. No added salt.
Nutritional intake at end of life	Managing expectations and offering support for patient and carers, accessing other services

Managing nutritional problems



Prioritise

Patient 1

65 year old female with borderline resectable adenocarcinoma of the pancreatic head, attending for cycle 1 of neo-adjuvant chemotherapy.

- Weight loss (5% in 3 months)
- Poor appetite (meeting 75% of nutritional requirements)
- Symptoms of malabsorption e.g. steatorrhoea + cramps
- Not on pancreatic enzyme replacement therapy
- Type 3C Diabetes (on Metformin, normal glucose on biochemistry + HbA1C of 55mmol/mol)

Poll 3

- What would you prioritise on this appointment? (choose one)

MaInutrition

Malabsorption

Type 3C Diabetes

Patient 1

Intervention

- Prioritise education on pancreatic enzyme replacement therapy (consent)
- Check if on PPI
- Arrange script for enzymes +/- PPI
- Patient to check blood glucose pre-meals if able
- Patient to contact Diabetes Specialist Nurse as commencing steroids with chemo
- Can consider high energy and protein diet advice and nutritional supplements on review

Patient 2

71 year old male with locally advanced pancreatic adenocarcinoma, attending for cycle 1 of palliative chemotherapy.

- Clinically significant weight loss (10% in 3-4 months)
- Poor appetite (meeting 50% nutritional requirements)
- Indigestion and cramps
- On pancreatic enzymes and prescribed PPI twice daily
- No Diabetes, HbA1C normal, glucose on pre-assessment bloods normal
- Not on nutritional supplements

Poll 4

- What would you prioritise on this appointment? (choose one or more)

MaInutrition

Malabsorption

Glycaemic control

Patient 2

Intervention

- Check compliance with enzymes
  (re-educate or increase dose as appropriate)
- Check compliance with PPI
- Educate on high energy and protein diet
- Depending on the individual, could consider a trial of nutritional supplements
- Dietitian to re-check glucose on fasting blood profile at next appointment

Patient 3

58 year old male with a diagnosis of locally advanced pancreatic adenocarcinoma at cycle 2 of palliative chemotherapy.

- Clinically significant weight loss (7% in 3 months)
- Appetite good (meeting nutritional requirements with diet)
- No symptoms of malabsorption, on pancreatic enzyme replacement therapy
- Type 3C Diabetes, on insulin, hyperglycaemia (home blood glucose readings pre-meals of 12mmol/L – 19 mmol/L)

Poll 5

- What would you prioritise on this appointment? (choose one)

MaInutrition

Malabsorption

Type 3C Diabetes

Patient 3

Intervention

- Prioritise managing hyperglycaemia
- Check differences in blood glucose monitoring on steroid and non-steroid days
- Check diet history / food frequency for sources of refined sugars
- Avoid over-restricting diet
- Encourage patient to contact Diabetes Specialist Nurses regarding glycaemic control
- Always re-check pancreatic enzyme replacement therapy compliance

Take home tips…

- Good working relationships with the multi-disciplinary team.
- Get a thorough baseline assessment pre chemo / chemo-radiotherapy.
- Take the time to educate patients well at first appointment.
- Check when during the chemo cycle possible symptoms of malabsorption e.g. diarrhoea / flatulence / nausea occur. Do these improve / resolve at any stage? If so , could be treatment related.
- Check and re-check that patients are taking / staggering / storing enzymes appropriately.
- Meals, snacks.....and additional courses!
- Sip feeds and enzymes
- Take necessary steps to have scripts for enzymes updated for dosage / quantity as required.

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