

## CASE REPORT

### HYPOCALCEMIA WITH BONY METASTASES IN PRO STATE CANCER

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A 65 year old man presented with a two-month history of low back pain and fatigue and urinary symptoms over the preceding month. He was found to have had a hepatomegaly & a large nodular prostate on rectal examination. Investigations revealed a normal full blood count and renal profile, raised alkaline phosphatase and Prostate Specific Antigen (PSA), and low serum Calcium. A bone scan was performed which revealed widespread bony metastases in the axial and appendicular skeleton resulting in a 'superscan', consistent with prostatic metastases. We recommend that calcium levels be checked in all patients with prostate cancer and metastatic bone disease as this may have a bearing on their symptoms and the use of bisphosphonate therapy.

**Keywords:** Prostate cancer, osteoblastic metastases, hypocalcaemia, superscan, zoledronic acid, bisphosphonates.

## INTRODUCTION

Prostate cancer accounts for more than 1% of deaths in men in the western world and is the commonest cancer in men and the 2<sup>nd</sup> most common cause of death from cancer in men.<sup>1</sup> Around 30% of patients have evidence of bone metastases at presentation and are usually normocalcemic. We describe a case of prostate cancer with bone metastases who presented with hypocalcaemia which is an uncommon presentation in these patients.<sup>2,3,4</sup>

## CASE SUMMARY

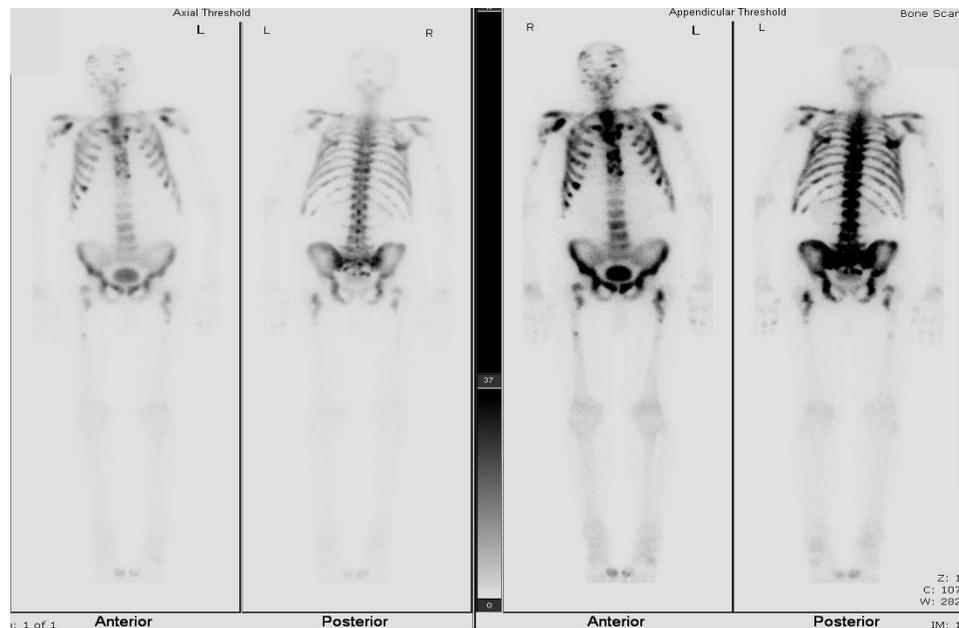
A 65 year old, previously healthy gentleman with a background of hypertension and well controlled atrial fibrillation was referred by his General Practitioner (GP) with a 2 month history of low back pain and

fatigue. He had also noticed hesitancy in micturition over the preceding month.

On clinical examination, the liver was enlarged 4 finger breadths below the right costal margin with a large nodular prostate on rectal examination.

His initial investigations showed a normal full blood count and renal profile. His alkaline phosphatase was elevated at 3820 IU/l, Prostate Specific Antigen (PSA) in excess of 1276 ng/ml, Calcium 2.06 mmol/l (low) and phosphate 0.80 mmol/l.

A bone scan was performed which revealed widespread bony metastases in the axial and appendicular skeleton resulting in a 'superscan', consistent with prostatic metastases, Figure-1.



**Figure-1: Isotopic bone scans in prostate cancer. Diffuse metastases demonstrate a 'superscan' appearance.**

## DISCUSSION

Around 30,000 men are diagnosed with prostate cancer each year in the UK and an estimated 10,000 will die of the disease each year.<sup>5</sup> The disease tends to be hormone responsive in the majority of patients initially but becomes hormone unresponsive with the passage of time. At this late stage 85% of patients have evidence of bone metastases which can cause considerable skeletal morbidity from pain, fractures and spinal cord compression.

The bone metastases typically appear osteoblastic on plain X-rays but CT imaging often identifies lytic areas within sites of sclerotic metastases. It is therefore not surprising to see an increase in markers of bone turnover such as N-telopeptides which are indicative of osteoclastic activity, even in patients with prostate cancer and 'apparently' osteoblastic bone metastases.<sup>6</sup> Bone scans typically show increase uptake at sites of skeletal involvement by metastases and when the involvement of the skeleton is diffuse the appearances of the bone scan are referred to as a 'super scan'. Such patients with widespread bone metastases from prostate cancer and a 'super scan' may present with hypocalcaemia. This is usually asymptomatic and picked up on routine laboratory testing.

## CONCLUSIONS

Hypocalcaemia is an uncommon but recognized feature of prostate cancer and bone metastases.<sup>2,3,4</sup> The mechanism of hypocalcaemia appears to be excessive uptake of calcium by the osteoblastic metastases.<sup>3,7</sup> These patients are increasingly being

offered potent intravenous bisphosphonate therapies with agents like Zoledronic acid, to reduce skeletal morbidity.<sup>8</sup> This has the potential to worsen the hypocalcaemia necessitating the use of replacement calcium therapy.<sup>9</sup> We recommend that calcium levels be checked in all patients with prostate cancer and metastatic bone disease as this may have a bearing on their symptoms and the use of bisphosphonate therapy.

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