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The addition of abdomen and pelvis CT to limited cancer screening does not increase diagnosis of cancer in patients with unprovoked venous thromboembolism

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Context

In patients with unprovoked venous thromboembolism, occult malignancy is of concern. Studies have shown that more than 60% of occult cancers are diagnosed following unprovoked venous thromboembolism and up to 10% of patients with unprovoked venous thromboembolism are diagnosed with cancer within the following year.¹ Despite this, the approach to evaluating patients for occult malignancy varies widely. Studies have described a limited technique of history, physical examination and laboratory tests, as well as utilising multimodal imaging techniques to detect cancer in these patients.²³ Carrier and colleagues compared comprehensive and limited occult-cancer screening strategies in patients with unprovoked venous thromboembolism.

Methods

This multicentre, randomised trial enrolled adults with a new diagnosis of unprovoked proximal lower limb deep vein thrombus and/or pulmonary embolism. Patients were randomly assigned to either a limited cancer screening strategy, which included complete history and physical examination, age-appropriate and sex-appropriate cancer screening, measurement of blood counts and electrolytes, and chest radiography; or to a limited cancer screening strategy plus CT of the abdomen and pelvis. Assignment to either strategy occurred within 21 days after diagnosis of venous thromboembolism. The CT protocol included virtual colonoscopy and gastroscopy as well as specific imaging of the liver, pancreas and bladder. Patients were followed for 1 year and assessed at intervals to detect a new cancer or recurrent thromboembolic diagnosis. The primary outcome was newly diagnosed cancer in patients who had a negative screening result.

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Findings

There was no significant difference between the number of patients who underwent additional testing for a potential cancer diagnosis between the limited-screening group and the limited-screening-plus-CT group. Overall, 33 patients (14 (3.2%) in the limited screen group and 19 (4.5%) in the CT group) received a new diagnosis of cancer in the subsequent 1 year monitoring period, with no statistical difference between groups ($p=0.28$). There was no statistical difference between the number of cancers missed by the screening strategy in each group (4 cancers missed in limited screen vs 5 missed in the CT group, $p=1.0$), nor was there a difference in the absolute rates of occult-cancer detection or cancer-related mortality (1.4% vs 0.9%, $p=0.75$) between the two strategies.

Commentary

This study adds to the body of literature investigating cancer screening in patients with unprovoked venous thromboembolism. The results of this well-designed study are consistent with prior studies looking at cancer screening strategies. In a non-randomised trial of over 600 patients, comparing a limited screening strategy with a strategy that included mammography for women and CT of the chest, abdomen and pelvis in all patients, there was no significant difference in the number of malignancies diagnosed between the groups.⁴ Similarly, the SOMIT investigators evaluated patients who all had initial negative limited screening and were then randomly assigned to no more testing versus additional imaging, tumour markers and endoscopy.³ Although the additional testing increased the number of cancers detected, there was no difference in cancer-related mortality.³ The limitations of this study are the exclusion of patients with renal failure and obesity, thus results are not readily generalisable to these populations. Some of the malignancies missed in this trial were acute leukaemia and gynaecological and colorectal tumours. Generally, these are not diagnoses amenable to detection with CT. A review of colonography studies showed that CT colonography is less sensitive and less specific than colonoscopy for diagnosis of colon cancer, specifically with smaller lesions.⁵ Here, despite the use of CT colonography and imaging specific to the liver and pancreas, more cancers than the numbers found on using limited strategy alone were not detected.

Implications for practice

This study demonstrated that cancer screening with CT of the abdomen and pelvis in patients with unprovoked venous thromboembolism was not more efficacious than limited cancer screening. As CT is associated with increased costs and radiation exposure, but unclear benefit, the current evidence does not support its routine use in patients with unprovoked venous thromboembolism.

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