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## CASE REPORT

# Diffuse leptomeningeal metastasis from signet-ring cell adenocarcinoma of the sigmoid

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**ABSTRACT**

Colorectal cancer may uncommonly metastasizes to central nervous system, including brain and/or meninges. This often occurs late in the course of the disease and is accompanied with other extracranial metastases, leading to poor prognosis. Rarely, it is the first manifestation of the malignancy. We herein describe a 50-year-old man with sigmoid adenocarcinoma and secondary meningeal involvement, which to the best of our knowledge, is a rare metastasis to the central nervous system. Since a wide variety of signs and symptoms are associated with meningeal carcinomatosis, any neurologic complaint or abnormal physical finding in a patient with a known malignancy should be considered and evaluated seriously. Although we cannot do much to save the patient, in this stage.

**Key words**: colorectal cancer, sigmoid, metastasis, leptomeningeal involvement

## INTRODUCTION

Colorectal cancer (CRC) is, according to the latest announcement of the American Cancer Society, the third most prevalent cancer and the third most common one leading to death among American men and women. It most commonly metastasizes to regional lymph nodes and liver; brain is among the rare sites for CRC metastasis[1], and there are some reports of leptomeningeal involvement.[2-4] As a matter of fact, meningeal carcinomatosis (MC) is most commonly a result of breast cancer, lung cancer, and melanoma[5]; it is infrequently associated with CRC.[6] We report a 50-year-old man with leptomeningeal metastasis and cranial nerve palsies from sigmoid adencarcinoma.

## CASE REPORT

A 50-year-old Iranian man was admitted to the surgery ward in Rasool Akram Hospital affiliated to Iran University of Medical Sciences, in August 2012 for his bloody diarrhea and significant weight loss. He was a known case of Ulcerative Colitis (UC) for the last 19 years; that was under treatment with sulfasalazine. His symptoms were almost under control until 2 weeks prior to admission, when he came with frequent and massive bloody diarrhea, and significant unwanted weight loss. He did not report loss of appetite or night sweating.

His past medical and drug history were negative except for UC and taking sulfasalazine. No specific disease in his family. He was working in a real estate agency, married with two children. He did not smoke, drink alcohol, or use recreational drugs.

Abdominopelvic computed tomography (CT) scan with contrast showed a regional mass lesion in sigmoid colon and para-aortic lymphadenopathy. In colonoscopy there was a polyp lesion in the same area which did not allow the scoop to pass. Histopathological examination of the tissue biopsy was suggestive for signet-ring cell adenocarcinoma of sigmoid. He was then admitted to the surgery ward for surgical intervention and underwent total proctocolectomy, ileoanal pouch anastomosis, and loop ileostomy. On the 9th day of admission, an acute abdominal pain more prominent in the left upper quadrant occurred and abdominopelvic CT scan with contrast showed a large amount of free fluid without enhancement in spleen. Laparotomy was carried out and revealed autosplenectomy due to thrombosis of splenic vein. Chest imaging was compatible with lung metasta-

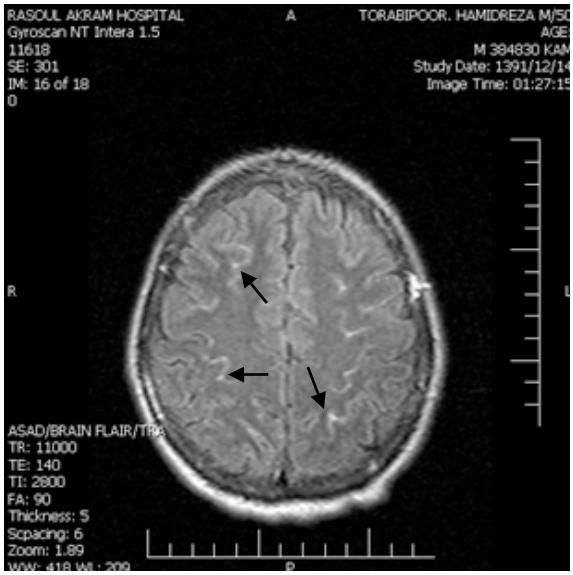


**Figure 1,** Axial T2 flair MRI shows gyral enhancement, scattered over both hemispheres (arrows).

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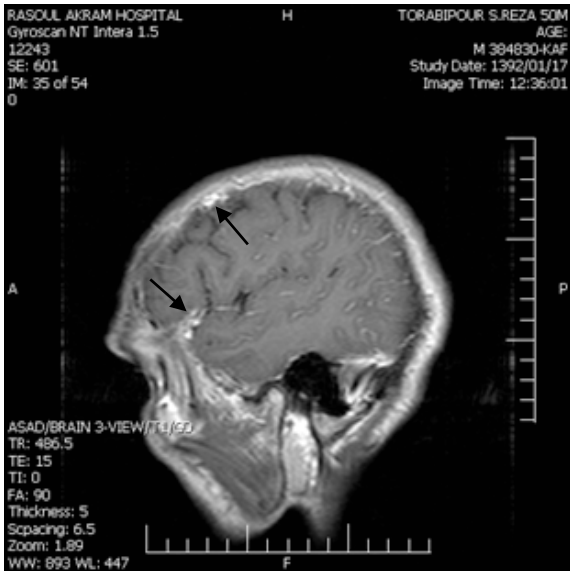


