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Phaeochromocytoma with transient hyperamylasaemia during hypertensive crisis

Episodic hyperamylasaemia in a patient with phaeochromocytoma has not been reported. Abnormally high serum amylase activities have been observed in various conditions without pancreatitis and salivary gland disorders.^{1 2} We describe a patient with phaeochromocytoma accompanied by pronounced hyperamylasaemia during hypertensive crisis in whom acute pancreatitis was diagnosed initially.

Case report

A 62 year old woman was admitted to another hospital on 11 August 1984 with increasing abdominal pain, nausea, headache, and palpitation for three days. She had a 10 year history of episodic hypertension rarely accompanied by nausea or vomiting. On admission her serum amylase activity and several other enzyme activities were noted to be raised (see table), and she

(table). During each episode serum amylase activity was greatly increased and returned to normal within two days. In the first of these episodes urinary catecholamine excretion rose from 436 to 4320 µg/24 h. In the second episode isoamylase analysis³ showed increased salivary type isoamylase (74.4%; normal 47-67%) and reduced pancreatic type isoamylase (14.0%; normal 35-53%). Amylase to creatinine clearance ratios in the two episodes were 5.1% and 2.1%, respectively. Other serum enzyme activities remained normal.

A left adrenal tumour 2.8×3.5×2.6 cm was removed and confirmed histologically as a phaeochromocytoma. Five months later she had had no further episode of high blood pressure, and serum amylase activity was normal.

Comment

Hyperamylasaemia due to salivary type isozymes has been found in various conditions without salivary gland disorders, such as pneumonia and postoperative state.^{1 2} Hyperamylasaemia during hypertensive crisis may be a further example. Salivary type isoamylases are widely distributed in various glandular epithelia, whereas pancreatic type isoamylases are considered to arise specifically from the pancreas. In our patient we found neither any clinical abnormality of the pancreas and biliary tract nor an increased amylase to creatinine clearance ratio suggesting acute pancreatitis. Hence any pancreatic contribution to hyperamylasaemia must be very small. Continuous hyperamylasaemia throughout the hospital stay with similar isoamylase patterns has been documented in patients with primary carcinomas of lung, pancreas, and colon as amylase producing tumours.^{4 5} In our patient hyperamylasaemia was transient, lasting at most for three days, and was not observed in the sample from the left adrenal vein, where the plasma catecholamine concentration was much higher than in other sites. Hence transient hyperamylasaemia during the hypertensive crisis was probably secondary to increased catecholamine secretion or high blood pressure.

The small and transient rises of serum lactate dehydrogenase and creatine phosphokinase activities were suggestive of haemolysis and

Blood pressure, serum enzyme activities, and plasma catecholamine concentrations during hypertensive crisis. [Normal ranges are given in square brackets]

	Blood pressure (mm Hg)	Amylase (IU/l) [66-240]	Aspartate transaminase (IU/l) [8-41]	Lactate dehydrogenase (IU/l) [120-260]	Creatine phosphokinase (IU/l) [5-160]	Noradrenaline (nmol/l) [0.35-2.65]	Adrenaline (nmol/l) [<0.65]
11 Aug 1984	196/90	2294	93	354	565	—	—
27 Aug 1984	180/80	1258	32	331	—	—	—
31 Oct 1984	218/104	6068	23	181	—	20.2	5.5
4 Dec 1984	190/110	1048	26	310	171	—*	—*
14 Dec 1984	210/100	3618	36	264	73	21.6	3.4

*Urinary catecholamine excretion measured.

Conversion: SI to traditional units—Noradrenaline: 1 nmol/l ≈ 169 pg/ml. Adrenaline: 1 nmol/l ≈ 183 pg/ml.

was treated as a case of acute pancreatitis. Within seven days her condition was greatly improved and blood pressure was stable at around 130/70 mm Hg. Serum enzyme activities returned to normal.

On 27 August and 31 October she had further episodes of abdominal pain, nausea, sweating, and headache accompanied by high blood pressure, high plasma catecholamine concentrations, and hyperamylasaemia (table). Treatment as before produced a dramatic improvement, with falls in blood pressure and serum amylase activity after three days. Computed tomography (CT) then showed a left suprarenal tumour but no abnormality in the pancreas. On 5 November she was transferred to Kobe University Hospital for further investigation.

On admission she was found to be dehydrated with a temperature of 36.9°C, pulse 84/min, and blood pressure 160/90 mm Hg. Examination elicited nothing abnormal except for diffuse tenderness in the abdomen. She had lost 9 kg in the past two years. Serum enzyme activities, including amylase, were normal but plasma catecholamine values were raised (noradrenaline 21.7 nmol/l (3670 pg/ml), adrenaline 2.6 nmol/l (470 pg/ml)). Urinary catecholamine excretion was 1030 µg/24 h (normal < 100 µg/24 h). CT and magnetic resonance imaging showed a left suprarenal tumour and abdominal aortography a round left adrenal tumour. Regional venous sampling showed that the serum amylase activity was 37 IU/l in the left adrenal vein and 42 IU/l in the superior vena cava, whereas the plasma catecholamine concentration was several times higher in the left adrenal vein than in other sites. After admission the blood pressure remained stable at around 140/70 mm Hg and plasma noradrenaline and adrenaline concentrations ranged from 7.2 to 16.0 nmol/l (1219 to 2705 pg/ml) and 1.1 to 2.8 nmol/l (207 to 518 pg/ml), respectively. Urinary catecholamine excretion ranged from 561 to 997 µg/24 h. Pancreas and biliary tract looked normal radiologically and on ultrasound assessment and salivary glands were normal clinically.

In December she had her last two episodes of symptoms with high blood pressure, provoked by upper gastrointestinal series and exercise, respectively

ischaemia due to severe hypertension. These abnormalities in patients with severe hypertension, however, are occasionally observed in the absence of hyperamylasaemia and may not be associated with its occurrence. Why hyperamylasaemia occurs in our patient we do not know, but it was apparently related to hypertensive crisis induced by increased catecholamine secretion.

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