CASE REPORT

Drug-induced Pancreatic Atrophy ("The Vanishing Pancreas")

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Abstract

Immune checkpoint inhibitors have become the therapeutic mainstay in a rapidly growing number of cancers. Immune checkpoint inhibitor-related diarrhea is attributed mainly to inflammatory colitis, with no other drug-related differential diagnosis. However, other causes of diarrhea should be considered. Pancreatic atrophy (and exocrine pancreatic insufficiency) is a relatively rare complication of immune checkpoint inhibitors. Herein we bring a set of striking computed tomography (CT) images that demonstrate a drug-related-progressive pancreatic atrophy until complete vanishing of pancreatic tissue. Exocrine pancreatic insufficiency (EPI) was diagnosed. Pancreatic enzyme replacement therapy was initiated with an excellent clinical response.

Keywords: Atrophy, Chemotherapy, Pancreas.

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A 60-year-old female with metastatic renal cell carcinoma was referred to the gastroenterology department for diarrhea and weight loss.

About 6 months before presentation, the patient started to suffer from progressive back pain. After a short workup, renal cell carcinoma with bone metastasis was diagnosed. Immunotherapy with a combination of two checkpoint inhibitors (anti-CTLA-4 [ipilimumab] and anti-PD-1 [nivolumab]) was started.

Three months later, worsening steatorrhea appeared.

Physical examination was unremarkable.

Laboratory tests including lipase, amylase, liver enzymes, and IGG4 levels were normal.

Fecal elastase-1 levels were markedly reduced (57 µg/g stool).

Endoscopic workup was normal including gastric, duodenal, ileal, and colonic biopsies.

Serial positron emission tomography–computed tomography (PET-CT) scans before and after the immunotherapy showed progressive pancreatic atrophy. Six months after the initiation of the therapy, complete vanishing of pancreatic tissue was observed (Fig. 1, panels A–C).

Exocrine pancreatic insufficiency (EPI) was diagnosed. Pancreatic enzyme replacement therapy was initiated with an excellent clinical response.

Immune checkpoints are proteins that control immune cell activation.

Agents blocking the PD-1 axis (anti-PD-1: nivolumab, pembrolizumab; anti-PD-L1: atezolizumab, avelumab, and durvalumab) have become the therapeutic mainstay in a rapidly growing number of cancers.[1]

Immune checkpoint inhibitor-related diarrhea is attributed mainly to inflammatory colitis. However, other causes of diarrhea should be considered.[2]

Checkpoint inhibitor-induced pancreatic atrophy is irreversible and can result in EPI.

Exocrine pancreatic insufficiency should be suspected in patients treated with checkpoint inhibitors who are suffering from

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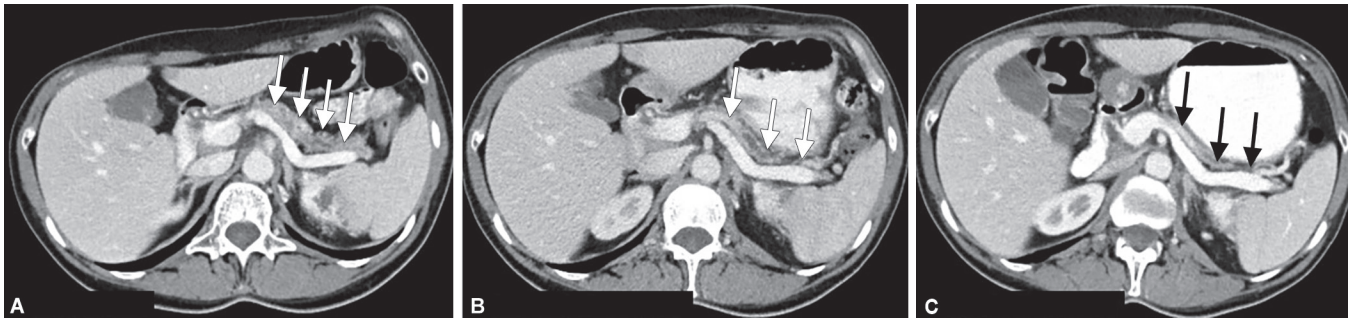

Fig. 1: Serial PET-CT scans before and after the immunotherapy showed progressive pancreatic atrophy

steatorrhea. EPI symptoms are largely responsive to pancreatic enzyme supplements.[3]

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