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CASE REPORT

Rectal carcinoma revealed by isolated mixed bone metastases

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Abstract

Isolated bone metastases secondary to rectal neoplasia are scarce. Radiographic findings may include lytic, sclerotic, or mixed lesions. We presented a case of rectal carcinoma revealed by isolated osseous metastases. We emphasize the radiological features of mixed bone metastases with the differential diagnoses that may be raised.

KEYWORDS

adenocarcinoma, bone metastasis, hypercalcemia, rectal neoplasms

1 | INTRODUCTION

Colorectal cancer is the third most common cancer. The liver is the most frequent site of metastases, occurring in about half of the patients with colorectal carcinoma.[1]

The bone spread is rare, affecting approximately 4% to 10% of patients.[2] It is generally a late event of the disease, leading to significant morbidity and mortality.

Colorectal cancer with bone metastases as initial manifestation is uncommon.

We report here the case of a rectal adenocarcinoma revealed by mixed-type osseous metastases without intraabdominal invasion.

2 | CASE PRESENTATION

A 69-year-old woman, with no significant past medical history, presented with a one-month history of inflammatory low back pain associated with weight loss and a poor appetite.

She complained of chronic constipation. Physical examination revealed restricted back movement with tenderness over lumbar spinal processes.

The digital rectal examination revealed a circumferential thickening of the low rectum.

Laboratory examinations showed a serum calcium level at 2.9 mmol/L [Normal value (N): 2.09–2.54 mmol/L]. Serum levels of parathyroid hormone, albumin, and phosphorus were within the normal range. The C-reactive protein level and the erythrocyte sedimentation rate were elevated at 91 mg/L and 101 mm/h, respectively. Protein electrophoresis, liver tests, and renal function were unremarkable. The total alkaline phosphatases were at 488 UI/L [N: 38-167UI/L].

Pelvis and lumbar radiography showed diffuse and ill-defined sclerotic and lytic lesions with no pathologic fractures (Figure 1a-b-c). The skull X-ray revealed

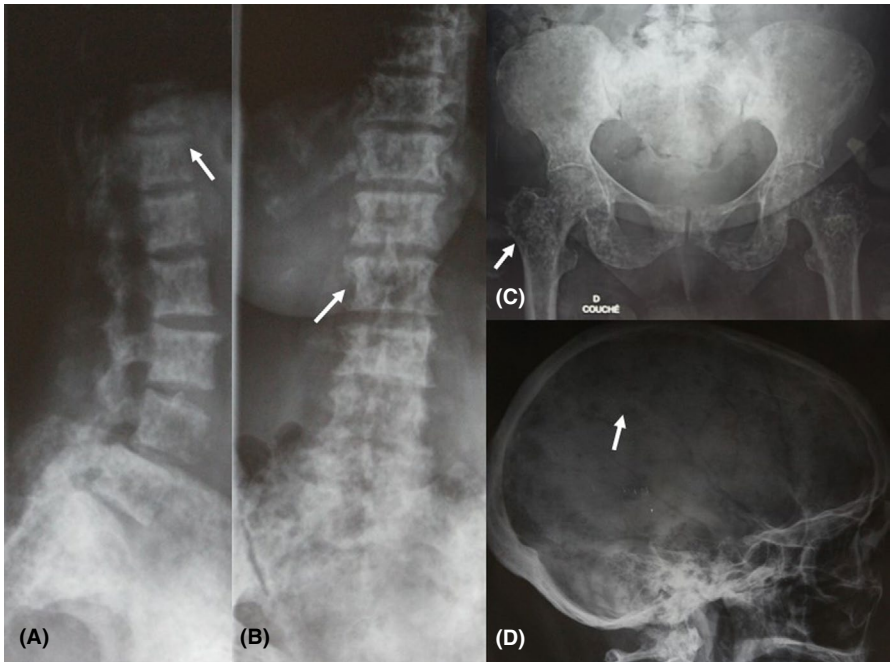

FIGURE 1 Anteroposterior (A) and lateral view (B) spine radiograph showing diffuse lytic and sclerotic lesions involving vertebral bodies and pedicles (arrows). Pelvis radiograph (C) showing a diffuse mixed bone appearance with expansile lytic lesions of both greater trochanters associated with cortical destruction (arrows). Lateral radiograph of the skull showing multiple lucent and radiodense lesions (D)

