Do MRI agents cause or worsen acute pancreatitis?

MR ajanları akut pankreatite neden olabilir mi?

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Acute pancreatitis is still one of the challenging issues in general surgical practice in terms of diagnosis, management and follow-up. CT evaluation of the patients with acute pancreatitis gained popularity in order to document necrosis within the pancreatic tissue which is one of the most important factor linked to the morbidity and even mortality of the disease. Recent studies evidenced that agents used for CT evaluation might also contribute to pancreatic inflammation and cause necrosis. Recently, magnetic resonance imaging (MRI) with gadolinium has been speculated as a safer mean of providing optimum imaging of the pancreas than contrast enhanced CT. In this article we report an unusual case of acute pancreatitis which might have been initiated and/or worsened by gadolinium.

Key Words: Gadolinium DTPA/diagnostic use; Magnetic Resonance Imaging; pancreatitis, acute necrotizing/diagnosis.

Although, imaging pancreas with contrast enhanced computed tomography (CT) in patients having or suspected to have acute pancreatitis, has become increasingly popular, several experimental and clinical studies supported that ionic and nonionic contrast agents used for CT evaluation increased the severity of necrotizing acute pancreatitis by aggravating the already existing impairment of pancreatic microcirculation.¹²,³

Recently, magnetic resonance imaging (MRI) with gadolinium has been speculated as a safer mean of providing optimum imaging of the pancreas than contrast enhanced CT.³ In this article we report an unusual case of acute pancreatitis which might have been triggered and/or worsened by gadolinium.


Anahtar Sözcükler: Gadolinium DTPA/tanı; manyetik rezonans görüntüleme; pankreatit, akut nekroz/tanı.

CASE REPORT

A 45-year old woman presented with complaints of acute onset of upper abdominal pain and vomiting four hours after cranial MRI evaluation for her two month-lasting visual and neurological symptoms that revealed hypophyseal macroadenoma. Following intravenous injection of 15 mL (0.2 mL/kg body weight) gadodiamide (Magnevist TM, Schering Ltd., Germany) she developed abdominal symptoms and clinical deterioration. On initial examination, the patient was afibrile and tachycardic. Abdominal palpation revealed tenderness on the upper quadrants of the abdomen. Blood tests revealed values within normal ranges except for total white cell count (16x109/L), glucose (10.56 mmol/L), serum amylase (3145 U/L) and lactic
dehydrogenase (912 IU/L). Abdominal sonography proved pancreatitis by stating enlarged and heterogeneous pancreas as well as a single 13 mm diameter gallbladder stone which was not known by the patient. Upon deterioration of the clinical findings, twelve hours after the onset of the abdominal symptoms, abdominal MRI was employed in order to document the severity of the pancreatitis and MRI proved severe necrotizing pancreatitis (Fig. 1). According to clinical and MRI findings, the patient was fully monitored, allowed nothing *per os* and admitted to the intensive care unit. Deterioration of the clinical and abdominal signs along with laboratory tests necessitated urgent laparotomy which proved intense inflammation at the site of porta hepatitis and necrosis on the pancreatic corpus. According to these findings the patient underwent cholecystectomy, T-tube drainage of the bile duct as well as pancreatic necrosectomy. Patient did well after the operation and postoperative course was uneventful except for a low volume pancreatic fistula. Patient was discharged on postoperative day 20 with with pancreatic fistula which was closed completely following endoscopic sphyncterotomy via ERCP.

**DISCUSSION**

Although it has become increasingly popular to image the pancreas with CT, several experimental and clinical studies supported that ionic and non-ionic contrast agents used for CT evaluation increased the severity of necrotizing acute pancreatitis by aggravating the already existing impairment of pancreatic microcirculation.²⁶ Because of its relative safety over CT agents, gadolinium is increasingly being used as a contrast agent in interventional radiology. Despite its safety, however, there have been two recent case reports of pancreatitis triggered by administration of gadolinium for MRI investigation.⁶⁷ Although in our case the gallbladder stone might have been an etiologic factor for the pancreatitis, the acute onset of the abdominal symptoms just four hours following the MRI evaluation in such an asymptomatic patient and worsening of the pancreatitis after the second MRI evaluation increased the likelihood of gadolinium as having being the etiologic agent for pancreatitis or at least the co-factor worsening the course of the inflammation in necrotizing pancreatitis along with the gallstone. Even though the exact mechanism of gadolinium as an etiologic factor for pancreatitis is unknown, the administration of this contrast agent in patients with an already inflamed pancreas might aggravate the impairment of pancreatic microcirculation. Further experimental and clinical studies must be conducted in order to investigate the pathogenetic consequences of gadolinium-triggered acute necrotizing pancreatitis. Our experience with this patient emphasizes that despite the safety of gadolinium over contrast agents used for CT imaging, it should still be kept in mind that gadolinium might either be an inducing factor alone or a worsening factor along with other etiologic factors such as gallstones for necrotizing pancreatitis.

**REFERENCES**