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A Case of Colorectal Cancer with Metastasis in a 40-year-old Female Without Any Risk Factors: Should We Start Screening for Colorectal Cancer Earlier?

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Introduction

According to the American Cancer Society, colorectal cancer (CRC) is the third leading cause of cancer-related death in men and the second leading cause in women, which is expected to cause about 53,010 deaths in 2024.[1] Though the death of CRC has been dropping in older adults for several decades, the rate in individuals younger than 50 has been increasing by 2% per year since 1994. [2] Here, we presented a case of CRC with extensive metastasis in a 40-year-old female patient without a family history and any known risk factors.

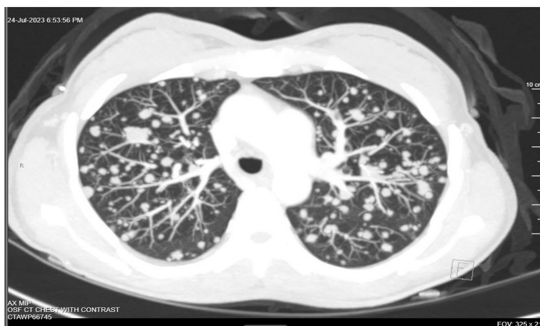

Figure 1: Numerous scattered bilateral punctate subpleural pulmonary nodules measuring up to 7 mm suspicious for metastatic disease.

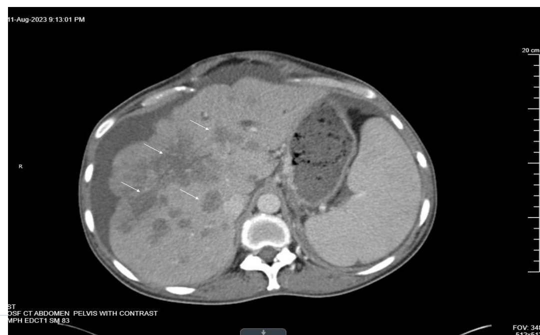

Figure 2: Scattered ill-defined liver lesions (white arrows) compatible with metastatic disease occupying approximately 25-30% of the liver parenchyma.

Case Presentation

- A 40-year-old Caucasian female with an unremarkable medical history presented to the emergency department with complaints of severe diarrhea. She tested positive for H. Pylori infection and was treated with oral antibiotics. Her diarrhea persisted despite treatment, and she subsequently developed abdominal pain. Upon her return to the emergency department, a computed tomography (CT) scan of the chest, abdomen, and pelvis was performed, which revealed abnormal thickening and edema involving the rectal wall. Furthermore, numerous scattered bilateral subpleural pulmonary nodules were observed, along with multiple hypodense lesions throughout the liver, the largest in the right hepatic lobe measuring 6.6 cm. A solid mass measuring 2.6*4.8cm was also detected in the right adrenal gland.
- Subsequently, the patient underwent colonoscopy, revealing a fungating partially obstructive mass in the rectosigmoid junction 18 cm from the anal verge. The mass obstructed two-thirds of the circumference of the rectosigmoid colon. Biopsies were obtained, and the histopathological analysis confirmed the presence of invasive moderately differentiated adenocarcinoma.
- The patient underwent sigmoid colon resection, liver biopsy, and appendectomy. Pathological analysis of the liver biopsy was positive for metastatic colon carcinoma. The pathology of the rectosigmoid mass revealed adenocarcinoma, demonstrating invasion into the peri colonic adipose tissue and metastatic involvement of 2 out of 12 lymph nodes. The surgical margins were free from carcinoma. Pathologic staging was T3pN1b. The appendix was benign. Mismatched repair proteins were proficient. HER2 was not overexpressed. The total PD-L1 expression was 12(positive). No alterations were found in MET, PTEN, or RET. Pan NTRK was negative
- The patient received adjuvant FOLFOXIRI (combination of oxaliplatin, irinotecan, leucovorin, 5- fluorouracil) 1 dose followed by FOLFOX (leucovorin calcium, fluorouracil, oxaliplatin) and bevacizumab for one year.
- Genetic analysis through Guardant360 identified alteration in KRAS A146V, KRAS Q61H, NRASQ61H, and BRAF. No alterations were found in TP53, APC, or ARID1A. MSI was stable.
- Ten months following the initial diagnosis, the patient underwent a repeat CT of the chest, abdomen, and pelvis, which showed an increase in size and number of numerous pulmonary metastases and unchanged liver metastasis. Ascites and splenomegaly were noted to be present.
- Along with receiving that chemotherapy regimen, the patient's CEA level had risen, and her pulmonary and hepatic metastasis were slightly enlarged. So, the patient was advised to discontinue FOLFOX and bevacizumab and transition to regorafenib.

Case Presentation

- However, a year following the initial diagnosis of metastatic colon cancer, a bone scan demonstrated new intense uptake in the right side of the lower sacrum, right lower cervical spine, and left posterior fourth rib, which may represent degenerative changes, but metastasis can't be excluded. Hence, one cycle of FOLFOX and bevacizumab has been started again, and palliative radiotherapy was advised for pain.
- At the time of diagnosis, the patient had no history of weight loss. She has no personal or family history of colon cancer. She has no history of smoking, IBD, using recreational drugs/medication, and caffeine intake or radiation history.
- Currently, the patient is looking for a suitable clinical trial.

Discussion

The sudden increase in the incidence of CRC in younger individuals without a family history or any known risk factors is alarming since the rate of overall CRC in adults has been decreasing. Among the patients of early-onset CRC, only 30% of cancers are due to mutations related to hereditary causes, 20% have familial CRC, and the remaining 50% of early-onset CRC patients have neither hereditary nor familial causes. [3] Several studies revealed that 27.8% of patients who are diagnosed with colorectal cancer are younger than 40 years. [4]

Conclusions

Studies showed that CRC has become increasingly significant among younger individuals without conventional risk factors and family predisposition. We suggest developing a protocol to screen CRC in < 40-year-old individuals to decrease CRC-related incidence in younger populations.

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