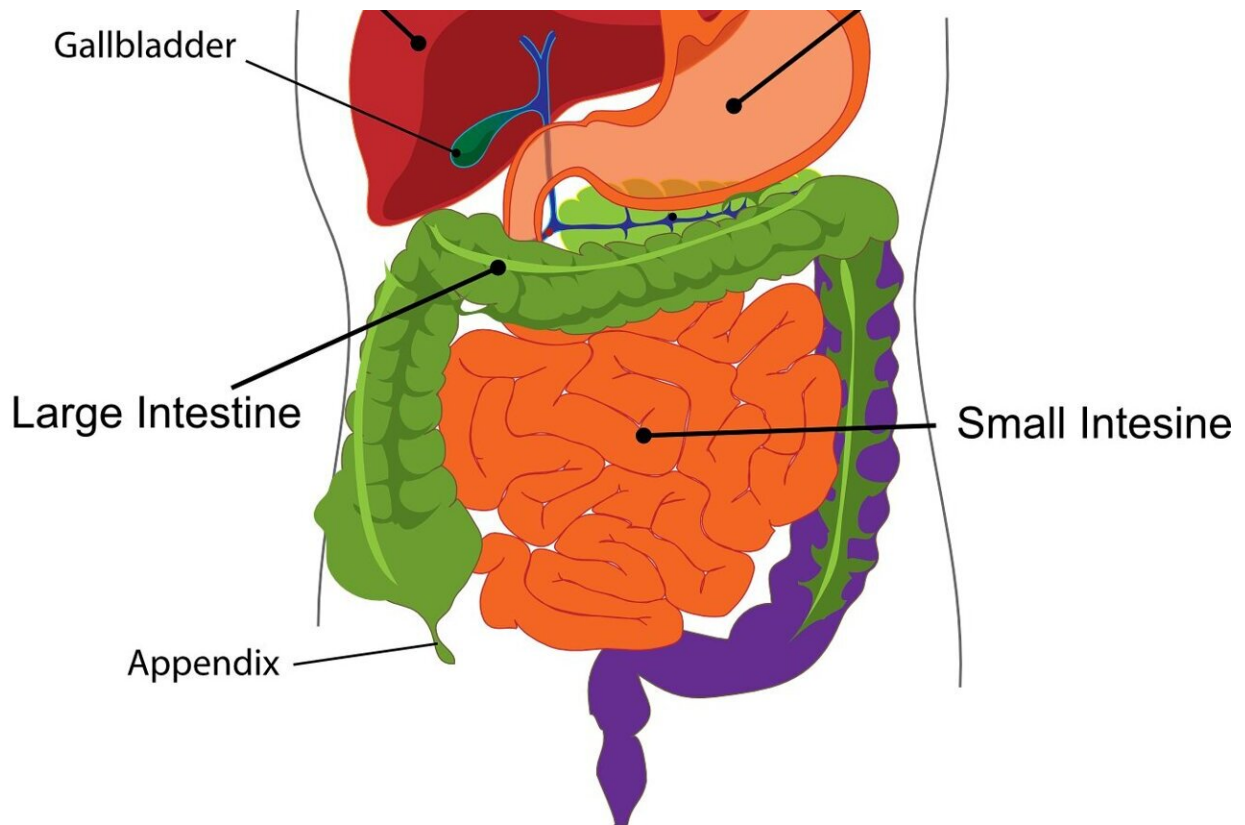


Younger patients with appendicitis are more likely to have cancer of the appendix

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Although appendectomy (surgical removal of the appendix) is still the most effective treatment for acute appendicitis, nonoperative management is increasingly common as recent studies have shown that

antibiotics can be an effective initial treatment for many patients. A new analysis of cases in the National Cancer Database (NCDB) finds, however, that there is an increased risk of cancer of the appendix for younger patients (less than 50 years old). The increase appears to be driven by a rise in carcinoids, a slow-growing type of neuroendocrine tumor, according to study findings published online today as an "article in press" in the *Journal of the American College of Surgeons*.

