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Paper Poster Session

Lessons from surveillance of resistance in Gram-negatives

Ten-year review of *Salmonella enterica* serovar Typhi in England: 2004-2013

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Background: Typhoid fever is a systemic infection caused by *Salmonella enterica* serotype Typhi (S. Typhi), a highly adapted human-specific pathogen that evolved about 50 000 years ago, known for its ability to persist in the host. The incidence of typhoid fever has declined greatly in Europe and the USA since the early 20th century, but the disease remains a serious public-health problem in other parts of the world.

Material/methods: Serology and sub-species identification was performed on all isolates of S. Typhi submitted to the Gastrointestinal Bacteria Reference Unit (the national reference laboratory) from patients with symptoms of typhoid fever in England from faecal specimens and /or blood cultures. . All isolates were phage typed and the antimicrobial resistance pattern was obtained by breakpoint antimicrobial agar incorporation. The date of isolation of the organism and information of each case, such as age, sex, clinical symptoms and travel history were analysed.

Results: Between 2004 and 2013, 2718 isolates of S. Typhi were submitted to GBRU. All patients had symptoms of typhoid fever and as far as could be ascertained, there were no chronic carriers. Regarding the source of the isolates; 63% were from blood cultures and 34% were from faecal specimens. The country of acquisition was known for 1356 (50%) cases. Of these 88.4% had visited India (634), Pakistan (378), Bangladesh (153) or Nepal (34). Over the 10 year period, resistance to ampicillin, chloramphenicol and co-trimoxazole remained stable at ~25% of isolates. However, resistance to these traditional first-line agents was higher in isolates from cases returning from Bangladesh (43.6%) and Pakistan (46.5%). Ciprofloxacin and nalidixic acid resistance was detected in 9.2% and 76.5% of isolates, respectively. Resistance to nalidixic acid increased from 50% to 80% during the study period, although resistance to Ciprofloxacin remained stable.

Conclusions: Between 2004 and 2013, the number of cases of S. Typhi reported in England each year ranged from 210 to 348 (average 272). Where travel history was recorded, the majority of cases (88.4%) reported recently returning from the Indian Sub Continent. Overall, no increase in ampicillin, chloramphenicol, co-trimoxazole or ciprofloxacin resistance was observed. However, a dramatic increase in resistance to Nalidixic acid was recorded and resistance to this fluorquinolone was detected in 92% and 88.7% of isolates from cases returning from India and Bangladesh, respectively