GAVIN PUBLISHERS

Journal of Surgery

Case Report

Zil-E-Ali A, et al. J Surg: JSUR-164.
DOI: 10.29011/JSUR-164.000064

Colorectal Cancer Presenting with Initial Neuropsychiatric Symptoms Due to Brain Metastases

Ahsan Zil-E-Ali[1*], Syed Muhammad Hammad Ali[2], FNU Asad Ur Rahman[3], Asma Waheed4, Syeda Naqvi[5]

[1]Department of Surgery, Fatima Memorial Hospital, Lahore, Pakistan

[2]Department of Biochemistry, FMH College of Medicine, Lahore, Pakistan

[3]Fellow of Gastroenterology, Cleveland Clinic, Ohio, USA

[4]Internal Medicine, Fatima Memorial Hospital, Lahore

[5]Department of Endocrinology, Aga Khan University, Karachi, Pakistan

[*]**Corresponding author:** Ahsan Zil-E-Ali, Department of Surgery, Fatima Memorial Hospital, Lahore, 725 Shadman Rd, Lahore 54000, Pakistan. Tel: +9242111555600; Email: ahsanzileali@gmail.com

Citation: Zil-E-Ali A, Ali SMH, Rahman FAU, Waheed A, Naqvi S (2017) Colorectal Cancer Presenting with Initial Neuropsychiatric Symptoms Due to Brain Metastases. J Surg: JSUR-164. DOI: 10.29011/JSUR-164.000064

Received Date: 28 August, 2017; **Accepted Date:** 06 September, 2017; **Published Date:** 13 September, 2017

Abstract

Metastatic involvement of the brain from Colorectal Cancer (CRC) is rare and confers a poor prognosis. Up to 6% of all patients with CRC develop brain metastasis, thus necessitating surgical resection or radiation therapy. We report a case of an 80-year-old male, who presented to us with progressively worsening cognitive function that was initially suggestive of a primary neuropsychiatric disorder. Magnetic Resonance Imaging (MRI) brain revealed multiple ring-enhancing lesions in the brain that were concerning for metastatic tumor spread. In light of mild elevation of liver enzymes, Computerized Tomography (CT) scan of the abdomen was performed that showed multiple hepatic and skeletal metastases. Subsequent colonoscopy confirmed left adenocarcinoma of descending colon as the primary site of tumor origin.

Keywords: Brain Metastases; Colorectal Cancer; Neoplasm Metastases

Introduction

Colorectal Cancer (CRC) is the third most common malignancy in the world after lung and breast cancer with an incidence of 1,361,000 cases in 2012 [1]. It is responsible for around 51,000 deaths in the US due to this cancer in year 2010 [2]. If detected early, most cases involve surgical resection of the tumor site, even if metastasis are noted with liver. Metastasis of CRC to the brain is a rare entity [3]. It is estimated that CRC metastasizes to the brain in approximately 0.3% - 6% of cases [4]. It is very rare for CRC to present with neuropsychiatric manifestations as a result of intracranial spread. We report a case of colonic adenocarcinoma that presented with progressive cognitive decline as its initial clinical manifestation.

Case Report

An 80-year old male presented to the Emergency Department (ED) with a two-day history of worsening confusion in the background of progressively deteriorating cognitive and behavioral disturbances for last three months. His past medical history was only remarkable for hypertension. The patient's family had noted irritability in his behavior over the last few months. He would utter profanities over minor issues at home with an increasing tendency towards aggression. In the last month, the patient had attempted suicide by overdosing of diclofenac potassium, however he was successfully resuscitated at his local health clinic. Initial neurologic evaluation in the ER showed incoherent speech and confusion. He was disoriented in terms of time, place and person. Initial Glasgow Coma Scale (GCS) was eight out of fifteen (E2, M5, V1). The patient was afebrile (99°F) and blood pressure was 170/110mmHg.