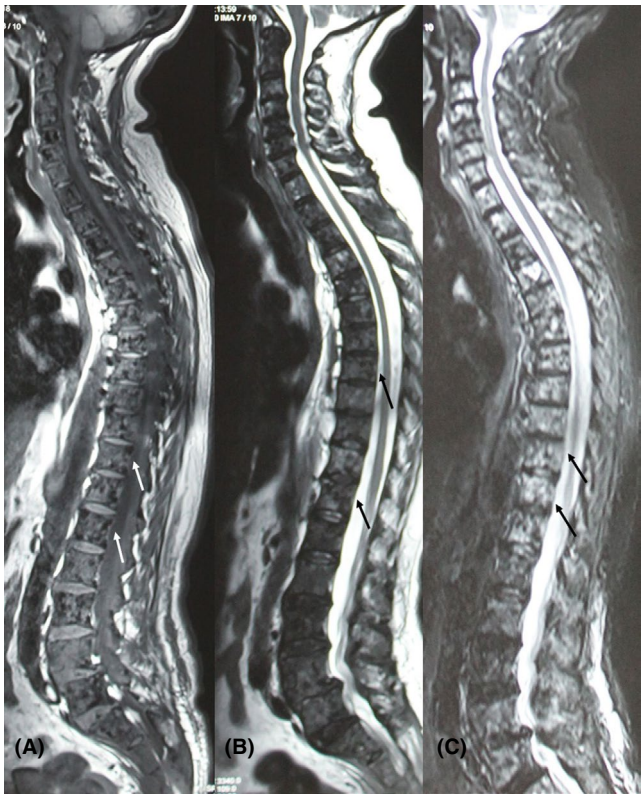

FIGURE 2 Spine MRI showing a diffuse micronodular infiltration hypointense on T1-weighted image with gadolinium injection (A) and hyperintense on T2- (B) and STIR- (C) weighted images (arrows)

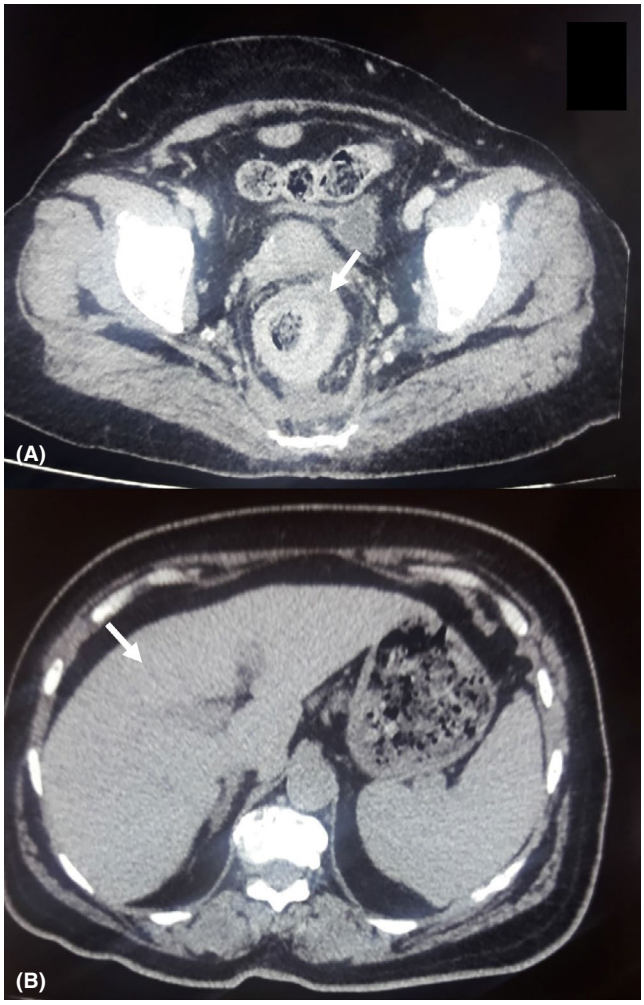

FIGURE 3 Computed tomography scan showing (A) a circumferential thickening of the medium and low rectum (arrow). (B) There were no hepatic metastases

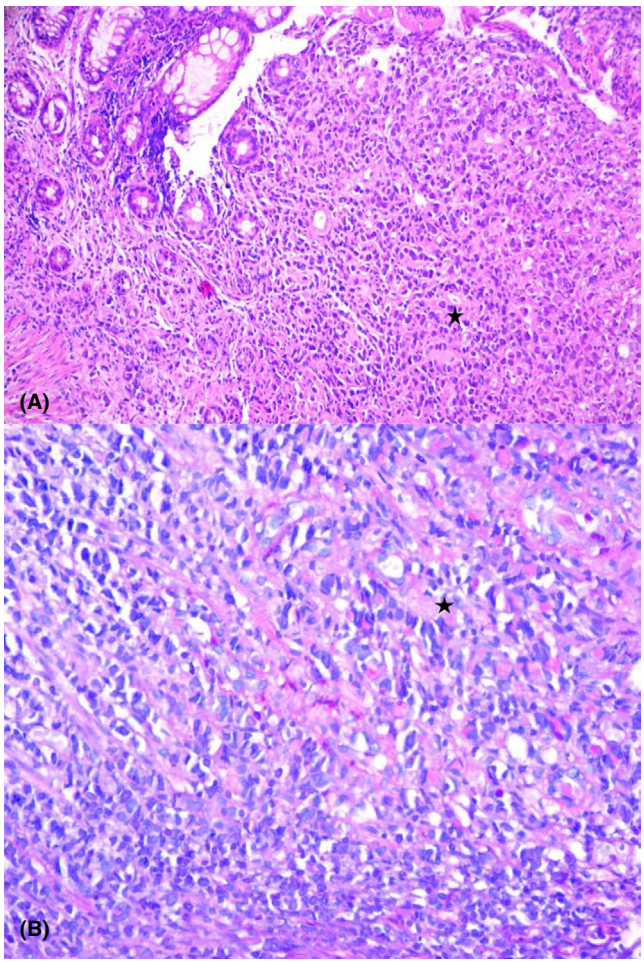

FIGURE 4 Histological examination HE *250(a) and PAS*250(b) showing carcinomatous proliferation of the rectal wall organized of sheets and independent cells (asterisk) without gland formation, within a fibro inflammatory stroma

multiple lucent foci (Figure 1d). Spine MRI showed a diffuse micronodular infiltration hypointense on T1-weighted images and hyperintense on T2-weighted images (Figure 2).