"There is no good answer as to why there is an increase in carcinoids. It could be due to environmental reasons, or it could be due to better diagnostics technology," said lead study author Michelle Salazar, MD, MHS, general surgery resident, Yale School of Medicine/Yale New Haven Hospital.

Since surgery provides the only definitive diagnosis of cancer of the appendix, the authors are concerned that [acute appendicitis](#) patients who receive nonoperative management could face a delay in their [cancer diagnosis](#).

"I would counsel patients based on age," Dr. Salazar said. "If you're older, you are at less risk for appendiceal cancer and greater risk for complications from surgery. Younger, healthy patients are more likely to be able to tolerate an operation and may want to rule out cancer by undergoing the operation. The characteristics of appendicitis should be considered in the decision."

The study underscores the fact that cancer of the appendix is a "small but real risk" and that patients with acute appendicitis should receive thorough review, said Nader Hanna, MD, FACS, professor of surgery and director of clinical operations, division of general and oncologic surgery at the University of Maryland School of Medicine, Baltimore. Dr. Hanna reviewed the study but was not part of the research team.

Study details

The study was a retrospective analysis of the NCDB, a clinical oncology database sourced from hospital registry data that are collected in more than 1,500 Commission on Cancer (CoC)-accredited facilities. Created and administered by the American Cancer Society and the American College of Surgeons, NCDB captures 70% of new cancer diagnoses in the U.S. from facilities accredited by the CoC.

The researchers queried the NCDB for data on patients 18 years or older who were diagnosed with a right-sided colon cancer from 2004 to 2017 and underwent appendectomy. All patients with appendiceal cancer were identified and that group was further divided into patients with carcinoid tumors and those diagnosed with other types of appendiceal cancer. Trends were also evaluated in several age groups, including those less than 40 years old and each decade beyond starting with age 40.

Key findings

- A total of 387,867 patients were identified with a right-sided colon cancer, which included 19,570 patients with appendiceal cancer. Of those with appendiceal cancer, 5,628 patients (28.7%) had carcinoid tumors.
- Patients with appendiceal cancer tended to be younger than 50 years and to have fewer comorbidities but were also more likely to have more advanced disease when compared with patients with other right-sided colon cancers. For example, patients under the age of 40 accounted for 1.4% of other right-sided colon cancers and 8.4% of appendiceal cancers, while patients 70 and older accounted for 58.2% of other right-sided colon cancers and 25.3% of appendiceal cancers.

- The yearly frequency of appendiceal cancers in the database more than doubled from 814 patients in 2004 to 1,928 cases in 2017 while other right-sided colon cancer cases were even or slightly down—from 26,445 cases in 2004 to 24,712 cases in 2017. As a result, the proportion of appendiceal cancer to other right-sided colon cancers rose over those years, especially in patients 40-49 years old, for whom the proportion increased from 10% to 18%.
- The patient group most likely to have appendiceal cancer compared with other right-sided colon cancers were those less than 40 years old (25% more likely).

The decision whether to treat with antibiotics or surgery should be shared between patient and doctor. For example, there are reasons that an appendicitis patient may want to postpone surgery—they may be traveling, lack health insurance, or have significant comorbidities, Dr. Hanna said. Investigators from the CODA Trial, which found that half of acute appendicitis patients treated by antibiotics did not need an appendectomy for up to four years after diagnosis, have developed an online decision-making tool that can be found at appyornot.org.

There are also some precautionary recommendations to consider for [older patients](#) with acute appendicitis, said Dr. Hanna. Imaging and pathology reports for acute appendicitis patients 50 years or older should be closely reviewed since they are more at risk for more aggressive types of [cancer](#) of the appendix, such as adenocarcinoma, he explained. "Especially in older patients, if close review of the imaging raises suspicions that it would not be a routine appendectomy, the patient should likely be referred to a surgical oncologist."

More information: Salazar, Michelle C et al, Appendiceal Cancer in the National Cancer Database: Increasing Frequency, Decreasing Age, and Shifting Histology, *Journal of the American College of Surgeons*

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