His exam did not reveal any focal neurological deficit. Initial blood laboratory results showed: Hemoglobin 11.4 (13-17 g/dl); white cell count, 11.3 (5-11 X 109 cells/litre); serum creatinine, 2.1 mg/dl (0.7-1.5 mg/dl); serum potassium, 5.3 (3.5-5.0 mmol/l); serum sodium, 125 mmol/l (135-145 mmol/l). He was rehydrated with intravenous fluids that led to improvement in renal function and electrolytes. Computerized Tomography (CT) scan of the brain showed a hypodense lesion on the left side of the brain (red arrow in (Figure 1 (a)). Lumbar puncture was done and Cerebrospinal Fluid (CSF) specimen sent for complete analysis (unsure if we should include this). Empiric antibiotic therapy was then started with intravenous ceftriaxone and vancomycin. This prompted the need for Magnetic Resonance Imaging (MRI) of the brain, that demonstrated multiple ring enhancing lesions with associated cerebral edema (Figure 1(b-e)).

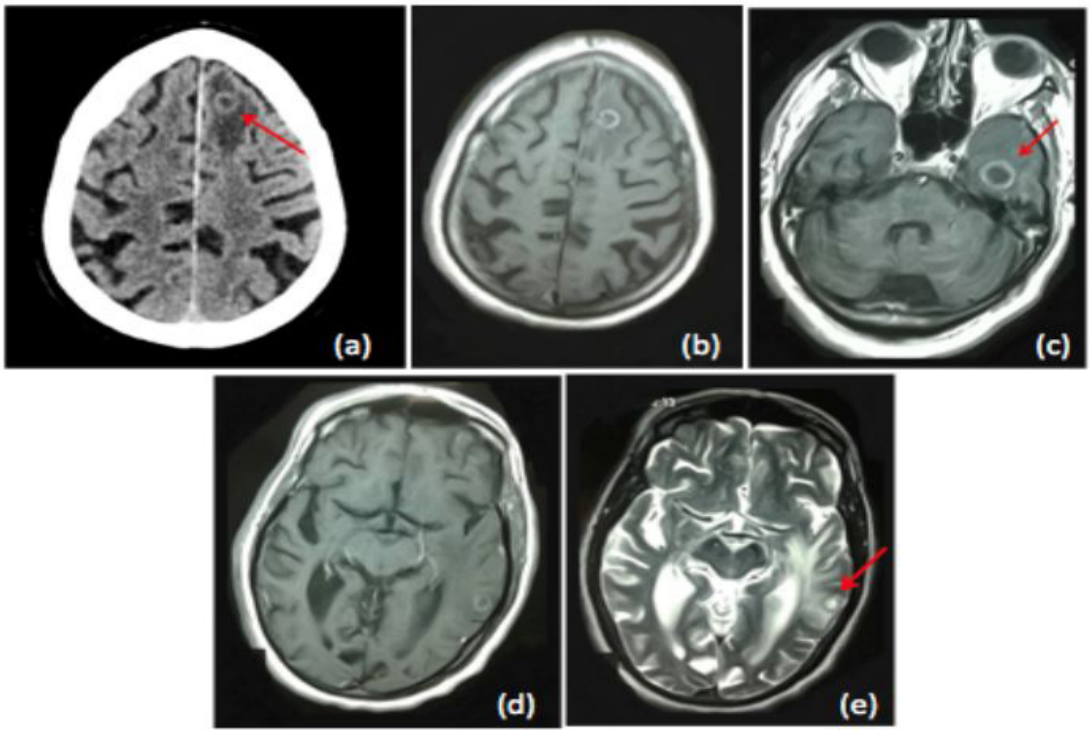

Figure 1(a-e): Axial section of brain of an 80-yrs-old male with metastasized Colorectal Cancer. (a) CT brain without contrast shows a rings-like focal lesion (arrow) in the left frontal lobe with cerebral edema. (b) MRI brain (post-contrast) shows ring enhancing lesions in the left frontal lobe with cerebral edema. (c) MRI brain (post- contrast) T1 weighted image shows ring enhancing lesion in the left temporal lobe (arrow). (d) MRI brain (post-contrast) T1 weighted image shows ring enhancing lesion on the left side of brain. (e) MRI brain (post-contrast) T2 weighted image shows hyperintense lesion (arrow).

