CASE REPORT

Hyperamylasaemia: pathognomonic to pancreatitis?

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SUMMARY

An 82-year-old woman, presented with a history of vomiting, abdominal mass and a significantly raised amylase, but no clinical evidence of pancreatitis. Abdominal ultrasound and CT scans showed an ovarian tumour, and no evidence of pancreatitis—as is often associated with a raised amylase. The patient underwent bilateral ovariectomy and hysterectomy and made a good recovery.

BACKGROUND

The amylase blood test is commonly requested in any abdominal pain, particularly in accident and emergency (A&E) triage. A raised amylase should therefore be interpreted with care. A raised amylase of over 1000 is highly suggestive of pancreatitis, but there are several other causes of a raised amylase. It is important to recognise these if we are to avoid misdiagnosis.

CASE PRESENTATION

An 82-year-old woman presented to A&E with a day history of vomiting and diarrhoea. She also reported some weight loss with decreased appetite over 2–3 months. She had a history of hypertension and took ramipril and amlodipine, but was otherwise well.

On examination her abdomen was mildly distended with minimal tenderness in the epigastrium and no signs of peritonism. She had a lower abdominal mass with dullness to percussion from the umbilicus to pelvis.

INVESTIGATIONS

A bladder scan showed a full bladder and she was catheterised twice but with low residual volumes each time. Urine dipstick tested positive and she was treated for a urinary tract infection.

Blood tests were normal, except a markedly raised amylase of 4350 U/L (28–100). Unfortunately our laboratory did not have the facility to perform lipase level. The chest and abdominal X-rays were unremarkable with no sign of abdominal obstruction.

The following day, her white blood count rose to $15.7 \times 10^9/L$ (4–11), C reactive protein to 222 mg/L (<7.5) and calcium to 1.9 mmol/L (2.2–2.6). This can occur in pancreatitis, but her clinical picture suggested urosepsis and she was treated with an intravenous gentamicin.

An urgent ultrasound scan of her abdomen showed a large, pelvic, predominantly anechoic structure, probably ovarian in origin. CT of the abdomen and pelvis (figure 1) not only confirmed an ovarian lesion, but also showed no evidence of pancreatitis. A raised CA125 61 U/ML (<35)

completed the picture. Blood and urine cultures did not grow any organisms.

DIFFERENTIAL DIAGNOSIS

- ▶ Tumour—most likely ovarian as this would explain the high amylase, raised CA125 and CT findings. Some lung cancers have also been well documented to cause hyperamylasaemia;
- ▶ Fallopian pathology—this could be a benign process but a raised CA125 requires a histological diagnosis to exclude malignancy;
- ▶ Pancreatitis leading to pseudocyst—discounted by CT and clinical findings.

TREATMENT

A total abdominal hysterectomy and bilateral salpingo-oophorectomy were performed.

OUTCOME AND FOLLOW-UP

Histology showed borderline ovarian mucinous cystadenoma. There was no evidence of metastasis. One year postsurgery, the patient remains well and has been discharged from gynaecology follow-up.

DISCUSSION

Raised amylase (>5 times normal) is most commonly associated with pancreatitis, especially when there is acute abdominal pain. Other causes of hyperamylasaemia with acute abdominal pain include a perforated peptic ulcer,¹ obstructive gut disease (oedematous leakage of amylase through the gut wall), gut infarction² and diabetic ketoacidosis (derangement of carbohydrate metabolism).³

The first case of hyperamylasaemia associated with malignancy was described in 1951 from a bronchogenic carcinoma.⁴ Since then cases of carcinoma of the ovary,⁵ myeloma,⁶ gastric carcinoma,⁷

Figure 1 A large ovarian cystic lesion likely to be ovarian tumour with ascites.

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lung and pheochromocytoma⁸ have also been shown to cause hyperamylasaemia. Fallopian tube cells are known to be a source of amylase production.⁹ It has been well documented that serous ovarian tumours produce amylase from cells that resemble the lining of the fallopian tube.⁵

Given how pancreatitis is less common in older populations,¹⁰ and malignancy is more common, the latter should be considered as an alternative diagnosis for a raised amylase in elderly populations.

Of these malignancies, ovarian cancer is a likely contender in elderly women; incidence rises steeply from 50–80-years old: in our patient's age group, the incidence of ovarian cancer is 70/100 000¹¹ and mucinous cystadenocarcinoma makes up 15–20% of the cases.

Learning points

- ▶ Amylase is often requested when patients present with abdominal symptoms, before a diagnosis of pancreatitis is even considered.
- ▶ However, on seeing that amylase is raised, a default initial diagnosis of pancreatitis is often made.
- ▶ Although raised amylase is frequently diagnostic of pancreatitis, malignancies should be considered among the alternative causes; particularly in older populations.
- ▶ Owing to the higher prevalence of cancer among this demographic, raised amylase is more likely to be indicative of malignancy than in younger populations.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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