

¹Department of General Surgery, District Specialist Hospital, Lublin

²Human Anatomy Department, Medical University of Lublin

³Pathology Department, District Specialist Hospital, Lublin

⁴2nd Surgical Department, Medical University of Lublin

⁵Medical Emergency Department, UTM Rzeszów

⁶Anesthesiology Department, District Specialist Hospital, Lublin

*Nursing and Health Science Faculty, Medical University of Lublin

KAMIL TORRES^{1,2}, ANDRZEJ CHROŚCICKI¹,
URSZULA KONARZEWSKA-RADWAŃSKA³, ANNA TORRES²,
GRZEGORZ STAŚKIEWICZ², KONRAD STYLIŃSKI⁶,
MAREK WOJTASZKO⁵, ANDRZEJ DĄBROWSKI⁴,
RYSZARD MACIEJEWSKI^{*,5}

Diagnostic difficulties in a patient with insulinoma – a case report

Tumours of the endocrine pancreas are benign in 90% of cases and even if the malignancy occurs they tend to grow slowly and metastasize usually into regional lymph nodes. Therefore in significant proportion of cases endocrine pancreatic tumours can be successfully treated by surgical excision (1).

The most common tumour of the endocrine pancreas is insulinoma, a neoplasm derived from the B-cells of Langerhans' islets. At the same time insulinoma is the most common endocrine tumour in adults in general. Usually, it grows as a solitary tumour but can be also connected with multiple endocrine neoplasia (MEN1). If it is solitary it is located equally often in the head, body and tail of the pancreas, in rare cases it is observed to be localized outside of pancreas. In most cases insulinomas are benign tumours. If they are malignant their diameter is usually bigger than 2 cm on clinical presentation. The symptoms of the insulinoma are connected with excessive insulin secretion by the B-cells. Their appearance is not preceded by carbohydrates intake and they usually show up early in the morning, when the patient is fasting. This feature distinguishes hyperinsulinism connected with insulinoma from reactive postprandial hyperinsulinism (reactive hypoglycemia) which occurs in response to meals. The most commonly observed symptoms of insulinoma are excessive sweating, weakness, hunger, palpitations, tremor, nausea, pain located in the epigastric region and being a result of hyperactivity of the adrenergic system. The hypoglycemia has also a direct influence on the central nervous system causing confusion, anxiety, visual disturbances (diplopia), headaches, dizziness, the aggressive behaviour, seizures and coma. The seizures and loss of consciousness are never observed in cases of reactive hypoglycaemia, which helps differential diagnosis. In cases of patients presenting the mild symptoms of hyperinsulinemia the insulinomas may remain not detected for years, causing organic brain damage syndromes, personality changes, memory disorders, paranoid syndromes and dementia (1, 2).

The diagnosis of insulinoma is based on the symptoms of hypoglycaemia which disappears after oral or intravenous administration of glucose, documentation of fasting hypoglycaemia (repeated

serum glucose tests levels below 2.2 mmol/l) and higher insulin serum concentration with regard to glucose levels. The developing of symptomatic hypoglycaemia after 72-h fast confirms diagnosis. The presence of medium size or large pancreatic tumour can be demonstrated by abdominal ultrasound. Small pathologies (<1.5 cm) may be localized using arteriography (which allows to detect tumours whose diameter is larger than 5 mm), MRI, angio helical CT, transhepatic venous sampling and endoscopic ultrasound (2–4). According to Boukhan et al. the sensitivity of these methods has been estimated as 50%, 47%, 30%, 24%, 55%, 40% respectively and of intraoperative contact ultrasound as 91% (5).

