

Hot tub lung: take a bathing history from the breathless

Dave A Duggan, Andrew G Stanley, Phil Shoemack

Hot tub lung is a non-infectious hypersensitivity granulomatous inflammatory condition caused by inhalational exposure to non-tuberculous mycobacteria. We report a case of confirmed hot tub lung in an immunocompromised host with underlying lung disease.

Case report

In July 2018, a 77-year-old New Zealand European male presented with a two-day history of acute on chronic dyspnoea with subjective fever and worsening dry cough.

He reported a 50m exercise tolerance on admission which had significantly declined from three months earlier when he could walk several kilometers. A 5kg weight loss was noted over the previous three months. He noted an acute on chronic exacerbation of his cough. On direct questioning he reported owning a spa pool which he kept in his garage and used on a regular basis.

He had multifactorial causes of dyspnea on exertion, including chronic obstructive pulmonary disease and obstructive sleep apnoea. He also had a history of rheumatoid arthritis and polymyalgia rheumatica for which he required methotrexate and low dose prednisone.

On examination he was noted to be hypoxic and tachycardia with inspiratory lung crepitations. The white cell count was 15.8 with CRP of 61. Chest x-ray revealed widespread reticular nodular opacities which had progressed over the preceding few months.

At the time of presentation the patient was under investigation by the general surgeons for a change in bowel habit and ongoing weight loss. A colonoscopy in June 2018 revealed an entirely normal colon. An outpatient CT thorax, abdomen, pelvis

was performed one week prior to the presenting admission to further investigate these symptoms. This revealed extensive ground glass attenuation, with centrilobular nodules commonly referred to as tree-in-bud appearance throughout both lungs¹ (Figure 1).

Intravenous augmentin was commenced and methotrexate was stopped. Expecto-rated sputum grew mycobacterium avium intracellulare complex (MAC) after 14 days of culture. Bronchoscopy cultures confirmed MAC growth on day 24 of culture. The public health officer visited the patient's home and took samples of the spa pool water which also demonstrated the presence of MAC.

Prednisone 30mg daily was commenced and he was advised to dispose of his spa pool. Two weeks post-discharge, his cough was markedly better with a 2kg weight gain but no significant improvement in dyspnoea. He reported that he had stopped using the spa pool but had not emptied its contents.

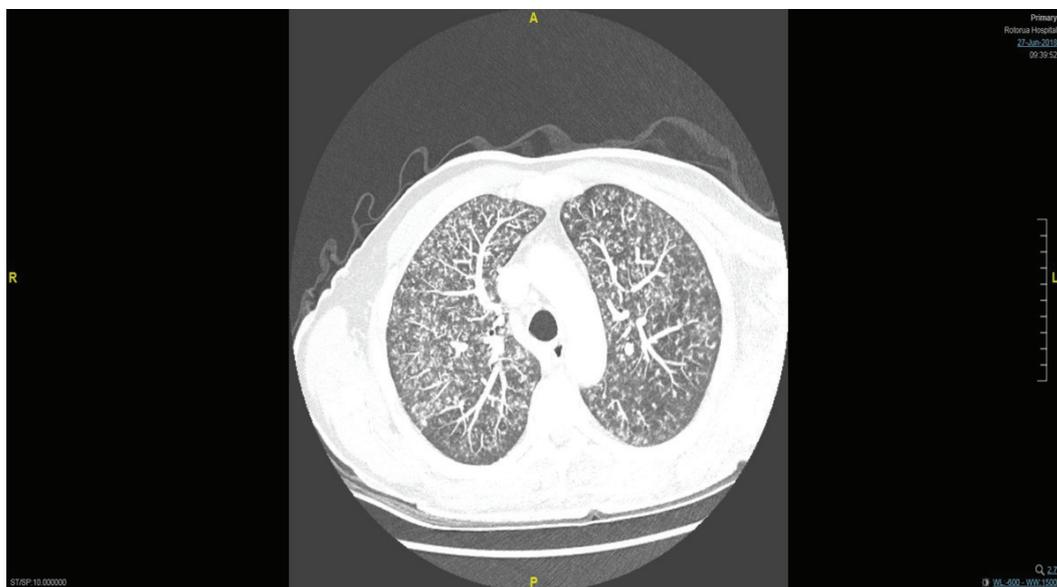
Prednisone was weaned by 5mg weekly. The spa pool was removed from the patient's premises. At two months post-discharge the patient's cough had resolved and his dyspnoea had also significantly improved.

Discussion

MAC is the most common bacteria that can cause hot tub lung.² In cases where hypersensitivity pneumonitis is demonstrated radiologically, it should be recognised as a possible differential diagnosis.³

It most commonly affects immunocompetent individuals.⁴ Our case is one of few reported in the literature where both underlying lung disease and immunosuppression were present at the time of diagnosis.

Figure 1: CT thorax at presentation showing extensive centrilobular nodules and ground glass appearance throughout both lungs consistent with hypersensitivity pneumonitis.



This case also demonstrates a challenging diagnostic process. Initial evaluation of this patient would likely trigger a differential diagnosis of methotrexate-induced pneumonitis or rheumatoid lung disease. Therefore, a detailed history and evaluation should be sought.

Avoiding further exposure to spa pools with or without the use of oral corticosteroids is the mainstay of treatment. It does not appear that antimycobacterial therapy is indicated in the treatment of these patients.⁵ Frequent spa pool cleaning with strict maintenance of pool filters and regular water changes reduces the risk of contamination.⁶

Competing interests:

Nil.

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