

Pasteurella Multocida Pneumonia: A Case of Mistaken Identity in a Previously Well 47-Year-Old Woman

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Abstract

Pasteurella infections in humans are usually zoonotic in origin, with a variety of presentations including cellulitis, septic arthritis and respiratory illness in elderly patients, the immunocompromised or those with existing chronic lung disease. We present a case of *Pasteurella multocida* pneumonia in a middle-aged woman with no previous lung disease and highlight a potential difficulty in the laboratory identification of *Pasteurella* species.

Keywords: Pasteurella pneumonia; Infection; Diagnosis

Introduction

Pasteurella multocida is a gram negative coccobacillus commonly found in the mouths of domestic and wild animals. It is estimated that 50 to 66% of healthy dogs carry the organism in their nasal secretions [1]. *P. multocida* cellulitis, pneumonia, bacteremia and even acute septic arthritis in humans can occur after a bite or scratch injury [2]. Since the 1980s molecular techniques have been used to further characterize the Pasteurella taxonomy and *P. multocida* sub-species *multocida* has a higher association with respiratory illnesses compared to *P. multocida* sub-species *septica* which appears to show an association with wound infections following animal bites [3]. Rarer presentations of *P. multocida* infections include meningitis and empyema [2, 4]. *P. multocida*

pneumonia has been colloquially described as “cat cuddlers’ cough” and has previously most frequently been described in patients who were immunocompromised, elderly or with existing lung pathology such as chronic obstructive pulmonary disease [5]. Laboratory differentiation between *Pasteurella* and *Hemophilus* species can sometimes be difficult as both species are gram negative, coccobacilli, indole and oxidase positive. Misdiagnosis between the two species has been reported using biochemical assays [6]. In this report we present the case of a previously well 47-year-old woman who was ultimately diagnosed with *P. multocida* pneumonia.

Case Report

A 47-year-old woman presented to the Royal Gwent Hospital emergency unit in October 2009 with a 2-day history of headache, myalgia, chills and sweats and a 12-h history of sore throat with chest pain but no cough. At this time the UK was in the middle of the H1N1 pandemic and she had previously been started on Oseltamivir by her general practitioner on suspicion of H1N1 infection, as she had been in contact with a co-worker with a flu-like illness. The patient’s past medical history was unremarkable, she was an ex smoker (stopped 10 years ago) and on no regular medications. On examination she was pyrexial and tachycardic with a blood pressure of 137/72. Her respiratory rate was 44 breaths per minute and she was hypoxic on air. She had bi-basal crackles on auscultation, heart sounds normal with no murmurs, and there were no obvious rashes. Her ECG was normal and her chest X-ray showed left basal changes (Fig. 1). Her peripheral blood white cell count was elevated at 22.5×10^9 cells/mL (neutrophils 18.8×10^9 cells/mL). Her CRP was raised at 217 mg/L and a clinical diagnosis of a bacterial lower respiratory tract infection was made.

Blood cultures were taken on admission, oseltamivir was discontinued and the patient was prescribed IV co-amoxiclav and oral clarithromycin. She was closely followed up by the critical care outreach team for 24 h due to her tachypnea and hypoxia but made a good clinical recovery and the co-amoxiclav was switched to oral after 72 h. Antibiotic treatment was given for 7 days and the patient

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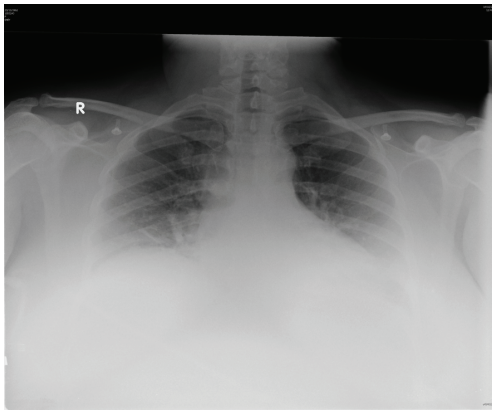


Figure 1. Chest X-ray on admission.

went home well 5 days after admission.

The day after admission both anaerobic and aerobic blood culture bottles became positive and the gram stain indicated the organism was a gram negative coccobacillus.

The organism was indole and oxidase positive but failed to identify on the BD Phoenix™ Automated Microbiology System. An API® NH test was used as the organism was presumed to be a *Hemophilus* at this stage. The organism grew poorly on cystine lactose electrolyte deficient (CLED) agar, but grew well on the chocolate agar swarming the X and V factors. The API NH test identified the organism as *Hemophilus* sp (99.7%). Direct disk sensitivity testing indicated the organism was sensitive to ampicillin, trimethoprim, tetracycline, cefotaxime, co-amoxiclav, ciprofloxacin, imipenem and piperacillin/tazobactam.

An interim laboratory report was issued stating that the organism was a gram negative bacillus presumed *Hemophilus* and the organism was sent to the HPA reference laboratory in Colindale. The final report from the opportunistic pathogens section of the reference laboratory identified the organism as *P.multocida*, by 16S rDNA sequencing (not identified to sub-species level). The patient returned to Royal Gwent Hospital for follow-up 2 months after initial presentation having made a full recovery. When questioned, at that time, the patient reported looking after a sick cat with hematemesis prior to her illness. Unfortunately the cat had died so there was no opportunity to get a sample from the

animal to confirm that the cat was the source of the infection.

Conclusions

Pneumonia caused by *P.multocida* in well middle-aged patients with no risk factors is extremely rare. This patient was unlucky to present with respiratory illness during an influenza pandemic following contact with H1N1 and therefore was initially misdiagnosed and treated inappropriately. It is understandable that the presumptive identification of *Hemophilus* was made given that: 1) this would be a more common respiratory pathogen and 2) laboratory identification of Pasteurella species can be confused with *Hemophilus*. Arguably when the organism was found to be easily cultured on chocolate agar the presumptive identification of *Hemophilus* species should have been questioned, but at that time the history of contact with a sick cat was not known. There is a distinct possibility that the organism was transmitted to the patient by aspiration whilst nursing the sick cat; however, only circumstantial evidence was available for this hypothesis. Fortunately for the patient the antibiotic treatment chosen was entirely appropriate and she made a full recovery.

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