Pyemotes species isolated from sputum sample of COVID-19 patient

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ABSTRACT

COVID-19, which emerged as a new and unknown disease in December of 2019, has transformed into a full blown pandemic. It has affected all spheres of life, however, has claimed more lives of immune-compromised. Many opportunistic infections are being reported. We present a case of pyemotes species in sputum sample of a COVID-19 patient.

INTRODUCTION

COVID-19 is a contagious disease caused by severe acute respiratory syndrome 2 (SARS-CoV-2). The first known case was detected in Wuhan, China in December 2019. The disease has since spread worldwide, leading to an ongoing pandemic. COVID-19 patients at high risk are those with acute respiratory distress syndrome who received broad-spectrum antibiotics, immunosuppressants or corticosteroid and supported by invasive or noninvasive ventilation. The patients are most likely to develop pulmonary aspergillosis, oral candidiasis, and pneumocystis pneumonia. House dust mite allergy is strongly implicated in the pathogenesis of respiratory allergic disease. House dust mites burrow into our clothing, pillowcases, carpets, mats and furniture, and feed on human dead skin cells by breaking them into small particles for ingestion. Dust mites are most common in asthma allergens, and some people have a simple dust allergy, but others have an additional condition called atopic dermatitis, often stated to as eczema by reacting to mites with hideous itching and redness. The most common type of dust mites are dermaphagoides farina Hughes (American house dust mite) and dermaphagoides pteronyssinus trouessart (European house dust mite) of family pyroglyphidae (Acari), which have been associated with dermatological and respiratory allergies in humans such as eczema and asthma.
A 65 years male patient, farmer by occupation and part time carpenter having symptoms of shortness of breath, fever, headache and body pain came to the Nepalgunj Medical College, Kohalpur on the date of 2078-2-18 BS (2021-6-1 AD). He was known case of Type II diabetes mellitus with hypertension. He was tested positive for COVID 19 by RT-PCR and the CT values of E gene, N gene and ORF 1ab gene are 28.2, 29.8, 30.4 respectively. Sputum sample was collected from COVID ward in tightly sealed leak proof container, packed in zip-lock plastic bag and transported to microbiology lab. Sample was processed following the standard protocol of bio-safety. Smear was prepared on slide and two drops of 10% KOH was poured over the smear and covered by cover slip. Presences of mites were revealed when two subsequent sputum samples were tested in two days interval.

On microscopic examination, a mite was found, identified morphologically as Pyemotes species. Peripheral blood smear correlation was done. The patient’s WBC level was increased.

**Ventral side 40x**

**Dorsal side 40x**

**DISCUSSION**

An enveloped novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), single-stranded RNA betacoronavirus of the family coronaviridae, was reported from Wuhan, China, in late 2019. Using broad-spectrum antibiotics, either empirically or targeted therapy are risk factors for superinfection in patients with severe COVID-19 which raises the odds of fungal infections due to endogenous fungi such as Candida species.

House dust mites have been shown to exist in sample of house dust from all over the world. The studies of house dust mites in dwelling were exclusively concerned with occurrence of mites in dust floor. Predominantly house dust mites were reported in study of dust mites in dwelling were exclusively concerned with the occurrence of mites in dust sample from floor dust. A case report of human case of house dust mite Tarsonemusfloricolus was collected from sputum of 23-year-old medical student in Korea. He was tested positive for Paragonimus westermani. His eosinophil count was 150/mm$^3$ and eosinophil ratio was 3% by peripheral blood smear. A fisherman after contact with old cherry-wood developed acute dermatitis. A Pyemotes mite, probably P. beckeri, found in the wood was responsible which shows the importance of appropriate laboratory examinations for ectoparasites. Numerous preparations of mites were made on slides, and two species present in the old cherry-wood were subsequently identified by acarological procedures. One of these mites was Calvoliaheterocoma, a sarcoptiform mite not previously associated with human or animal dermatoses. The other was a pyemotes species, probably P. beckeri. This correlates with our case as the patient is farmer and part time carpenter. He has history of allergy during his occupational work. Mite Pyemotes spp. are found in wood. Pyemotes in covid patient may aggravate its allergic reaction complicating the disease process.

**CONCLUSIONS**

Mites in different part of the world is often studied and reported. However, isolation of mite is less reported in Nepal. Mite and their importance in allergic diseases cannot be overlooked. Our case report of Pyemotes in covid patient sputum warrants its management along with other issue in COVID patient.

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