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CORRESPONDENCE

Water-clear cell parathyroid adenoma in a patient with acute pancreatitis

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Water-clear cell parathyroid adenoma is a very rare histological variant of parathyroid adenoma and is exclusively composed of water-clear cells that are characterized by abundant clear cytoplasm. This variant was first reported in 1994 and currently only 12 cases were reported in literature.[1] Herein, we report a case of water-clear cell parathyroid adenoma with acute pancreatitis as its initial manifestation.

An 81-year-old woman was admitted to our hospital due to acute onset of epigastralgia with radiation to her back. She experienced nausea, vomiting, and fever. Results of a laboratory examination revealed leukocytosis (white blood cell count: 18,770/μL) with marked increase in the levels of serum amylase (2815 U/L; normal range: 25–125 U/L) and lipase (2880 IU/L; normal range: 0–30 IU/L). She denied any recent use of alcohol. An abdominal computed tomography scan showed diffuse swelling of the pancreas with adjacent fat stranding. Neither dilatation nor radiopaque stone was found in the common bile duct. Acute pancreatitis was diagnosed.

Meanwhile, hypercalcemia (12 mg/dL; normal range: 8.3–10.5 mg/dL) and increased levels of plasma intact parathyroid hormone (iPTH) (450 pg/mL; normal range: 12–72 pg/mL) were found during the diagnosis of acute pancreatitis. Primary hyperparathyroidism was considered during her medical examination. An ultrasound examination and thallium–technetium subtraction scintigraphy showed a functioning parathyroid adenoma in the left upper neck region. Parathyroidectomy was done subsequently.

The parathyroid tumor measured 3.8 cm in size (Fig. 1A). A microscopic analysis revealed that the tumor was exclusively composed of monotonous polygonal cells with abundant clear cytoplasm (Fig. 1B). Cytoplasmic accumulation of glycogen was confirmed by positive periodic acid-Schiff (PAS) and negative diastase-PAS stains (Fig. 1C). An immunohistochemical analysis showed that these clear cells stained positive for PTH (clone 105G7, Leica Microsystems) (Fig. 1D). A parathyroid adenoma of water-clear cell type was diagnosed.

After the exclusion of other etiologies, hyperparathyroidism was diagnosed as the cause of acute pancreatitis. The symptoms of acute pancreatitis gradually improved after parathyroidectomy. The serum calcium and plasma iPTH levels returned to normal during a clinical follow-up.

This is the first case of water-clear cell parathyroid adenoma having acute pancreatitis as its initial clinical presentation. Symptoms of the previously reported 12 cases were renal stones, bone fracture, or they were asymptomatic. Acute pancreatitis is an unusual manifestation of hyperparathyroidism. This situation was first reported in 1954.[2] Hypercalcemia is thought to be a cause of acute pancreatitis. Hypercalcemia can cause pancreatic

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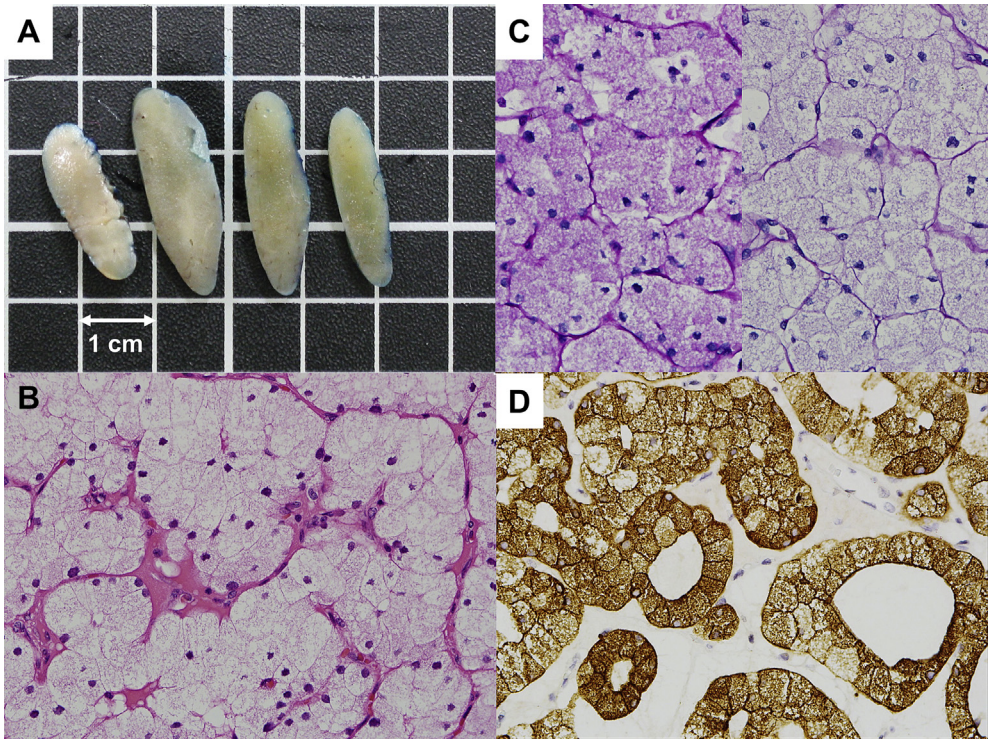

Figure 1 (A) Yellowish cut surface of the parathyroid adenoma. (B) Microscopic image of the water-clear tumor cells with abundant clear cytoplasm (hematoxylin and eosin stain, 400×). (C) Periodic acid-Schiff (PAS) stain (left) and diastase-PAS stain (right) confirmed cytoplasmic glycogen deposition. (D) The tumor cells stained diffusely positive for parathyroid hormone.

acinar cell damage by increasing cytoplasmic calcium levels and interrupting cellular signal pathway.[3] Hypercalcemia may lead to ectopic trypsinogen activation and autodigestion of the pancreas.[4] Increased calcium levels may increase the permeability of pancreatic duct to the digestive pancreatic juice with secondary enzyme leakage and autodigestion.[5]

The serum calcium level usually decreases during acute pancreatitis owing to the precipitation of calcium soaps in the abdominal cavity. Hypocalcemia and tetany are well-known complications of acute pancreatitis. Hypocalcemia is also a clinical parameter of Ranson criteria, which are used to predict the severity of acute pancreatitis. Hypercalcemia is unusual in acute pancreatitis and physicians must search for its potential causes such as hyperparathyroidism or carcinoma with bone metastasis. In our case, a functioning water-clear cell parathyroid adenoma was thus found and resected.

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