

eP032

ePoster Viewing

Antibiotic consumption-resistance associations

BLOOD STREAM INFECTION WITHIN 48 HOURS OF ADMISSION, THE EFFECT OF HEALTHCARE ASSOCIATED RISK FACTORS ON ANTIBIOTIC RESISTANCE-A CROSS SECTIONAL STUDY

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Objectives

The community/hospital associated infection paradigm is becoming less relevant with changes in modern healthcare. Up to one half of patients presenting in the community with blood stream infections (BSIs) have evidence of recent exposure to healthcare environments. The local epidemiology of BSIs was investigated to identify the relevance of these healthcare associated exposures when choosing empirical antibiotics.

Methods

Between 2009 and 2013 a cross sectional study involving seven hundred and eleven randomly selected episodes of adult BSI in South West England was performed. Repeat cultures within 28 days were excluded. Thirteen per cent of BSIs were polymicrobial and 804 individual isolates were analysed. For each infection the isolated bacterium or yeast was identified and antibiotic susceptibilities recorded. Each BSI was assigned as community, healthcare or hospital associated. Hospital infections had onset greater than two days after admission and healthcare infections had one or more pre-specified risk factors eg. recent hospitalisation, admission from residential care, home intravenous/wound therapy, haemodialysis. All information was from routinely available sources such as hospital patient management systems and clinical history. Causes of the BSI and antibiotic sensitivities were compared across the three groups and differences between antibiotic sensitivities assessed using Fisher's exact test.

Results

There were few specific differences in the microbial epidemiology separating community, healthcare and hospital infections from one another. BSIs classified as healthcare associated had antimicrobial resistance patterns more akin to hospital associated BSIs than community infections. The rate of resistance to most antibiotics was significantly greater for healthcare associated than community associated BSI. For healthcare associated BSI resistance rates to common empirical antibiotics such as co-amoxiclav, piperacillin/tazobactam and quinolones far exceeded those for community BSI (see table). A similar though less extreme and statistically robust pattern was noted when the analysis was restricted to coliforms and pseudomonas.

	Proportion sensitive	Absolute difference	p
Amoxicillin	Community 53.4	17.9	<0.001
	Healthcare 35.5		
Co-amoxiclav	Community 81.5	16.1	<0.001
	Healthcare 65.4		
Piperacillin/tazobactam	Community 95.1	9.1	0.02
	Healthcare 86		
Levofloxacin	Community 91.8	16	<0.001
	Healthcare 75.8		
Vancomycin	Community 45.8	19.4	<0.001
	Healthcare 26.4		
Gentamicin	Community 66.2	-3.1	0.5
	Healthcare 69.3		

Conclusions

Failure to differentiate between community presenting BSI with and without risk factors for drug resistance will lead to under treatment with all the attendant morbidities and mortality. The use of simple and readily available admission information allows the identification of patients at greater risk of drug resistant infection. Targeting empirical broad spectrum antimicrobials to such patients may allow more effective treatment whilst minimising overall exposure to broad spectrum antibiotics.