

# Low PTHrP in a Malignancy Induced Hypercalcemia: A Case Report

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## Introduction

Hypercalcemia related to malignancy accounts for 65% of the hospitalized patients. Elevated parathyroid hormone related protein (PTHrP) helps in the diagnosis of these patients related to the malignancy as high levels leads to increased osteoclastic bone resorption and hypercalcemia also known as Humoral Hypercalcemia of Malignancy (HHM). We describe a case of hypercalcemia of malignancy with low PTHrP in a middle age male.

## Case

A 59 year-old male with a past medical history of squamous cell carcinoma (SCC) of the supraglottic larynx (pT2N2cM0, p16 negative) status post resection and radiation therapy, hypothyroidism, megaloblastic anemia and tobacco/alcohol abuse who presented to the emergency department (ED) with complaints of severe back and shoulder pain. On further evaluation, he noted long standing generalized weakness and body aches. In the ED his labs showed marked hypercalcemia with calcium (Ca) levels of 14.5 mg/dl (8.6 – 10.2 mg/dl). Further workup of hypercalcemia revealed low PTH 3.5 pg/ml (10 – 65 pg/ml), low 25-OH Vitamin D levels of 7 ng/ml (30 –100 ng/ml), low 1 – 25 dihydroxy vitamin D levels of 5 pg/ml (20 – 79 pg/ml) and low PTHrP of <5 pg/ml (14 – 27 pg/ml). His chest xray was done which showed pleural-based mass like lesions in the lateral left thorax. A follow up CT scan chest showed marked partially calcified mass like thickening of the left pleura with invasion into the left chest wall consistent with new primary malignancy vs metastasis. His repeat PTHrP was sent which again came back low at 8 pg/ml. Hematology-oncology was consulted in hospital who recommended patient to follow up with his primary Heme/Oncologist at outside hospital (OSH). His Ca levels improved to 10.4 mg/dl on discharge with IV fluids, later

on he was admitted at the OSH for ultrasound-guided core biopsy of a left pleural/chest wall mass after one month where his PTHrP levels were 27.1 pg/ml. His left pleural mass lung biopsy results revealed metastasis from the primary Head & Neck SCC.

## Discussion

PTHrP is elevated in HHM with head, neck and lung SCC as the most common cause identified in solid organ malignancy. Our case was unique in a way that despite pathological diagnosis of metastasis of head and neck SCC to the left pleura, PTHrP was low twice on initial admission and it didn't help us before the biopsy in guiding us towards the diagnosis of HHM. More studies and case reports are warranted to identify the exact mechanism of initial low PTHrP in HHM which is uncommon.

## References:

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