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A Rare Case of Pantoea Agglomerans Causing Haematuria and Urethritis in a Patient with Acute Myeloid Leukaemia (AML)

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ABSTRACT

Pantoea agglomerans, a Gram negative bacterium of the family, Enterobacteriaceae, has been reported to cause septic arthritis/synovitis, endophthalmitis, periostitis, endocarditis, osteomyelitis, cholelithiasis, peritonitis and skin allergy [1-6]. We report the first case of haematuria with pantoea urethritis in a 51 year old adult male who was undergoing chemotherapy for acute myeloid leukaemia on the AML 19 trial. He developed a persistent fever with haematuria five days after completion of chemotherapy. The blood culture from his PICC line grew pantoea agglomerans sensitive to ceftriaxone. He became neutropenic with associated fevers post chemotherapy, so he was started empirically on meropenem and vancomycin as per the neutropenic sepsis policy. He continued these for eight days until blood culture results were available. Although urine culture was negative, CT Urogram however revealed features consistent with urethritis. He completed another week of intravenous ceftriaxone and haematuria subsequently resolved. It is very likely that pantoea agglomerans caused the urethritis which resolved with antibiotics and repeat blood cultures returned negative. Pantoea agglomerans commonly occurs in plants as an epi or endophytic symbiont [7] with reports of opportunistic infection mostly in immunocompromised individuals. 6 Most human infections reportedly occur through skin breaks for instance through thorn pricks [2,4,6] during gardening, although there are also reports of sepsis through contaminated parenteral fluids [1,2] and indwelling lines/ catheters [8] or even presenting like a tumour [9]. Timely antibiotics intervention led to the favourable outcome in our case. Mortality with pantoea agglomerans infection has been reported especially in immunocompromised children, [10] our case of pantoea agglomerans urethritis was most likely line associated. The case highlights the importance of developing policies on performing investigations on immunocompromised patients including those at risk of neutropenic sepsis with timely intervention and targeted antibiotics to give the best possible outcome and patient care.

Keywords

Pantoea agglomerans, Urethritis, Haematuria, Pantoea agglomerans Urethritis.

Introduction

Pantoea agglomerans is a Gram negative bacterium of the family, Enterobacteriaceae, which is commonly a plant pathogen. It has been reported to cause septic arthritis/synovitis, endophthalmitis, periostitis, endocarditis, osteomyelitis, cholelitiasis, peritonitis and skin allergy in humans [1-6].

It is commonly isolated from plant surfaces, seeds, fruits, animal or human faeces. It rarely causes diseases in humans but it has been reported to cause infections as in the above listed sites especially in immunocompromised patients [6], including those on chemotherapy. There are even some reports of Pantoea causing urinary tract infections in children [1]; however there has been no report to the best of our knowledge of Pantoea agglomerans causing haematuria or urethritis in adults. We report a case of Pantoea agglomerans causing haematuria with urethritis in an adult patient with Acute myeloid leukaemia (AML) who had chemotherapy on the AML 19 trial that is, FLAG-IDA(Fludarabine, Ara-c/ cytarabine, G-CSF and Idarubicin), as well as Myelotarg on days 4 and 7. Urethritis which is usually due to infective causes refers to inflammation of the urethra.

Case Report

The patient was a 51 year old adult male who was usually fit and well and referred with a history of SOB and abnormal blood results. He had been unwell for 4 weeks with pleuritic chest pain, night sweats, had associated dizziness and lethargy but did not have a cough, there was no history of bruising or bleeding. Physical examination was unremarkable. He had antibiotics by his GP however he remained unwell, and so was referred for blood tests, he was subsequently diagnosed with acute myeloid leukemia after his bone marrow aspirate biopsy results confirmed the diagnosis and was thus randomised to have chemotherapy on the AML 19 trial.

He completed the first course of chemotherapy for a week with the AML 19 trial and blood counts subsequently improved however, he became neutropenic post chemotherapy and had intermittent fevers. Five days after completing chemotherapy, he developed persistent fever and haematuria. Blood cultures sent later revealed Pantoea agglomerans. He also had urine culture which was negative likely because he had already commenced empirical antibiotics by this time. He was started on treatment with intravenous Meropenem and Vancomycin once he had become neutropenic with intermittent fevers, as per neutropenic sepsis protocol, which he continued for eight days.

