

THIS CPD/CEU EXERCISE IS PRESENTED UNDER THE THISTLE QA SERVICE PROVIDER NO : MT00025. IT IS DESIGNED TO TAKE PLACE WITHIN YOUR OWN LABORATORY AS A SMALL GROUP ACTIVITY LASTING APPROXIMATELY ONE HOUR. PLEASE ENSURE THAT YOU KEEP A REGISTER OF THOSE TAKING PART IN THIS EXERCISE AND SUBMIT YOUR APPLICATION FOR 1 CEU POINT ON THE APPROPRIATE HPCSA FORM, ALONG WITH THE RELEVANT THISTLE QA PARTICIPATION CERTIFICATE SENT TO YOUR LAB WITH YOUR EQA KIT AND INSTRUCTIONS.

Cycle 19 Organism 4

The causative organism was *Pseudomonas fluorescens*.

Overview

Pseudomonas fluorescens and *Pseudomonas putida* are members of the fluorescent pseudomonad group. Members of the fluorescent group (*Pseudomonas aeruginosa*, *Pseudomonas fluorescens* *Pseudomonas putida*) produce pyoverdinin, a water-soluble yellow-green, yellow-brown pigment that fluoresces under short wave UV light. *Pseudomonas aeruginosa* is easily recognized by colonial morphology, diffusible pigments and a typical odour¹.

Microbiology

The ability of *P. aeruginosa* to grow at 42°C distinguishes it from the other fluorescent *Pseudomonas* species. *Pseudomonas fluorescens* and *Pseudomonas putida* do not possess a distinctive colony morphology or odour. Their inability to reduce nitrates to nitrogen gas and their inability to produce acid from xylose distinguish these two species from the other fluorescent pseudomonads. *P. fluorescens* can be differentiated from *P. putida* based on its ability to grow at 4°C and ability to hydrolyse gelatin.; *P. putida* can do neither. The ability to grow at 4°C allows the organism to proliferate in blood products¹.

Pathogenicity

P. aeruginosa is the only member of the genus that possesses significant virulence factors and is an important human pathogen. In the clinical setting it is usually not important to differentiate between *P. fluorescence* and *P. putida* since they are of low virulence and usually not clinically significant. Because of the well-known association between *P. fluorescence* and contaminated blood products, accurate identification may be important for isolates from patients who recently received blood products and developed bacteraemia. Strains of *P. fluorescens* have been frequently identified as contaminants on the skin of humans and as agents causing pseudobacteremia and procedure-related infections in hospitalized patients^{2, 3, 4}. Four patients developed *P. fluorescens* bacteraemia at a hospital in Taiwan; one in the oncology ward and the other 3 in the chemotherapy ward. The patients had underlying malignancies and had Port-A-Cath implants. *P. fluorescens* should be considered as the cause of infusion- or catheter-related infections. *P. fluorescens* may be difficult accurately identify using routine or commercially available methods⁵.

Treatment

Strains of *P. fluorescens* are commonly susceptible to the carbapenems, aminoglycosides and tetracycline, but less susceptible to 1st and 2nd generation cephalosporins and trimethoprim. In other studies ceftazadime and carbapenems appeared to be the drugs of choice for empiric treatment^{5, 6}.

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References

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2. Lazarus, HM., *et al.*, Contamination during *in vitro* processing of bone marrow for transplantation: clinical significance. 1991. Bone Marrow Transplant; **7**:241-246.
3. Murray, AE., *et al.*, Blood transfusion associated *Pseudomonas fluorescens* septicaemia: is this an increasing problem? 1987. J Hosp Infect; **9**:243-248.
4. Puckett, A., *et al.*, Post-transfusion septicaemia 1980-1989: importance of donor arm cleansing. 1992. J Clin Path; **45**:155-157.
5. Hsueh, PR., *et al.*, Outbreak of *Pseudomonas fluorescens* bacteraemia among oncology patients. 1998. J Clin Microbiol; **36**:2914-2917.
6. Scott, J., *et al.*, A fatal transfusion reaction associated with contamination with *Pseudomonas fluorescens*. 1988. Vox Sang; **54**: 201-204.

Service Provider No. : MT – 00025

CPD Questions.

1. Why is *Pseudomonas fluorescens* classified in the fluorescent pseudomonal group?
2. How does *Pseudomonas aeruginosa* differ from the other *Pseudomonas* species?
3. How will you differentiate *Pseudomonas fluorescens* from *Pseudomonas putida*?
4. Why is *Pseudomonas fluorescens* a potential human pathogen?

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