

# CT scans may offer a non-invasive alternative to diagnose immunotherapy-induced colitis

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Computed Tomography (CT) scans are a reliable tool to establish a diagnosis of immune-related colitis, a potentially life-threatening adverse event in patients with advanced melanoma who receive the immune checkpoint inhibitor ipilimumab, and this non-invasive approach could provide a safer alternative to a colonoscopy and biopsy to confirm colitis, according to a study published in *Cancer Immunology Research*, a journal of the American Association for Cancer Research.

"Immune checkpoint inhibitors, such as [ipilimumab](#) and nivolumab, can lead to inflammation of the colon, and as many as 15 percent of patients who receive ipilimumab either alone or in combination with PD-1 pathway-directed antibodies are affected by significant immune-related colitis," said senior author Patrick Ott, MD, PhD, clinical director of the Center for Immuno-Oncology and Melanoma Center at the Dana-Farber Cancer Institute (DFCI) in Boston.

"Immune-related colitis can be a life-threatening adverse event for patients receiving immune checkpoint inhibitors. However, there aren't any clear guidelines on how to best establish the diagnosis," Ott added. Colonoscopy is certainly the gold standard for diagnosing colitis, however, it is an invasive and costly procedure that poses some risk of intestinal perforation, he explained.

"Our study shows that CT scans are a good means to establish a diagnosis

of immune-related colitis," Ott said.

To assess whether CT scans can provide a safer, faster, and more cost-effective alternative to reliably diagnose colitis, Ott and colleagues retrospectively assessed 303 patients with metastatic melanoma who had been treated with ipilimumab at DFCI between 2008 and 2015.

Thirty three percent of the patients (99) who received ipilimumab experienced diarrhea and other gastrointestinal (GI) symptoms concerning for colitis; 46 of these patients were diagnosed with immune-related colitis based on either direct visualization and biopsy of the colonic mucosa or the need for corticosteroid for resolution of the GI symptoms. Thirty of the 46 patients with colitis had undergone both colonoscopy/biopsy and CT.

The researchers correlated the CT scans with the biopsy results when both were performed and with corticosteroid requirement for the resolution of colitis (suggesting the patients very likely had colitis), and found that CT scans had a 96 percent positive predictive value, meaning that they predicted colitis correctly 96 times out of 100.

Scans commonly showed bowel wall thickening and problematic air/fluid levels. Only 3percent of patients with colitis had no CT findings. The team also found that age, number of ipilimumab doses, and shorter intervals between doses increased the risk of immune-related colitis. The method's strong predictive value could help clinicians avoid riskier colonoscopies, Ott noted.

"Immunotherapy, particularly the use of immune checkpoint inhibitors, is a rapidly evolving field, and many oncologists still need to learn how to best approach these toxicities; so given that colitis is one of the most dangerous, improved diagnostic guidance should be helpful," Ott said.

While CT scans had a 96 percent positive predictive value, their ability to predict the absence of colitis was only 42.9 percent, indicating that CT scans may be far less accurate at ruling out colitis.

The study's retrospective and single-institution design are both potentially limiting factors, Ott said. In addition, ipilimumab as monotherapy is used only in melanoma [patients](#). Nevertheless, promising data on the efficacy of ipilimumab in combination with nivolumab in several malignancies suggest that these combination treatments will be used more frequently in the future, potentially leading to many more cases of colitis, he added. Since the mechanisms causing immune-related colitis are considered similar between different checkpoint inhibitors, the results can probably be extrapolated to the combination regimens, Ott said. While a prospective study would be needed to validate the results of the study, the authors believe that this research provides valuable information that can advance care.

Provided by American Association for Cancer Research

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