A computed tomography scan showed a circumferential thickening of the medium and low rectum (Figure 3). There were no pulmonary, hepatic, or peritoneal metastases.

Recto colonoscopy showed a burgeoning and infiltrating tumor of the medium and low rectum. The biopsy of the rectal lesion confirmed the diagnosis of undifferentiated adenocarcinoma (Figure 4).

Bone marrow biopsy was consistent with the above finding, showing a metastatic deposit of adenocarcinoma. Thus, the diagnosis of bone metastasis secondary to rectal neoplasia was made. The patient was referred to the oncology department to undergo a chemotherapy protocol. She died two months after the diagnosis.

3 | DISCUSSION

Isolated bone metastases in patients with colorectal carcinoma without intraabdominal organ involvement are scarce, occurring in about 1% to 2% of cases.[2,3]

The mechanism of metastasis of colorectal carcinoma to bone can be explained by the invasion of Batson's plexus, which is composed of valveless veins that connect deep pelvic veins draining the rectum to the internal vertebral venous plexus.[4]

Thus, Batson's venous plexus allows metastases to bypass the portal and cava venous systems.

Consequently, the spine and the pelvis are the first sites of bone metastases of colorectal carcinoma.[3]

Predictors of bone metastatic spread are distal rectum involvement, signet-ring cell carcinoma, and RAS mutations.[5]

Bone metastases can be responsible for pain, pathologic fractures, nerve root, or spinal cord compression as well as hypercalcemia.

It may cause pain via several mechanisms, including local production of cytokines and chemical mediators by the tumor cells, periosteal irritation, stimulation of intraosseous nerves, direct infiltration, and tumor-induced osteolysis.[6]

Bone metastases are classified as osteolytic, osteoblastic (sclerotic), or mixed as shown in our case.[7]

Metastatic mixed lesions have been reported in patients with breast cancer and gastrointestinal tract carcinoma in 40% and 4% of patients, respectively.[7,8] They can also be shown in patients with non–small-cell lung cancer, ovary, cervix, and testis, as well as squamous cancer.[9]

Besides, metastatic mixed lesions have been reported in POEMs syndrome and one case of multiple myeloma.[10,11]

This mixed radiographic appearance can be seen rarely in patients with benign bone dystrophy, such as Paget's disease of bone, typically in the intermediate phase of the disorder.[12]

Bone metastases usually affect the spine and pelvis. Occasionally, skull localizations may occur in advanced tumoral disease. Jawbones seem to be the most affected site.[13] In our case, the skull radiography showed punched-out lesions that can also be observed in myeloma.[14] Sagar et al. described the same feature in a 44-year-old man with a metastatic gastric carcinoma.[15]

MRI is highly sensitive for detecting bone metastasis. It usually shows foci hypointense on T1-weighted images and hyperintense on T2-weighted images with gadolinium enhancement due to increased vascularity.[16]

In our case, the MRI showed a diffuse micronodular appearance, called variegated or salt-and-pepper.

This appearance is due to the juxtaposition of multiple lesions in low signal intensity and hyperintensity corresponding to tumoral and fatty tissues, respectively. This finding can be also seen in non-Hodgkin's lymphoma.[17]

In our case, the diagnosis of multiple myeloma was initially suspected because of the existence of micronodular appearance in the MRI and multiple lucent lesions in skull radiography.

However, the existence of circumferential thickening of the low rectum in digital rectal examination and CT scan, as well as the histological features, led to the diagnosis of bone metastases.

4 | CONCLUSION

Isolated skeletal metastases from primary rectal carcinoma should be considered in patients with mixed-type bone lesions.

Metastatic skull localization may also be seen with a predominance of jawbone's involvement.

Despite its rarity, physicians should be aware of the possibility of micronodular appearance in the MRI in patients with bone metastases.

ACKNOWLEDGMENTS

None.

CONFLICT OF INTEREST

None.

AUTHOR CONTRIBUTIONS

Maissa ABBES and Maroua SLOUMA have drafted the work. Rim DHAHRI and Nour ElHouda GUEDDICHE have substantively revised the work. Issam MSEKNI has given the anatomopathological analysis. Imen GHARSALLAH has made substantial contributions to the acquisition of data. Leila METOUI has made substantial contributions to the design of the work. Bassem LOUZIR has made substantial contributions to the conception of the work.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no datasets were generated or analyzed during the current study.

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