The treatment of insulinoma is a surgical excision of the tumour, which in approximately 75% of cases allows complete cure. The exact localisation of the tumour should be determined before the surgery. In cases of small insulinomas which can not be detected by the above mentioned methods the explorative laparotomy is performed and the attempts are made to detect the tumour by palpation or by intraoperative contact ultrasound. In the study performed by Boukhan et al. nine of the 11 nonpalpable and nonvisible tumours at operation were localized by intraoperative ultrasonography. The solitary tumours are enucleated and in cases of larger, deeply embedded pathologies distal pancreatectomy or pancreaticoduodenectomy is performed. In all cases any enlarged lymph nodes or macroscopic liver lesions are taken for intraoperative pathological examination. Subtotal pancreatectomy is employed in MEN1 patients. Malignant insulinomas are treated by total pancreatectomy with regional lymphadectomy. In case of inoperable insulinomas or in order to control the symptoms of hypoglycaemia in the preoperative period diazoxide therapy may be indicated. Treatment of malignant, inoperable insulinomas includes also therapy with somatostatin analogues (octreotide) and streptozotocin (1, 6).

CASE REPORT

A 70-year-old woman was admitted to District Specialist Hospital in November 2006 due to pain in the epigastric region. The patient complained of nausea and recurrent abdominal pain located in the superior left abdominal quadrant that lasted for 10 months. During that time the patient lost 18 kg of weight. Two years before she was diagnosed with diabetes mellitus and treated with metformine (1500 mg/24 h) since then. She was also treated for arterial hypertension and NYHA III as well as cataract. Moreover, patient's medical history included hysterectomy (due to fibromas) in 1980 and cholecystectomy in 1989. In January 2006 the patient underwent abdominal ultrasound examination during which a pancreatic tumour located in the body and tail was discovered. In February the ultrasound was repeated and the increase in tumour's diameter was observed. Nevertheless, no further diagnostics or treatment was undertaken. In March 2003 the patient was hospitalized in her home town hospital due to severe abdominal pain, nausea and vomiting. At that time the double contrast enema and colonoscopy were performed revealing no evident pathology except for slightly decreased motility of the colon. The patient was diagnosed with spastic colonopathy and discharged from the hospital. On admission to our department no abnormalities were found in complete blood cell count, urinalysis, electrolytes, liver and kidney function. On the physical examination the patient presented with the large abdominal tumour, that was painful and could be palpated in the left epigastric region. On the ultrasound examination the tumour was polycystic, had a diameter of 103 cm, was localized in the tail of pancreas, pushing the spleen downwards. The head and body of the pancreas were intact. No other pathologies were found. In order to specify the nature and extent of the tumour the CT examination was also performed. CT scan revealed the mass of pathologic tissue richly vascularised, but contrary to ultrasound, it did not identify the origin of the tumour. According to the radiologist performing the scan the most possible origin of the tumour was the stomach wall and suspicion of

the lymphoma was suggested. Infiltration of the stomach wall, spleen hilus and body and tail of the pancreas was also described. No enlarged lymph nodes or other pathologies were found. Gastroscopy performed as the next step of the diagnosing process revealed an impression of the posterior wall covered with normal gastric mucosa, the varices of the wall and a gastric polyp (5-mm diameter), which was removed. After the above examinations the patient was qualified for surgical treatment. During laparotomy an enormous tumour (the diameter approximately 10 cm) of the body and tail of the pancreas was found. The tumour had uneven surface and rich pathological vascular network. No macroscopic infiltration of the stomach wall or spleen was observed. In order to remove tumour completely the distal pancreatectomy was performed. During the surgery the surgeon discovered a significant dilation of the omental and stomach blood vessels as well as the presence of hypertension in the superior mesenteric vein. The spleen was significantly enlarged and the splenic vein was dilated and contained a thrombus inside. That was the reason the spleen was also removed. There were no complications during the surgery and postoperative period. The pathological examination of the obtained specimens revealed the insulinoma of the pancreas.

DISCUSSION

Tumours of the endocrine pancreas are not very common pathology, and incidence of the insulinoma itself is estimated to be one per 250,000 inhabitants (6). At the same time they constitute a difficult diagnostic issue. In large series the interval between the onset of the symptoms and the definitive diagnosis of insulinoma was 37 months, with the range of 0 to 14 years (6). In the presented case report the diagnostic process between the beginning of the patient's ailments until the diagnosis confirmed by pathology report lasted almost a year.

