

Addisonian Crisis Secondary to Bilateral Adrenal Metastases in Rectal Carcinoma: Report of a Rare Case and Literature Review

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Case Report

We present the case of a 62-year-old man who initially presented with altered bowel habit and rectal bleeding in 2007. On digital rectal examination, there was an easily palpable rectal lesion. Computed tomography and magnetic resonance imaging revealed the rectal tumour. Biopsy confirmed the diagnosis of adenocarcinoma of rectum (Fig. 1). According to preoperative imaging, the tumour was staged at T2N0M0 [1], stage I, Duke A rectal carcinoma. His past medical history included an old myocardial infarction and he required coronary artery bypass grafting.

The patient underwent neoadjuvant short-course radiotherapy in which 25 Gy in five fractions was administered to the posterior pelvis using a three-field planned technique. The patient underwent abdomoperineal excision of rectum in September 2007. His post-operative course was uneventful. In view of complete surgical excision in Duke A rectal cancer, no adjuvant chemotherapy was offered. He was being followed up when, approximately 2 years following his initial curative surgery, it was noted that the carcinoembryonic antigen was slightly raised to a level of 6.5 (normal range of 0–5 µg/L). Computed tomographic scanning revealed bilateral adrenal metastases (Fig. 2) and positron emission tomography (PET/CT) scanning showed high flourodeoxyglucose uptake, which was highly indicative of

metastatic disease. This case was discussed in a multidisciplinary meeting where it was felt that there was no recurrence in the pelvis but there were large adrenal masses consistent with metastases. There was no evidence of disease elsewhere. Bilateral adrenalectomy was considered but it was felt that this would certainly induce all the negative problems of bilateral adrenalectomy without any realistic prospect of cure. Patient was therefore offered palliative chemotherapy.

The patient completed eight cycles of palliative capecitabine chemotherapy in June 2010 with some evidence of radiological response. He suffered a period of lethargy and malaise. Shortly after this, he was admitted to hospital with symptoms of generalised weakness, weight loss, vomiting and hypotension. He was quite unwell. Clinically and metabolically, he was found to be in Addisonian crisis and was commenced on steroid replacement therapy, i.e. urgent intravenous hydrocortisone followed by lifelong oral hydrocortisone and fludrocortisone. His symptoms responded well to steroids. Currently, the patient feels well, has regained weight and is being followed up.

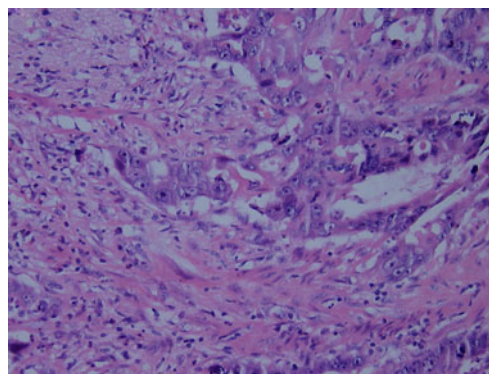


Fig. 1 Rectal biopsy revealed adenocarcinoma

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Fig. 2 Coronal image of computed tomography showing large bilateral adrenal metastases

Discussion and Literature Review

Addison's disease is primary adrenal insufficiency, a rare disease, which is named after Dr. Thomas Addison, a British physician who first described the condition in 1849 [2]. Adrenal cortex damage leads to glucocorticoid (cortisol) and mineralocorticoid (aldosterone) deficiency. Very rarely, it can lead to Addisonian crisis (severe hypoadrenalism) which if left untreated, could be life threatening [3]. Further review is discussed under following subheading:

Aetiology of adrenal insufficiency

In adults, major causes of adrenal insufficiency are autoimmune (80 %) and tuberculosis (10–15 %) worldwide [4].

Table 1 Aetiology of adrenal insufficiency

Autoimmune adrenal insufficiency
Addison's disease
Congenital adrenal hypoplasia
Infections
Tuberculosis
Fungal infections
AIDS
Bilateral adrenalectomy
Infiltration
Neoplastic destruction
Amyloidosis
Sarcoidosis
Haemorrhage/infarction
Secondary hypoadrenalism
Hypothalamic—pituitary disease
Long-term steroid therapy

Incidence of adrenal metastases

The finding of adrenal metastases is increasing in all malignancies as the diagnostic techniques are improving [5]. The incidence of overall adrenal metastases from all malignancies in reviewed autopsy series ranges from 13.3 % [6] to 27.0 % [7]. The most common malignancies which metastasize to adrenal glands are lung, kidney and breast cancers [6–8]. Lam and colleagues [9] in their article 'Metastatic tumours of the adrenal glands: a 30-year experience in a teaching hospital' studied disease pattern of 464 patients with adrenal metastases and found the incidence of adrenal metastases in different primary malignancies as follows: lungs 35 %, stomach 14 %, oesophagus 12 %, liver/bile duct 10 %, pancreas 6.9 %, large intestine 5.4 %, kidneys 4.3 %.

Symptomatic adrenal insufficiency in metastatic disease

The nature of symptoms of Addison's disease is non-specific. The symptoms range from fatigue, weakness, abdominal pains, nausea and postural dizziness [3]. It is not uncommon to miss the diagnosis of Addison's disease especially in patients with cancer, as these non-specific symptoms are generally attributed to the malignancy itself.

Despite high incidence of adrenal metastases in all malignancies, the incidence of symptomatic adrenal insufficiency remains low (4 % in Lam et al. study) [9, 10]. This can be explained by the fact that over 90 % adrenal reserve must be destroyed before it becomes dysfunctional.

Presentation of acute adrenal crisis in patients with adrenal metastases is extremely rare. Few cases have been reported in world literature. It has been reported in lung cancer [11], Hodgkin's disease [12], non-Hodgkin's Burkitt-like lymphoma [13], pancreatic carcinoma [14] and prostate cancer [15]. PubMed literature search revealed only two cases of symptomatic adrenal insufficiency in metastatic colorectal carcinoma [16, 17].

Treatment options of adrenal insufficiency in metastatic disease

The treatment of Addison's disease is lifelong replacement of glucocorticoids and mineralocorticoids. Acute adrenal crisis needs urgent attention and it is managed with intravenous fluids and steroid replacement [3].

As far as the treatment strategy of adrenal metastases from colorectal carcinoma is concerned, there are some cases [18, 19]/small case series [20, 21] where resection of isolated solitary adrenal metastases was attempted, and the authors advocate adrenalectomy with curative intent improves survival. Largely, it remains a therapeutic dilemma as in most cases, adrenal metastases are considered disseminated systemic disease and palliative route of treatment is adopted. The treatment

for simultaneous bilateral adrenal metastases, in general, is palliative which is mainly achieved by systemic chemotherapy. Radiotherapy has been used effectively to control the local pain secondary to adrenal metastases [22] and it may contribute to survival of patients with adrenal metastases in lung cancer [23, 24] but it has no role in treatment of adrenal insufficiency. More recently, stereotactic body radiotherapy has also been delivered safely in different fractionation regimens to treat adrenal metastases [25, 26].

Take Home Message

Although the adrenal glands are not a likely site of metastases from rectal cancer, this remains a possibility that can manifest in an endocrinological emergency, i.e. Addisonian crisis. It would have been easy to have mistakenly attributed the lethargy to the general effects of the cancer or chemotherapy and have overlooked his readily correctable condition.

Conflict of Interest The authors declare that they have no conflicts of interest to disclose.

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