Vancomycin was added to the usual Meropenem protocol for Neutropenic sepsis to cover for a possible line infection as the temperature spikes seemed to occur at certain times of the day, coinciding with the time of drug administration. Despite these antibiotics treatment, fever persisted.

He had a fungal screen with beta glucan and galactomannan, treatment was started empirically for a possible fungal infection as well, however, as fungal screen returned negative including a high resolution chest computed tomography(CT) scan, these were switched back to prophylactic doses while he remained neutropenic. Viral screen also returned negative except rhinovirus which was positive.

Admission bloods	Post chemotherapy
Hb-67g/l,WCC-69.1*10^9/l Plt-43*10^9/l, Neut-10.4 *10^9/l	Hb-74g/l, WCC-1.1*10^9/l Plt- 9*10^9/l, Neut-0.9 *10^9/l
CRP-187mg/l, ESR- 106mm/hr	CRP- 203 mg/l
Na+-144mmol/l, K+-4.4mmol/l, Ur-3.4mmol/l, Cr-64µmol/l, eGFR-108 ml/min/1.73m^2	Na+- 141mmol/l, K+ -4.5mmol/l, Ur-7.8mmol/l, Cr-67µmol/l, eGFR- 106 ml/min/1.73m^2
Ca2+-2.35mmol/l, Po4+-1.24 mmol/l	Ca2+ - 2.13mmol/l, Po4+- 1.10 mmol/l
Initial LD-876 U/l	LD- 14041 U/l
Uric acid - 247 µmol/l	Uric acid- 368 µmol/l

Table 1: comparison of admission and postchemotherapy blood results.

By the fifth day post chemotherapy, he had developed haematuria with fevers still persisting. CT urogram was done which revealed features consistent with a urethritis but no bleeding was seen into the kidneys and the bladder was unremarkable. He continued empirical antibiotics until blood culture results from the red lumen of the PICC line revealed Pantoea agglomerans sensitive to Ceftriaxone. He was then switched to Ceftriaxone which he continued for another week and haematuria subsequently resolved. He had his PICC line inserted according to the protocol, however, as he was neutropenic, he remained at risk of developing infections. He was managed according to the hospital protocol for Neutropenic sepsis. He also had red blood cells and platelet transfusions.

Discussion

Differential diagnosis of line infection and fungal infection were considered. Bladder carcinoma was also unlikely given the history. Tumour lysis syndrome was unlikely as no other component apart from haematuria and mild hypocalcemia, renal function remained normal.

Fludarabine induced haemorrhagic cystitis is rare and bladder was normal on CT scan. As he had no history of sexual intercourse during admission, it was also unlikely to be caused by a sexually transmitted infection. The resolution of the haematuria with antibiotics and the outcome of recovery rather than a protracted course of severe haematuria fits with an infective cause, in this case Pantoea agglomerans.

Pantoea agglomerans commonly occurs in plants as an epi or endophytic symbiont (Erwinia amylovora causing fire blight) in apple and pear trees [7], with reports of opportunistic infection mostly in immunocompromised individuals [6]. Most human infections reportedly occur through skin breaks for instance through thorn pricks [2,4,6] during gardening, although there are also reports of sepsis through contaminated parenteral fluids [1,2] and indwelling lines/catheters [8]. Pantoea agglomerans have even been reported to cause urinary tract infections in children [1] as well as other unusual presentations for instance as a tumour [9], there are however no reports to our knowledge of Pantoea causing haematuria or urethritis especially in adults.

Conclusion

We report this case to illustrate this unusual presentation of pantoea agglomerans and the need for clinicians to consider this diagnosis especially in immunocompromised patients with haematuria, which can easily be treated with antibiotics with good recovery rates.

Pantoea agglomerans can cause haematuria and urethritis especially in immunocompromised patients. Blood and/or urine cultures are important for making a diagnosis. Prompt antibiotics treatment results in favourable outcomes in most patients. Timely antibiotics intervention led to the favourable outcome in our case of pantoea agglomerans urethritis which was most likely line associated. Mortality with pantoea agglomerans infection has been reported especially in immunocompromised children [10]. The case

highlights the importance of developing policies on performing investigations on immunocompromised patients including those at risk of neutropenic sepsis with timely intervention and targeted antibiotics to give the best possible outcome and patient care.

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