The difficulties in diagnosing the endocrine pancreatic tumours are due to the fact that in most cases patients not only present with the subtle symptoms of hypoglycaemia or neuroglycopenia, but there is also no evident sign of the tumour within the pancreas (7). The case of insulinoma presented in this paper seems to be unusual in this respect, as except for nausea the patient did not present with any of the symptoms of hypoglycaemia or neuroglycopenia, but on the other hand, a large pancreatic tumour was observed and was evident even on physical examination.

REFERENCES

1. Cuscheri A., Grace P. A., Darzi A. et al.: *Clinical Surgery, Second Edition, Disorders of the Colon and Rectum*, Ed. Blackwell Science Ltd., Turine 2003.
2. Service F. J.: Recurrent hyperinsulinemic hypoglycemia caused by an insulin-secreting insulinoma. *Nat. Clin. Pract. Endocrinol. Metab.*, 2 (8), 467, 2006.
3. Rassetta G., Geatti O., Pozzetto B. et al.: An occult pancreatic insulinoma: radio-guided surgery with ¹¹¹In-octreotide. A case report and review of the literature on pre- and intraoperative diagnosis. *Ann. Ital. Chir.*, 71 (1), 107, 2000.
4. Hall R. S., Hanley J. F., Georgitis W. et al.: Endoscopic ultrasound localization of a pancreatic insulinoma: case report and review of the localization techniques. *Mil. Med.*, 163 (12), 853, 1998.
5. Boukhman M. P., Karam J. M., Shaver J. et al.: Localization of insulinomas. *Arch. Surg.*, 134 (8), 818, 1999.
6. Vazquez Quintana E.: The surgical management of insulinoma. *Bol. Asoc. Med. P. R.*, 96 (1), 33, 2004.
7. Dajbog E., Lefter L. P., Scripcariu V. et al.: Diagnostic features of benign pancreatic insulinomas. An analysis of three cases. *J. Gastrointest. Liver Dis.*, 15 (1), 61, 2006.

SUMMARY

A case of 70-year-old female suffering from hypertension and diabetes for the last 2 years is presented. The patient complained of nausea and recurrent abdominal pain located in the superior left abdominal quadrant. In January 2006 she underwent abdominal ultrasound examination which revealed pancreatic tumour. In November 2006 the patient was admitted to the surgery ward of District Specialist Hospital in Lublin. An enormous tumour of the body and tail of the pancreas was found and removed. The tumour had uneven surface and rich pathological vasculature. The pathological examination of the obtained specimens revealed the insulinoma of the pancreas. The diagnostic and therapeutic difficulties are presented and literature discussed.

Trudności diagnostyczne u pacjenta z *insulinoma* – opis przypadku

Praca opisuje przypadek choroby 70-letniej pacjentki z nadciśnieniem tętniczym i cukrzycą typu drugiego (leczoną od dwóch lat), zgłaszającą nudności i bóle brzucha umiejscowione w nadbrzuszu lewym, trwające z przerwami od 10 miesięcy. Na podstawie badania ultrasonograficznego brzucha w styczniu 2006 r. u pacjentki rozpoznano guz trzustki (wychodzący z trzonu i ogona). Pacjentka została przyjęta w marcu 2006 r. do szpitala rejonowego, gdzie po wykonaniu diagnostyki nie zaproponowano dalszego leczenia. W listopadzie 2006 r. pacjentka została przyjęta do Oddziału Chirurgii Ogólnej WSzS w Lublinie, gdzie przeprowadzono zabieg chirurgiczny trzustki. W trakcie zabiegu stwierdzono obecność dużych rozmiarów guza trzonu i ogona trzustki wypełniającego nadbrzusze. Guz całkowicie usunięto. W czasie zabiegu stwierdzono również poszerzenie naczyń krwionośnych sieci większej i żołądka oraz objawy nadciśnienia w żyły kręzkowej górnej. Preparat tkankowy zbadano histopatologicznie, stwierdzając obecność wyspiaka – *insulinoma*. W pracy omówione są trudności diagnostyczne i terapeutyczne u pacjentów z *insulinoma*.