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Hypertriglyceridaemic pancreatitis induced by oral contraceptives: rare but a fatal complication

Zapalenie trzustki związane z hipertriglicerydemią wywołane przyjmowaniem doustnych
środków antykoncepcyjnych – rzadkie, lecz śmiertelne powikłanie

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Abstract

Acute pancreatitis is a common surgical emergency with a variety of aetiologies. Hypertriglyceridaemia is considered as one of the causes, especially in elevated triglyceride levels in the absence of other culprits. However, it rarely occurs in combination with oral contraceptives. We present a case of a 35-year-old woman with acute pancreatitis caused by oral contraceptive-induced hypertriglyceridaemia. This case report highlights the importance of considering rare side effects of oral contraceptives, which are commonly used by women at childbearing age. Proper clinical history and evaluation with measurements of fasting serum lipid profile in high-risk patients will help explain the aetiology of pancreatitis to avoid further morbidity in the future.

Keywords: oral contraceptives, pancreatitis, hypertriglyceridaemia

Streszczenie

Ostre zapalenie trzustki o różnej etiologii jest częstym problemem pacjentów zgłaszających się na ostry dyżur chirurgiczny. Za jedną z jego przyczyn uznaje się hipertriglicerydemię, zwłaszcza w przypadku podwyższonego stężenia trójglicerydów oraz braku innych czynników etiologicznych. Niemniej jednak choroba ta rzadko rozwija się w związku ze stosowaniem doustnych środków antykoncepcyjnych. W pracy przedstawiono przypadek 35-letniej kobiety z ostrym zapaleniem trzustki spowodowanym hipertriglicerydemią w następstwie przyjmowania doustnych środków antykoncepcyjnych. Autorzy zwracają uwagę na potrzebę uwzględnienia działań niepożądanych tej metody antykoncepcji, powszechnie stosowanej przez kobiety w wieku rozrodczym. Odpowiednio zebrany wywiad chorobowy i badania kliniczne, w tym ocena profilu lipidowego surowicy u pacjentek wysokiego ryzyka, są pomocne w wyjaśnieniu etiologii i pozwalają uniknąć choroby w przyszłości.

Słowa kluczowe: doustne środki antykoncepcyjne, zapalenie trzustki, hipertriglicerydemia

INTRODUCTION

Acute pancreatitis is a common disease with various aetiologies which can result in mortality of up to 20%⁽¹⁾. Gallstones and alcohol are the most common causes, whereas metabolic and structural factors, drugs, trauma and iatrogenic factors are responsible for other cases. Hypertriglyceridaemia contributes to acute pancreatitis in 7% of cases⁽²⁾. It usually occurs in the absence of other aetiological factors and with the presence of elevated triglyceride levels (>11.3 mmol/L) and latescent serum⁽³⁾. The relationship between oral contraception and hypertriglyceridaemia has been shown in few case reports published in the early 1970s⁽³⁾. Although it is indeed a safe method of birth control, acute pancreatitis may be one of its rare complications, as highlighted in this case.

All oestrogen-containing oral contraceptive pills (OCP) will elevate fasting serum triglyceride levels by increasing the hepatic synthesis of triglycerides, which will be reflected in increased very-low-density lipoprotein (VLDL)⁽³⁾. Furthermore, this usually occurs in patients with moderate obesity, impaired glucose tolerance and a positive family history of diabetes and hyperlipidaemia⁽³⁾. Hence, the purpose of this case report was to draw attention to the rare side effects of OCP, which should be considered to avoid serious complications in the future.

CASE SUMMARY

We present a case of a 35-year-old woman with a history of underlying type 2 diabetes mellitus, who had no significant past surgical history. She presented to the emergency department with epigastric pain for 3 days, which was gradual in onset, burning, with no radiation, and relieved when sitting forward. It was further associated with vomiting and loss of appetite. On further questioning, the patient denied history of fever, trauma, smoking or alcohol intake, past history of similar pain and traditional medication or steroid intake. On examination, she was severely obese with a body mass index of 38 kg/m^2 . She was dehydrated but had normal skin and mucosa colour. Vital signs were stable, there was no haemodynamic instability and oxygenation was good. Abdomen was tender at epigastrium, with no guarding or palpable masses. Other systems were unremarkable. Investigations showed elevated serum amylase up to 1,034 U/L with urine diastase of 2,500. Imrie scoring was performed with a score of 2, to which hypoalbuminaemia (27 g/L) and leucocytosis ($15 \times 10^9/\text{L}$) contributed. Blood glucose was slightly raised (9 mmol/L). Renal profile and liver function test, electrocardiogram (ECG) and chest radiograph showed no abnormalities at admission. Therefore, the patient was treated for mild acute pancreatitis in view of no organ failure and no local or systemic complications. Ultrasound of the hepatobiliary tree was done on day 1 of admission, and showed features of acute pancreatitis with fatty liver and no gallstones or dilatation of the biliary ducts.

