

## Case Report

# Bilateral lungs uptake of $^{99m}\text{Tc}$ -HDP in a post treated patient with breast carcinoma

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## ABSTRACT

$^{99m}\text{Tc}$ -HDP radiopharmaceuticals uptake has been reported at various sites and it is known to be induced by various causes. Bilateral lungs uptake of  $^{99m}\text{Tc}$ -HDP in a post treated patient with breast carcinoma can be a cause of poor renal function as chemotherapy affects renal function. Here we report on a post treated patient with Ca Breast in which rarely having  $^{99m}\text{Tc}$ -HDP uptake in bilateral lungs. After full cycle of chemotherapy treatment, some patient suffer with poor renal function although it will improve along with time but due to poor renal function there is chance of  $^{99m}\text{Tc}$ -HDP uptake in lungs during bone Scintigraphy. So Bilateral lungs uptake of  $^{99m}\text{Tc}$ -HDP in a post treated patient with breast carcinoma on bone scan may suggest rare but due to poor renal function which some time develop after full cycle chemotherapy treatment.

**Keywords:** Lungs uptake,  $^{99m}\text{Tc}$ -HDP, Ca-Breast

## Introduction

Some chemotherapy drugs can affect the kidneys (nephrotoxicity). The kidneys remove many chemotherapy drugs from the body. When chemotherapy drugs break down, they make products that can affect cells in the kidneys. The potential for kidney damage varies with the type of chemotherapy drug used<sup>1</sup>.

$^{99m}\text{Tc}$ -HDP radiopharmaceuticals uptake has been reported at various sites and it is known to be induced by various causes. Bilateral lungs uptake of  $^{99m}\text{Tc}$ -HDP in a post treated patient with breast carcinoma can be a cause of poor renal function as chemotherapy affects renal function. Here we report on a post treated patient with Ca Breast in which rarely having  $^{99m}\text{Tc}$ -HDP uptake in bilateral lungs. After full cycle of chemotherapy treatment, some patient suffer with poor renal function although it will improve along with time but due to poor renal function there is chance of  $^{99m}\text{Tc}$ -HDP uptake in lungs during bone Scintigraphy. So Bilateral lungs uptake of  $^{99m}\text{Tc}$ -HDP in a post treated patient with breast carcinoma on bone scan may suggest rare but due to poor renal function which some time develop after full cycle chemotherapy treatment<sup>2</sup>.

## Case Report

In February 2017, a 61-years-old woman with a complaint of feeling of lumpiness in right breast had come B P Koirala Memorial Cancer Hospital for treatment. She had menopause 10-years back. After performing Mammography procedure, the result showed an ill-defined lump over upper outer quadrant of right breast with BIRADS category IV. But there was no overlying skin changes and no nipple retraction. Right axilla was also normal. Her left breast was in normal limit. After that FNAC from right breast lump was performed and its report showed "Infiltrating Ductal Carcinoma".

After performing Modified radical mastectomy of right breast on same month, the Histo-pathological report showed PT2 PN3 d (MRM); 3X3cm lump in right breast; 30 lymph nodes were dissected. After post operation, the blood reports of CBC, LFT, RFT, CXR and ECG were in normal limits which were also normal prior to the operation. ER and PR were negative, c-erbB2 (Her-2/neu) was 3+positive, IR was absent and average intensity at staining was also absent. After checking all the above pathological reports, she was given 6-cycles of chemotherapy and 16 fractions of radiotherapy. After completion of both these therapeutic

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treatments, on February 2018, she came with a complaint of abdominal pain, headache and loss of appetite. Then she underwent CT-scanning procedure of brain, chest, abdomen and pelvis. The report showed normal scanning of brain, chest, (Fig. 1) pelvic whereas liver metastases (Fig. 2) were seen in abdominal scanning. The biochemistry report showed blood urea level 173mg/dl, blood serum level 3.0mg/dl and alkaline phosphatase level 443mg/dl which showed poor renal function.

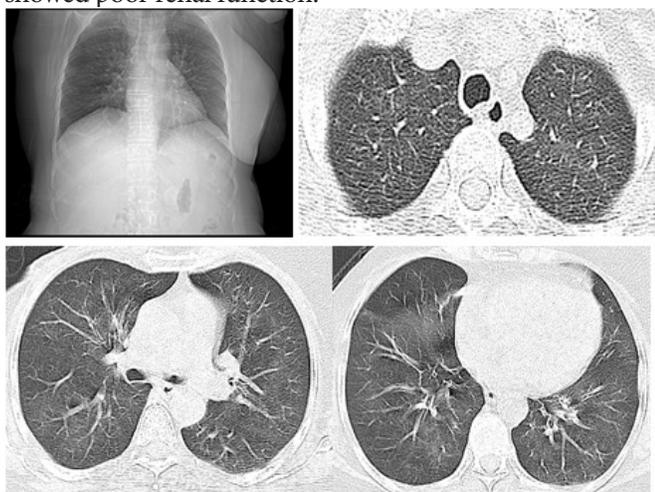


Fig. 1 CT scans Image of Patients (Normal Lungs)

