

Asymptomatic Synchronous Brain Metastasis of Low Rectal Cancer: Case Report and Review

DESIRÉE PANTALONE, *BRUNO NERI, MARIA NINCHERI KUNZ, ROBERTO PAOLUCCI, FRANCESCO TARUFFI, LUIGI MARIA PERNICE, ALESSANDRO BORRI, FRANCESCO ANDREOLI

*From Department of Critical Medicine and Surgery-Section of General Surgery and Surgical Science and *Department of Internal Medicine, Oncologic Day Hospital, University of Florence, Italy*

The Authors report the case of a 68 year-old female with unoccluding low rectal tumour. The tumour was evaluated by a double-contrast barium enema and sigmoidoscopy, confirmed on biopsy. CT scan for chest and abdomen was negative for metastases, lymph node or pelvis involvement. Post-surgery staging was: Dukes C, Astler Coller C2, Jass IV, T3 N2 M0. Patient had an unremarkable postoperative course until day 9, when she complained of general discomfort reported as weakness, anxiety and disorientation. A CT scan showed frontal lobe metastasis, which determined the decision to transfer her in a Neurosurgical Unit, where she was operated. Thereafter, the patient was discharged from the hospital with no neurological symptoms and without any other signs of recurrence; presently, she is undergoing adjuvant therapy. In general, brain metastases occur in 20-30% of patients with systemic cancer and represents the most common of intracranial tumours. It is relatively uncommon in colorectal cancer, and constitutes 1.8 to 4.5% of all metastatic lesions of the brain. Previous studies strongly suggest that an aggressive treatment in patients with colorectal cancer brain metastases can be beneficial. The concept that the presence of brain metastases is a terminal event without possibility of therapeutic option can be challenged. Furthermore, it seems appropriate to routinely include a brain MRI or CT scan, preoperatively and during follow-up of patients affected by low rectal cancer.

KEY WORDS: Colorectal cancer – Brain metastases

Metastases to the brain are an unusual event in patients with colorectal cancer and are more frequently associated with recurrences in other sites, such as liver and lung. This

last modality practically precludes resection of any given focus for cure.

Concerning metastases in general, it is considered that location of the primary tumour is responsible for different patterns of spread. This is especially true when the tumour is rectal and resided below the peritoneal reflection. In fact, the cancer often extends into the perirectal soft tissue involving the bladder and prostate or the vagina, invading the venous drainage. Cancer of the lower rectum drains through the middle and inferior haemorrhoidal veins to the inferior vena cava and through the connections with the sacral plexus to the vertebral venous plexus. The latter may account for metastatic sites in locations other than the liver.^{1,2}

Regarding brain metastases of colorectal primary cancer, the published reports are relatively few and only recently some have focused on the problems and treatment of brain metastases from colorectal cancer.³⁻⁸

We reviewed the literature on colorectal cancer brain metastases, starting from the clinical case of a woman with rectal cancer and a synchronic solitary brain metastasis, totally asymptomatic at the time of surgery for the primary tumour. The aim of the present review was to consider clinical presentation, associated risk factors, therapeutical options and recommendations for early detection.

Case report

A 68 year old female was admitted to the hospital on September, 11, 2000. Her main complaint was that she had had rectal bleeding for three months. Digital rectal examination revealed an unoccluding low rectal tumour. A double-contrast barium enema and sigmoidoscopy confirmed an adenocarcinoma, by biopsy, located at less than three cm from the anal verge. CT scan for chest and abdomen was negative for metastases, lymph node or pelvis involvement. Preoperative CEA was 10.9.

The patient gave her informed consent for an

Address reprint requests to: Dr Desiree Pantalone, Clinica Chirurgica II, Department of Critical Medicine and Surgery, Section of General Surgery and Surgical Science, University of Florence, Viale Morgagni 85, 50134 Firenze, Italy. Tel: +39-055-427 7009 Fax: +39-055-422 0133. E-mail: dpantalone@unifi.it

TABLE I. - *Symptoms more frequently reported.*

Ataxia
Mental status change
Limb weakness
Headache
Dizziness
Seizures
Dysphasia
Nausea and/or vomiting
Convulsion

TABLE II. - *Colorectal brain metastases. Selection criteria for surgical treatment.*

Solitary metastasis
Peripherally located lesion
Good general condition

abdominoperineal excision of the tumour, performed on September 19.

