Protecting patients from *Pneumocystis jirovecii* outbreaks requires vigilance, a systematic approach and perseverence

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Aims

To quantify and prevent *Pneumocystis jirovecii* (PJ) infection in immunosuppressed patients by understanding the effect of the environment and person–person spread upon outbreaks and the safe use of chemoprophylaxis.

Methods

Every patient with PJ detection in every department across our single site hospital was identified in the period 2012–2017. Samples were analysed for PJ with the mitochondrial large-subunit RNA polymerase chain reaction (PCR) method. Patient characteristics including reason for immunosuppression (disease or drug-induced), imaging and other microbiological samples were collated and reviewed by a group of clinicians and the infection control team. PCR cycle times were utilised. Cases were stratified according to colonisation or definite cases of PJ pneumonia (PJP) and where possible genotyping was undertaken. The internal hospital environment air handling system was analysed with PJ PCR. Supervised by Public Health England, a case-control study of a subset of renal transplant patients was undertaken. Guidelines were introduced for the management of PJP, educational meetings were held and chemoprophylaxis was offered to patients in rheumatology, haematology, oncology and renal.

Results

PJ was detected in 112 patients (54 definite, 25 probable/possible and 33 colonised). Definite cases of PJP peaked at 14 in 2014 and reduced in frequency each year. Cases were present in nine medical specialties. Renal transplant recipients with PJP were more likely to be older and to be receiving mycophenolate. Co-trimoxazole 480 mg daily was offered to all 192 renal transplant recipients and was effective in terminating an outbreak in 2014. Twenty-one adverse events were reported, mostly an asymptomatic rise in creatinine which normalised once the drug was discontinued.

Environmental investigations revealed the same genotypic strain (811) of PJ in our patients and the air handling system. The significance of this is uncertain. The case-control study (nine cases, 25 controls) demonstrated that all cases evidenced temporo-spatial overlap. Similarly, those with inpatient exposure were more likely to be cases. Spatial overlap with a limited timeframe raises the possibility of an environmental reservoir.

Conclusion

All physicians may encounter PJP in their patients. The incomplete understanding of the pneumocystis lifecycle and the inability to culture the organism poses significant challenges when confronted by cases of pneumocystis. A combination of clinical surveillance, vigilance and educational awareness along with our case-control study and environmental studies has contributed to a reduction in cases of PJP in our hospital. However, further work is required to understand the route of spread in all immunosuppressed patients. ■

Conflict of interest statement

None declared.

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