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Case Presentation

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Adenocarcinoma Cells in Feces: A Case Report

Danning Denga, Bo Situa* and Lizhi Yana*

Department of Laboratory Medicine, Nanfang Hospital, Southern Medical University, Guangzhou, China

***Corresponding author**: Bo Situ, Department of Laboratory Medicine, Nanfang Hospital, Southern Medical University, 1838 Guangzhou Avenue North, Baiyun District, Guangzhou, China, Tel: 020-61641888; E-mail: drstb@126.com

Lizhi Yan, Department of Laboratory Medicine, Nanfang Hospital, Southern Medical University, 1838 Guangzhou Avenue North, Baiyun District, Guangzhou, China, Tel: 020-61641888; E-mail: yanlizhi1102@126.com

Abstract

Background: Feces is a metabolic product of digestion and absorption of food, its composition is diverse, and can be a reflection of the gastrointestinal environment. Analysis of fecal cytology is an easy and cost-effective way to obtain information about diseases but it is often underappreciated in the clinical practice. In the present case report, clusters of typical rectal adenocarcinoma cells in a patient's feces were found, which provided a valid basis for the diagnosis of the gastrointestinal cancer.

Case presentation: A 77-year-old woman presented to the gastroenterology clinic with a 2-month history of abdominal pain and hematochezia. Testing of fecal occult blood was positive and cytologic analysis of the feces specimen revealed clusters of adenocarcinoma cells. The clinical laboratory tests showed a carcinoembryonic antigen level of 8.33 ng per milliliter (reference range, 0 to 4.7 ng per milliliter). Colonoscopy revealed a circumferential mass in the rectum, and a diagnosis of rectal adenocarcinoma was confirmed by the histopathologic examination of the biopsy. No metastases were observed by computed tomography of the chest, abdomen, and pelvis. Changes in bowel habits and feces are common in colorectal cancer, but the presence of intact tumor cells in the feces is rare. The patient received a tumor resection and had no recurrence at follow-up 13 months later.

Conclusion: Fecal cytology can be a valuable method for the non-invasive screening of gastrointestinal cancer.

Keywords: Fecal cytology; Adenocarcinoma; Colorectal cancer; Case report

Introduction

Colorectal Cancer (CRC) is one of the most common malignancies of human **[1,2].** In recent years, the incidence of colorectal cancer is increasing and it is usually detected at an advanced stage, so early screening is

very important. Early diagnosis of colorectal cancer can significantly improve the prognosis of patients. Therefore, there is an urgent need for simple and effective detection tools for early screening of colorectal cancer to improve the survival rate. Multiple guidelines have recommend using feces testing and colonoscopy for colorectal cancer screening. Feces testing, which is more readily available and less invasive, could be an important tool in colorectal cancer screening. However, fecal occult blood test has high false positives and false negatives, and its specificity is low [3]. By contrast, the effectiveness of colonoscopy is high, but its cost, side effects and low participation also limit the options for colorectal cancer screening. Cytologic analysis of feces specimens may provide another option for colorectal cancer screening. Most of the degenerative changes of various cells shed from the intestine are obvious, making intact tumor cells in feces rare. And when the disease is severe, those degenerate cells would affect the correct diagnosis of cytology, so smear staining examination is usually not done. But for some shed cells of low rectal neoplasms, careful observation of cell cytologic characteristics through feces smear staining may reveal abnormal cells. When patients have clinical symptoms of gastrointestinal diseases such as abdominal pain and blood in feces, it can provide an effective basis for diagnosis of colorectal cancer.

In the present case report, we found adenocarcinoma cells in the feces specimen, which provided a valid diagnosis of colorectal cancer. The cytologic analysis of feces specimens is considered as an effective non-invasive and low-risk detection tool, which may be applicable to screen for colorectal cancer with excessive cancer risk.

Case Presentation

A 77-year-old female patient presented to the gastroenterology department with 2 months of intermittent blood in the feces and abdominal pain without apparent causes. At the time of presentation, the patient had normal vital signs and denied any significant past medical or family history. The fecal occult blood is positive and microscopical cytologic analysis of the feces specimen showed clusters of abnormal cells with irregular shape, large nuclei with obvious nucleoli, and moderate eosinophilic staining of the cell pulp with an island arrangement, which were considered adenocarcinoma cells (shown in **Figure 1a,** black arrow, Giemsa stain). Other laboratory tests showed that carcinoembryonic antigen is 8.33 ng per milliliter (reference range 0-4.7 ng per milliliter) and CA-50 level is 50.99 unit per milliliter (reference range 0 to 20 unit per milliliter). The above results suggested the possibility of gastrointestinal tumors, so colonoscopy was performed. The result of colonoscopy and histopathological biopsy revealed a large irregular node-like bulge in the rectum (shown in **Figure 1b**), and the diagnosis of adenocarcinoma of the rectum was confirmed. Computerized tomography scans of the chest, abdomen and pelvis did not reveal any tumor metastasis. After consultation with oncology and general surgery, the patient underwent tumor resection and was followed up 13 months later without recurrence.

