# Incidental finding of $^{68}$Ga-PSMA uptake in covid-19 induced pneumonia

Case Report

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## ABSTRACT

A 68 years old man with prostate carcinoma was referred for $^{68}$Ga-PSMA PET/CT scan because of recent significant rise of PSA. He complained of muscle weakness and fatigue, since 3 weeks before the scan, without dyspnea or shortness of breath. In his $^{68}$Ga-PSMA-617 PET/CT study, widespread skeletal metastasis, as well as liver involvement were noticed. Also, multiple bilateral patchy areas of ground glass opacities were noticed in peripheral areas of both lung fields, which showed typical pattern of covid-19 pneumonia. These lung lesions showed relatively significant PSMA uptake, which were about twice of the liver uptake. Serology test, which was performed later, confirmed covid-19 infection.

**Key words:** Covid-19; PSMA; PET/CT; Pneumonia

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## INTRODUCTION

A 68 years old man with prostate carcinoma was referred for $^{68}$Ga-PSMA PET/CT scan because of recent significant rise of PSA (more than tripled in recent 4 months). He had underwent external beam radiotherapy of the prostatic bed as the initial treatment 4 years ago and had been on androgen deprivation therapy till now. He complained of muscle weakness and fatigue, since 3 weeks before the scan, without dyspnea or shortness of breath. In his $^{68}$Ga-PSMA-617 PET/CT study, widespread skeletal metastasis as well as liver involvement were noticed (Figure 1). $^{68}$Ga-PSMA PET/CT study reveals widespread PSMA avid skeletal metastasis, as well as liver involvement). Multiple bilateral and patchy areas of ground glass opacity and consolidation was evident in the lung CT window of the study, which were located mostly in the peripheral areas of the lung, and were typical for covid-19 pneumonia (Figure 2). Fused and non-fused lung sections of $^{68}$Ga-PSMA PET/CT, reveals typical pattern of covid-19 pneumonia with PSMA avidity). Interestingly, these lesions showed considerable PSMA uptake, which was about twice of the liver uptake (SUV max =4.1, mean SUV of the liver= 2.22). For confirmation of the Covid-19 infection, serology tests were ordered and elevated IgM level was confirmed.

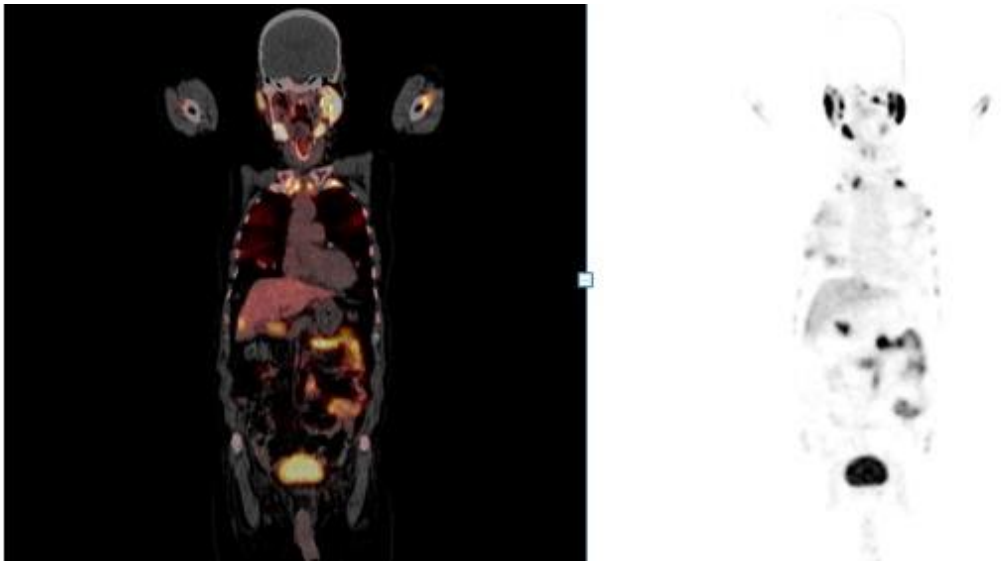

**Fig 1.** Whole body $^{68}$Ga-PSMA PET/CT scan showing multiple skeletal metastasis, liver involvement and lung uptake

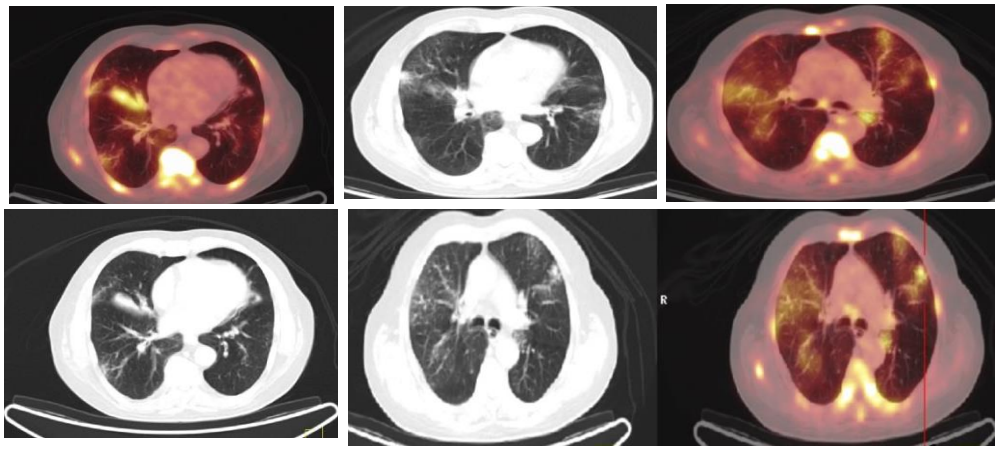

**Fig 2.** Transaxial sections of the scan, showing $^{68}$Ga-PSMA activity in the patchy ground glass opacities and consolidations.

## DISCUSSION

PSMA is a membrane bound, type II glycoprotein over expressed on prostate cancer tissue [1]. $^{68}$Ga-PSMA positron emission tomography/computed tomography (PET/CT) is a non-invasive diagnostic technique, which have shown promising results in imaging prostate cancer, especially for initial staging of high risk prostate cancer patients, and also for evaluating the PSMA expression in castration resistant prostate cancer patients before planning for peptide receptor radionuclide therapy. However, it does express in some benign conditions, as well as non-prostatic malignancies [2, 3].

Inflammation and infection may also mimic malignancy in PSMA PET/CT scans by showing mild increased PSMA uptake, but the etiology has not been completely understood [4].

Covid-19 pandemic is the global health crisis in our time [5] and the resulted pneumonia is not infrequently seen in lung CT scanning performed for other reasons in asymptomatic patients.

To our knowledge, this is the first report of PSMA uptake in covid-19 induced pneumonia interestingly occurred in an asymptomatic patient.

## CONCLUSION

Our case, describes a case of PSMA uptake in covid-19 induced pneumonia in an asymptomatic patient. This highlights the importance of being vigilant and pay attention all the incidental findings, while interpreting PET/CT scans, considering the false positive patterns of uptake, especially in the situations such as covid-19 pandemic.

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