**Figure 2,** Sagital T1W MRI with GD shows leptomeningeal enhancement (arrows).

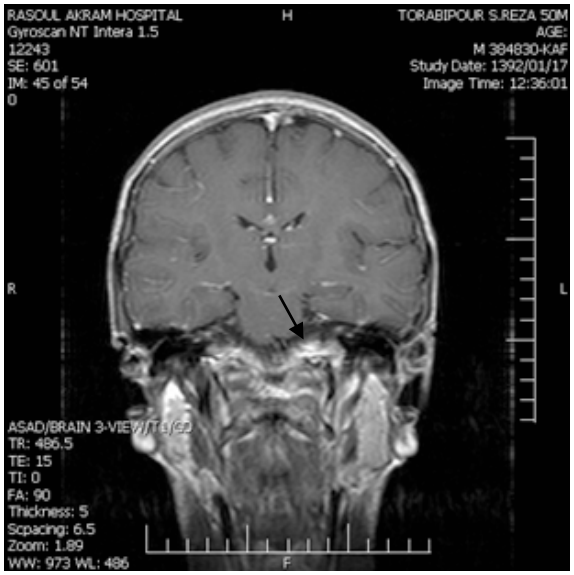


**Figure 3,** Coronal T1W MRI with GD shows enhancement of leptomeninges (arrowhead) and complex of seventh and eighth cranial nerves (arrow).

sis. Almost two months after surgery, chemotherapy started with Oxaloplatine, Fluorouracil, and Calcium folinate in 3-day regimens and 2-week intervals, for a total of 12 cycles. Four months later, a whole body bone scan by Tc99m-MDP was performed and revealed bone metastases to ribs, sternum, thoracic and lumbar spine. Then he complained of intermittent morning headache, but did not follow it. In April 2013, while admitted to the oncology ward for the last course of chemotherapy, he was visited by neurologist, ENT man, and ophthalmologist because of nausea, worsening headache, blurred vision, diplopia, vertigo, disequilibrium, and hearing loss in the last two weeks. In neurologic evaluation, he had biparietal headache, radiating to the eyes, and aggravated by changing position, diplopia, tinnitus, and gait ataxia. No papilledema was detected in both eyes. His headache responded to steroid pulses for three days. Analysis of cerebrospinal fluid (CSF) showed no abnormality (glucose=56 mg/dl, protein=41 mg/dl, LDH=64 U/L, with no white blood cell and red blood cell), and the result of repeated analysis was almost the same. Perimetry was normal. Magnetic resonance imaging (MRI) of the brain showed gyral enhancement in fluid attenuated inversion recovery (FLAIR) sequence (Fig. 1), also enhancement of leptomeninges and complex of seventh and eighth cranial nerves after gadolinium (GD) injection in T1-weighted (T1W) sequence (Fig. 2, 3). Audiometry was compatible with bilateral sensory neural hearing loss (SNHL). In the next neurology visit, two weeks later, he had disequilibrium, vertigo, deteriorated hearing, and left facial palsy. Three weeks later, he was visited in the Emergency Department, presenting with epigastric pain and respiratory distress. His condition rapidly deteriorated, got intubated and finally died from cardiac arrest with no response to cardiopulmonary resuscitation (CPR).

## DISCUSSION

MC is associated with a wide spectrum of signs and symptoms, based on the site of involvement (cerebral hemisphere, cranial nerves, spinal cord and roots). Headache, which was actually our patient`s first neurologic complaint, is the most common symptom of hemispheral involvement.[7] Kleinfeld K et al reported a patient with leptomeningeal metastasis from occult signet-ring cell adenocarcinoma of the transverse colon who presented with isolated headache.[4] Involvement of cranial nerves may cause a variety of symptoms and signs i.e. decreased vision and hearing, diplopia, disequilibrium, facial weakness or neuropathy, and hypoglossal weakness.[7] The most prevalent affected cranial nerves are III, IV, VI, and VII (8). There are some reports of cranial nerve palsies from CRC with MC.[9-11] Our patient had seventh and eighth cranial nerves palsy. Abali H et al and Kato Y et al also reported involvement of seventh and eighth cranial nerves, in combination with other cranial nerve palsies, in a 51 year-old man with recurrent rectal adenocarcinoma and a 77 year-old woman with occult colon cancer, respectively.[9, 11] As Freilich et al mentioned, the presence of appropriate neuroimaging abnormalities in a patient with typical clinical features, are sufficient for diagnosis of leptomeningeal metastases.[12] So we made the final diagnosis of MC in our patient according to MRI findings. The patients with MC do not last long, regardless of the type of primary malignancy. Median survival is at most 6 months in some cases with aggressive treatment, although it is reported to be 4-6 weeks in untreated patients.[13, 14] Our patient died within almost 5 weeks after the diagnosis of MC, regarding diffuse extracranial metastases. We concluded that any neurologic complaint or

abnormal physical finding in a patient with a known malignancy has to be considered serious and get evaluated, even if it is not a common one to metastasize to central nervous system (CNS). Although we cannot do much to save the patient in this stage.

## CONCLUSION

Since a wide variety of signs and symptoms are associated with meningeal carcinomatosis, any neurologic complaint or abnormal physical finding in a patient with a known malignancy should be considered and evaluated seriously.

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