Case report

Antibiotic instillation for a chronic lung abscess

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ABSTRACT

Introduction: Antibiotic treatment of lung abscesses fails in 10–20% of cases and require surgery, however, some are unsuitable for resection. Alternative options carry significant morbidity.

Case report: A 47 year old man with inoperable non-small cell lung cancer developed a lung abscess following definitive radiotherapy. Initial antibiotic therapy was successful, however four years later his symptoms recurred. Despite multiple courses his symptoms recurred despite long-term antibiotics. Immediately following a diagnostic aspiration, ceftriaxone and metronidazole were instilled into the abscess with subsequent clinical and radiological resolution.

Discussion: Lung abscesses are an uncommon complication of radiotherapy. Antibiotic therapy can fail for a number of reasons. Although instillation of antibiotics has not been described in the management of lung abscesses, the direct application of antifungals for aspergillomas is well documented and case series report success in other abscess sites.

Conclusion: Direct antibiotic instillation following lung abscess aspiration adds minimal risk and is potentially curative.

1. Introduction

Medical treatment of a lung abscess with intravenous antibiotics fails in approximately 10–20% of cases and surgical resection is usually advised, but some patients are unsuitable for surgery. Less commonly, percutaneous thoracostomy can be attempted, however this too carries a significant morbidity [1]. While the instillation of antimicrobials into pulmonary abscesses is not a new concept [2–5], to our knowledge the direct instillation of antibiotics has not previously been reported.

2. Case report

A 47 year old man presented with altered voice secondary to a recurrent laryngeal nerve palsy and was found to have a left upper lobe (LUL) non-small cell primary lung cancer (NSCLC) large cell subtype. He was a heavy smoker with a history of Stage 2 gastric adenocarcinoma 8 years previously, definitively managed with a partial gastrectomy and adjuvant chemotherapy. His lung cancer was initially classified as Stage IIIA (T2aN2M0); and was planned for surgical resection following a diagnostic aspiration, ceftriaxone and metronidazole were instilled into the abscess with subsequent clinical and radiological resolution.

He re-presented again four years later with recurrence of fever and the same abscess. Multiple antibiotics were utilised without success. He was initially commenced on amoxicillin/clavulanic acid then intravenous ceftriaxone 1g daily without symptomatic benefit despite one month of ceftriaxone with short courses of clindamycin and metronidazole. With a dose increase to 2g ceftriaxone daily his fevers settled. Following cessation of antibiotics his fevers recurred and he developed left apical chest pain and a non productive cough. Bronchoscopy demonstrated that the LUL bronchus had been obliterated by fibrosis, without a patent lumen to allow drainage. After a further 6 weeks of oral amoxicillin and clavulanic acid his symptoms abated.

Unfortunately he was unable to tolerate the side effects of high dose two years that followed, however both appeared to resolve following further radiotherapy. Following a total 150 Gy to his LUL he was left with significant radiation fibrosis and almost total collapse of the lobe.

One year following the final dose of radiotherapy he presented to hospital reporting two months of intermittent fevers. CT imaging demonstrated a cavitating multi-loculated lesion in the superior aspect of the LUL surrounded by an area of fibrosis (Fig. 1). He was commenced on intravenous (IV) piperacillin/tazobactam after the abscess was aspirated under CT guidance. He rapidly defervesced on antibiotics and following growth of amoxicillin sensitive Streptococcus milleri he was changed to IV ampicillin for six weeks, followed by two weeks of oral amoxicillin. Following cessation of antibiotics his fevers recurred and he developed left apical chest pain and a non productive cough. Bronchoscopy demonstrated that the LUL bronchus had been obliterated by fibrosis, without a patent lumen to allow drainage. After a further 6 weeks of oral amoxicillin and clavulanic acid his symptoms abated.

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Success rates and complications vary greatly between the case series [1]. Antibiotics into pulmonary abscess cavities but case series of antibiotic irrigation have been described for both breast [12] and liver [13] abscesses, often in combination with systemic therapy. The direct application of antifungals into aspergillomas is however a well-recognised, if not widely used, treatment option. First described in 1959; the success of the initial attempts with nystatin and amphotericin B were mixed; but improved once the antifungals were prepared in a paste that solidified at body temperature, increasing the duration of antifungal exposure. No randomised trials have been performed but multiple case series utilising the technique have been published since, primarily for the management of severe haemoptysis, with resolution of symptoms in 30–100% of cases, again often with concurrent systemic treatment [2–5].

4. Conclusion

Our patient had numerous reasons for antibiotic failure. He had developed a resistant organism, the degree of damage to the surrounding lung tissue left no drainage available for the abscess, and the extensive surrounding fibrosis greatly reduced antibiotic penetration. All of these factors were overcome by lavage and instillation of antibiotics. We would suggest that this technique adds minimal risk and is potentially curative should an aspiration already be planned for diagnostic purposes.

Declaration of competing interest

Nil.

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