In view of no gallstones or alcohol intake, fasting serum lipid profile was done to further investigate the cause of acute pancreatitis. Triglycerides increased to 12 mmol/L (normal range <2.3 mmol/L) and cholesterol of 8 mmol/L (normal range 5.2 mmol/L).

During the first 2 days of admission, the patient was fasted and treated with crystalloid infusion, insulin sliding scale, analgesics, statins and a proton pump inhibitor. On day 2 of admission, the patient developed respiratory distress with type 1 respiratory failure and was electively intubated and nursed at the intensive care unit (ICU). She was treated for acute respiratory distress syndrome (ARDS) which was an end organ complication of acute pancreatitis. In ICU, she was given supportive treatment, and no cardiovascular or renal compromise was noted. Computed tomography (CT) of the abdomen was performed on day 7 of admission to look for local complications of acute pancreatitis, and showed only features of acute pancreatitis with moderate to gross ascites and no features of necrotising pancreatitis. She was extubated on day 7 of admission and was transferred back to the general ward. In the ward, further history was taken from the patient to investigate the cause of hypertriglyceridaemia since the patient had no pre-existing dyslipidaemia. To our surprise, the patient mentioned that she has been on OCP for 3 to 4 years, which she failed to report during admission to the consulting doctor. The patient's condition improved with no systemic compromise and was discharged well on day 12 of admission. She was started on gemfibrozil and advised to discontinue oral contraception. On a follow-up at our clinic, the patient was well, with no active complaints. Further reinforcement was made on avoiding OCP intake and advice was given for weight loss and continuation of follow-up for the comorbidities.

DISCUSSION

Hypertriglyceridaemia is one of the common causes of pancreatitis. All oestrogen-containing oral contraceptive pills (OCP) will elevate fasting serum triglyceride levels by increasing the hepatic production of triglycerides, which will be reflected by an increase in VLDL. Although oestrogen can elevate serum triglycerides in patients without pre-existing hyperlipidaemia, these increases are usually mild and not associated with pancreatitis. The exact mechanism of hypertriglyceridemia that can lead to pancreatitis is unclear. However, it has been suggested that the hydrolysis of triglycerides by pancreatic lipase leads to accumulation of free fatty acids in high concentrations⁽⁴⁾. These large numbers of fatty acids are bound to albumin which leads to albumin binding saturation, where large amounts of cytotoxic free fatty acids will be released. Acinar or capillary injury can occur with the unbound free fatty acids⁽⁴⁾. Usually when the serum triglyceride level exceeds 11.3 mmol/L, chylomicrons, which may be normally eliminated after 8 hours in a conducive physiological environment, will be permanently present⁽¹⁾. Plugging of the pancreatic capillaries will

occur, which will result in ischemia and acidosis⁽⁴⁾. As a result, trypsinogen will be activated by the free fatty acids in the acidic environment and initiate acute pancreatitis⁽⁴⁾. Elevation of triglycerides is also related to the circulating oestrogen levels.

Oestrogen-containing OCPs can produce a 40% reduction of insulin sensitivity, which will eventually increase free fatty acid levels, cholesterol and triglycerides⁽³⁾. In this case, the diagnosis of acute pancreatitis was well established and the common causes, i.e. gallstones and alcohol, were ruled out. OCPs in addition to patient's risk factors of diabetes mellitus and obesity contributed to hypertriglyceridaemia. It is important to investigate the cause of hypertriglyceridaemia as this will ensure that the patient will not develop recurrent pancreatitis, which will increase her risk of morbidity and mortality, in the future.

CONCLUSION

This case report accentuates the importance of considering acute pancreatitis in a young female patient who is on OCP who presents with an acute abdominal pain. Moreover, proper clinical history and evaluation with measurements of fasting serum lipid profile in high risk patients with obesity or family history of dyslipidaemia will help determine the aetiology of pancreatitis to avoid further morbidity in the future.

Conflict of interest

The authors declare that they have no conflict of interest.

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