These findings were concerning for toxoplasmosis, Acquired Immune Deficiency Syndrome (AIDS), lymphoma or metastatic disease. CSF testing did not reveal any atypical cells. (Table 1).

Tests	Results
CSF Analysis	
Color	Colorless
Transparency	Clear
White blood cells (per mm3)	3
Neutrophils (%)	Nil
Lymphocytes (%)	100
Red blood cells (per mm3)	140
Protein (mg/dl)	35
Glucose	78
CSF Cytology	No malignant cells
CSF Microbiology	
Culture	No growth
Gram stain	No micro-organism seen
AFB (Acid-Fast Bacilli) stain	No acid-fast bacilli seen

Table 1: Cerebrospinal Fluid (CSF) testing done in an 80-yrs-old male with metastasized Colorectal Cancer.

The patient showed initial clinical improvement with dehydration, however in the next few days, he developed gradual abdominal distension and constipation. Digital rectal examination showed empty rectum with normal anal sphincter tone. Sonographic Scan (USG) of the abdomen showed dilated gut loops along with a focal lesion in the liver. Several viral, parasitic and tumor markers were done for this suspicious liver mass (Table 2).

Markers	Results	Normal Values
Viral Markers		
Anti-HCV titres	Negative	
HBsAg titres	Negative	
HIV profile	Negative	
Tumor Markers		
Alpha Fetoprotein (AFP) levels	2.68	<20 IU/ml
Prostate Specific Antigen (PSA) levels	1.195	<4.0 ng/ml
Carcinoembryonic Antigen (CEA) levels	1265	2.5-5 µg/l
Parasitic Marker		
Toxoplasma IgM	0.076	< 0.55 IU/ml
HIV: Human Immunodeficiency Virus; HBsAg: Hepatitis B surface antigen; HCV: Hepatitis C Virus		

Table 2: Serological testing done for suspicious liver mass on ultrasonography of an 80-yrs-old male with metastasized Colorectal Cancer.

Carcinoembryonic Antigen (CEA) levels were found to be significantly high, raising the suspicion of malignancy. CT scan of abdomen and pelvis was done that revealed marked distension of colon along with skeletal and liver metastases (Figure 2 (a-c)).

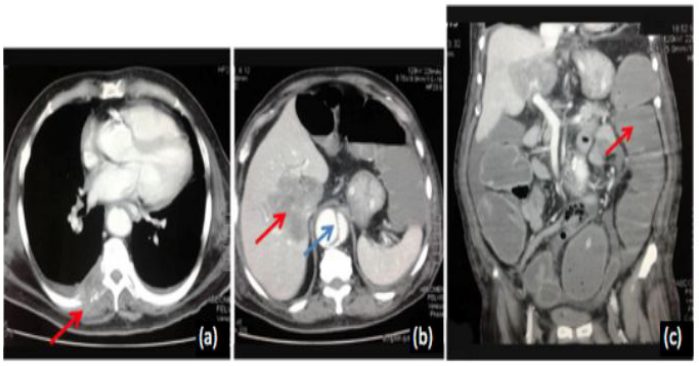

Figure 2(a-c): CT scan abdomen and pelvis with contrast of an 80-yrs-old male with metastasized Colorectal Cancer. (a) Axial section lower thorax shows mild bilateral pleural effusion and erosion of the proximal end of the 8th rib on right side (arrow) with associated soft tissue density mass. These changes are suggestive of skeletal metastasis. (b) Axial section of upper abdomen shows a large hypodense mass (red arrow) in the liver with a few smaller focal lesions suggestive of hepatic metastasis. Partially thrombosed dissecting aneurysm of abdominal aorta (blue arrow) is also noted. (c) Coronal section of abdomen and pelvis shows moderately severe dilation of large intestine (arrow) and focal mass in the liver.

Colonoscopy confirmed the in left descending colon. Proctosigmoidectomy with end colostomy (Hartmann's procedure) was planned by the surgical team as a palliative procedure. The attendants were counseled regarding patient's critical condition and the risks associated with surgery. On the tenth day of admission, the patient's condition started to deteriorate as his blood pressures continue to drop. Surgery was postponed. Supportive therapy was initiated with vasopressors and supplemental oxygen. Eleven days after his admission, the patient suddenly collapsed and died.