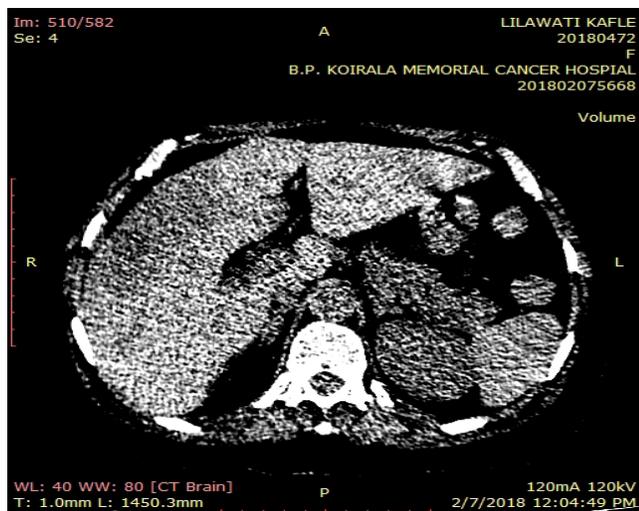


Fig.2 CT scan of Patient with liver metastases

The patient subsequently underwent a Bone-Scintigraphy procedure without any delay. The bone scan was performed 3-hrs after intravenous injection of 23mCi of <sup>99m</sup>Tc-HDP. There was high uptake of tracer in both the lungs. (Fig 3) We also perform whole body bone scan after 24 hr and it also showed bilateral lung uptake. (Fig 4)



Fig. 3 Bone Scintigraphy with lungs uptake (3Hr)

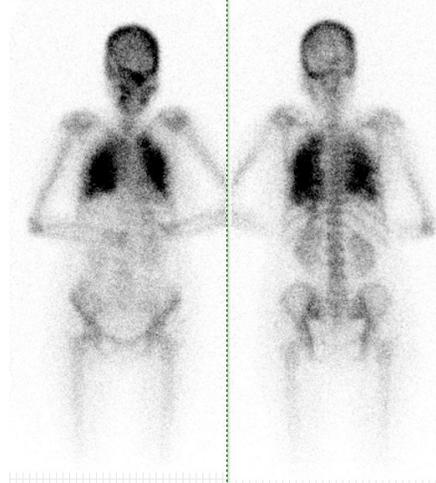


Fig. 4 Bone Scintigraphy with lungs uptake (24Hr)

**Discussion**

Extra skeletal <sup>99m</sup>Tc-MDP uptake in soft tissues rarely can be seen on delayed bone-scan images<sup>3</sup>. Uptake of bone-seeking radiopharmaceuticals in extra skeletal tissues can be categorized according to the underlying mechanisms: dystrophic calcification, metastatic calcification, increased ectopic osteoblastic activity, metastases from osteoid-forming primary tumors, and increase of calcium-binding tissue cations<sup>4</sup>. The lung is a rare site of bone-specific radiopharmaceutical accumulation, which is thought that the relative alkaline environment surrounding the alveoli conduct calcium precipitation<sup>2</sup>.

It is also reported that some patients had hypocalcaemia of varying etiologies and another six were chronic dialysis patients. Except for one patient in the latter group, none of them had radiological evidence of

pulmonary calcification. Even then, the calcifications seen radiographically did not correspond to the scintigraphic patterns. In contrast, only two patients with no biochemical abnormalities had extensive radiologic calcifications and were diagnosed with diffuse alveolar microlithiasis<sup>5</sup>.

In our case report, after chemotherapy and radiotherapy treatment, there was elevated of Renal Function Test (RFT) i.e. serum urea, serum creatinine etc. and renal function was not within the normal range. But there was also no evidence of underlying malignancy. In the case of diffuse pulmonary uptake of Tc-99m MDP, the presence of biochemical abnormality and/or radiologic abnormality should be initially evaluated.

Bone seeking radiopharmaceuticals uptake in lungs has been reported at various sites and it is known to be induced by various causes. In current patient, Bilateral lungs uptake in a post treated patient with breast carcinoma may be a cause of poor renal function as chemotherapy affects renal function. Here we report on a post treated patient with Ca Breast in which rarely having <sup>99m</sup>Tc-HDP uptake in bilateral lungs. After full cycle of chemotherapy treatment, some patient suffer with poor renal function although it will improve along with time but due to poor renal function there is chance of <sup>99m</sup>Tc-HDP uptake in lungs during bone Scintigraphy. So Bilateral lungs uptake of <sup>99m</sup>Tc-HDP in a post treated

patient with breast carcinoma on bone scan may suggest rare but due to poor renal function which some time develop after full cycle chemotherapy treatment<sup>2</sup>. Even though, there is also chance of micro pulmonary metastasis which can't diagnosed early. So there is also change but after evaluating renal function test, CT scan of chest abdomen pelvis, may suggest rare but due to poor renal function.

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