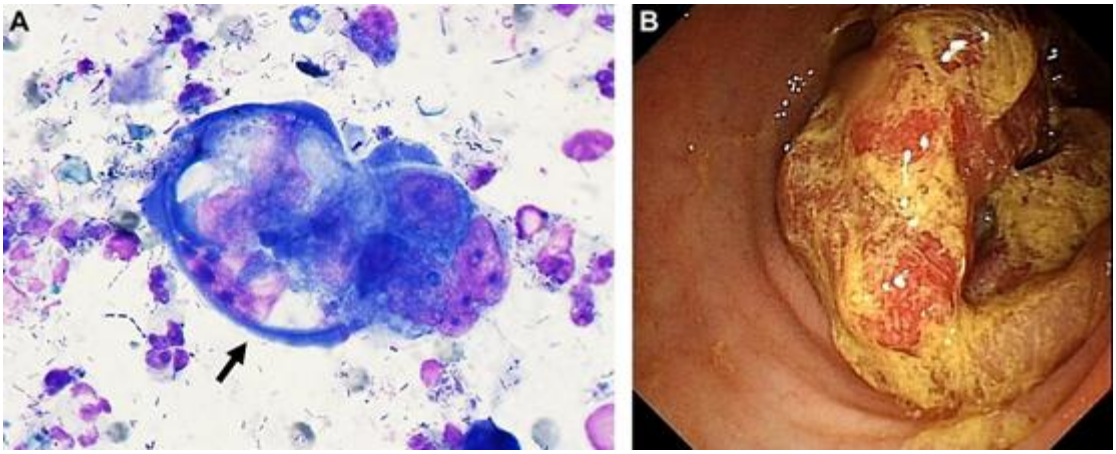

Figure 1: (**a**) Cytologic analysis of the stool specimen and (**b**) colonoscopic image of the mass.

Discussion

Colorectal Cancer (CRC) is one of the common malignant tumors worldwide, and the global incidence rate of CRC in 2020 is about 19.5/100,000, and the mortality rate is about 9.0/100,000. The prognosis of CRC is closely related to the stage when diagnosis, and most sporadic CRC progresses slowly from precancerous lesions, which is generally considered to take 5-10 years. This biological behaviour dictates that CRC can be effectively detected and treated through screening, thereby improving disease prognosis. The most popular and inexpensive screening method for CRC is the Fecal Occult Blood Test (FOBT), which has a low sensitivity for screening tumors and progressive adenomas. And it is easily influenced by dietary composition, and has a high false-positive and false-negative rate [4]. Colonoscopy combined with pathological tissue biopsy is the gold standard for the diagnosis of CRC, performing colonoscopy can greatly reduce the risk of morbidity and mortality. However, colonoscopy is costly, requires high medical standards and cumbersome preparation, preventing its widespread use. In addition, colonoscopy is an invasive test, which is not easily accepted because of the pain during the examination, and the risk of perforation and hemorrhage, so it is urgent to find a simple, non-invasive, easy-to-operate and more acceptable method. At present, fecal-related researches are very popular, such as at the genetic level, tumor mutation level, and intestinal flora treatment-related research, and the study of viruses in the feces of patients with COVID-19 has been attracting scientists' attention, but fecal cell morphology is often neglected. Human colorectal epithelium renews rapidly, the degenerative changes of the various cells shed from the intestine are obvious, which makes intact tumor cells in feces rare and affects the correct diagnosis of cytology in serious cases, so smear staining examination is usually undervalued.

However, for some low rectal tumor cells, careful observation of the morphological characteristics by stool smear has the potential to detect morphological abnormalities and provide evidence for diagnosis. Moreover, fecal cytomorphological analysis, with non-invasive and easy-to-obtain specimen source and good patient compliance, can be carried out rapidly in medical units at all levels, which may provide another effective way for clinical colorectal cancer screening and diagnosis. In the present study, we found that fecal adenocarcinoma cells may be an important clue for colorectal cancer diagnosis. For the choice of colorectal cancer screening methods, cytologic analysis of feces specimens is more readily available, less invasive, and patient compliance is better.

Conclusion

For early screening of colorectal cancer, cytological analysis of feces specimens may be an effective alternative for early diagnosis and prognostic monitoring as a non-invasive and low-risk testing tool.

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