Discussion

Our case has fugue state which is not very commonly reported in metastatic disease, although theoretically, it is possible. The disease course was peculiar and rapid that engulfed the vascular as well as the neurological homeostasis. In Pakistan, there is no set protocol or recommendation for the colonoscopy, increasing the rate of late diagnosis. The best way to catch CRC in early stages is to have a detailed family directory of previous positive cases in a family, following standardized screening protocol of colonoscopy and avoiding the known etiologies including a healthy fiber diet. The prognosis is not very satisfactory and depends on various factors involving age, performance status and site of the primary tumor. The predictors of survival in this condition are less discussed in the literature. Though it is notable to discuss that even though after rigorous treatment plan and compromised lifestyle the median survival is not more than 3 to 6 months [5,6]. This brings

in account the clinician's decision and caregivers to decide for a difficult treatment that compromises lifestyle versus palliative care. Most of the brain metastases have the primary tumor at distal colon or rectum and least common in the proximal colon. This is also suggested by studies that metastasizing to the brain is the probably the last course of the disease and multi-organ metastasis is already known by then [5]. A study suggested that the reported median age of brain metastasis patients was 63 years with grade 2. The median time duration from diagnosis of CRC to the brain was 29.2 months. Usually, uni-focal lesion of metastasis was found and as mentioned earlier this study also documented a less survival rate once it was found in the brain [7]. Another study brought in account that the median age of diagnosis of brain metastases of CRC was around 66 years and proposed that this condition is the late-stage phenomenon which is less promising in prognosis irrespective of sex, performance status, and early treatment modality [8]. The chances of survival are diminished and quality of life compromised in the gastrointestinal tumors metastasizing to the brain, unlike its presentation and treatment when involving breast, lungs or liver [9].

Conclusion

Metastasis to the brain is a very difficult disease for both, clinician and the patient. For the clinician, it is challenging in deciding the appropriate treatment plan as well as handling the social norms of expressing the survival of the patient. Also, it is important that once the CRC is diagnosed, the possibility of lesions in other sites of the body should be considered and appropriate management plan should be devised early in time. All the factors that contribute in CRC should be known to the general public to minimize the primary lesion at the first place.

References

1. Worldwide data | World Cancer Research Fund International 2016.
2. Jemal A, Siegel R, Xu J, Ward E (2010) Cancer Statistics, 2010. CA: A Cancer Journal for Clinicians 60: 277-300.
3. Patanaphan V and Salazar OM (1993) Colorectal Cancer. Southern Medical Journal 86: 38-41.
4. Barnholtz-Sloan JS, Sloan AE, Davis FG, Vigneau FD, Lai P, et al. (2004) Incidence Proportions of Brain Metastases in Patients Diagnosed (1973 to 2001) in the Metropolitan Detroit Cancer Surveillance System. Journal of Clinical Oncology 22: 2865-2872.
5. Damiens K, Ayoub J, Lemieux B, Aubin F, Saliba W, et al. (2012) Clinical features and course of brain metastases in colorectal cancer: an experience from a single institution. Current Oncology 19: 254-258.
6. Gaspar L, Scott C, Rotman M, Asbell S, Phillips T, et al. (1997) Recursive partitioning analysis (RPA) of prognostic factors in three radiation therapy oncology group (RTOG) brain metastases trials. International Journal of Radiation Oncology*Biology*Physics 37: 745-751.
7. Michl M, Thurmaier J, Schubert-Fritschle G, Wiedemann M, Laubender R, et al. (2015) Brain Metastasis in Colorectal Cancer Patients: Survival and Analysis of Prognostic Factors. Clinical Colorectal Cancer 14: 281-290.
8. Kruser T, Chao S, Elson P, Barnett G, Vogelbaum M, et al. (2008) Multidisciplinary management of colorectal brain metastases. Cancer 113: 158-165.
9. Go P, Klaassen Z, Meadows M, Chamberlain R (2011) Gastrointestinal cancer and brain metastasis. Cancer 117: 3630-3640.