Macroscopic examination of the specimen showed an excavated 3x4 cm tumour, 2/3 circumferential, at 3 cm from the anal verge. Microscopic examination revealed a low grade adenocarcinoma invading the bowel wall and the lymph nodes (Dukes C, Astler Coller C2 ; Jass IV; T3 N2 M0).

The patient had an uneventful postoperative course until day 9, when she complained of a general discomfort reported as weakness, anxiety and disorientation. Physical examination was negative for abdominal complications. No cardiologic or respiratory problems were present. The perineal wound was well healed, and colostomy functioning well. No other neurological symptoms or signs were present and the decision was made to perform a CT scan for brain metastases. CT scan showed a frontal lobe metastasis, prompting the decision to transfer her in a Neurosurgical Unit, where she was successfully operated on October 7th, 2000. The patient was discharged from the hospital without neurological symptoms and without any other sign of recurrence; she is presently undergoing adjuvant therapy, with no evidence of local recurrence or distant metastases.

Discussion

In general, brain metastases occur in 20-30% of patients with systemic cancer⁹⁻¹⁴ and represent the most common of intracranial tumours.¹⁴⁻¹⁶ During the 80's general consensus considered aggressive therapy for brain metastases as ineffective, or even harmful. Only during the early 90's two prospective randomized studies^{17,18} demonstrated better survival results with surgery plus radiotherapy, rather than radiotherapy alone. In a recent study on brain metastases, Emery et al^{15,16} pointed out that surgery can be considered as the preferred treatment for single brain metastasis; advances in neurosurgical techniques and neuroimaging have reduced both operative mortality and morbidity; consequently, single metastases located in an accessible brain site represent

the best indication for surgical treatment; surgery is eligible also for patients with multiple and recurrent brain secondaries. Infact, in two studies the Authors^{15,16} showed an improved median survival for these patients and a better quality of life.

The brain metastatic disease in colorectal cancer is a relatively uncommon condition,³⁻⁸ representing 1.8 to 4.5% of all metastatic lesions of the brain.

With regards to the clinical presentation,⁶⁻⁸ most patients complained of neurological symptoms ranging from ataxia to dysphasia and change in the mental status (Table 1).

Analysis of the risk factors, showed that the low rectal location of the primary tumour is more frequent in patients with pulmonary metastases,⁶⁻⁸ while no significant difference⁶⁻⁸ emerged in terms of preferential site of primary tumours for brain metastases of colorectal cancer.

Concerning the treatment of choice,^{6-8,15-20} no significant differences in terms of patient age at presentation time, presence of extracranial disease, disease-free interval, synchronous presentation or gender were present between the group treated with radiotherapy alone and the group treated with craniotomy, resection plus radiotherapy.

Ko et al⁷ reported to have examined 53 patients with brain metastases of colorectal cancer. The evaluated parameters included: the original tumour location, staging, adjuvant therapy, the time interval between initial diagnosis for colorectal cancer and diagnosis of the metastatic brain lesion, number, size, location, coexistence of lung metastases, interval between brain metastases and death.

Surgery included conventional craniotomy for the removal of the metastatic tumour, and gamma knife radiosurgery, or both. This study evaluated also gender, presence of synchronous metastases, radiotherapy, chemotherapy, tumour location and patterns of brain metastases in both univariate and multivariate analysis. Radiotherapy, chemotherapy and surgical treatment show a statistical significance at univariate analysis, but the only factor that shows a significant influence on survival time in multivariate analysis was the performance of surgery.

In another study⁸ these results were practically confirmed and again surgery proved to be the only therapy that offered statistically significant survival results compared to other treatments.

Results of these studies⁶⁻⁸ strongly suggest that an aggressive treatment in patients with colorectal cancer brain metastases can be beneficial and the concept that the presence of brain metastases is a terminal event with no possibility of therapeutic option can be challenged, albeit only in selected patients (Table 2); surgery has in fact proved to offer an improvement in the quality of life and a survival benefit.

In consideration of the reported results, it seems appropriate to include a brain MRI or CT scan in the preoperative workups of patients affected by low rectal cancer and to routinely introduce MRI or CT-scan in the follow-up. MRI or CT scan need to be performed also in patients with other colonic primary sites, whenever a secondary localization is present.

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