Diagnosis *of Shigella* Infection in Children with Acute Diarrhea by Conventional and Molecular Methods

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Abstract

Shigellosis in children is a major cause of morbidity and mortality in developing and developed world. This work aims to shed some light on the *ipaH* PCR in comparison with the conventional microbiological methods for diagnosis of *shigellae* infection in stool samples of children with acute diarrhea, and to determine the antimicrobial susceptibility patterns of *shigella* clinical isolates. The study included 300 children under 5 years of age (125 dysentry cases and 175 non-dysentry cases with mucoid diarrhea). The standard microbiological methods revealed 52 (17.3®/o) *shigella* isolates out of 300 stool samples. Of the 52 *shigella* isolates, *s. flexneri* was most frequently identified, comprising 25 (48.1%) isolates, followed by *s. sonnei* (11 isolates, 21.2%) *s. dysenteriae* (10 isolates, 19.2%) and *s. boydii* (6 isolates, 11.5%). By PCR, positive *shigella* infections were revealed in 74 (24.7%) out of 300 children, of whom 24 yielded negative culture results. Out of 226 children with negative PCR results, 2 cases had microbiologically confirmed *shigella* infection. Most *shigella* isolates were resistant to tetra- cycline (100% for ‹S', *sonnei*, 92% for *s. flexneri*, 80 % for ‹S', *dysenteriae* and 50°/o for ‹s. *boydii*), sulphamethoxazole-trimethoprim (100% for *s. sonnei*, 60% for *s. flexneri*, 50% for *s. dysenteriae* and 33.3 % for *s. boydii*), Chloramphenicol (90 % for ‹S', *dysenteriae*, 84% for *s. flexneri*, 45.5% for *s. sonnei* and 16.7 % for *s. boydii)* and ampicillin (92 % for ‹S', *flexneri*, 83.3% for ‹S', *boydii*, 70 % for ‹S', *dysenteriae* and 27.3% for *s. sonnei).* No resistance was detected to ciprofloxacin, aztreonam, nalidixic acid (except *s. flexneri, 4* % were resistant) and ceftriaxone (except *s. flexneri,* 8 % were resistant). Therefore, these antimicrobial agents may be good alternatives for the treatment of diarrhea caused by *Shigella* spp. In conclusion, the *ipaH* PCR was found a highly sensitive and specific, rapid and convenient diagnostic tool for *shigella* infection providing a potential advantage over the conventional microbiological methods. Further studies on asymptomatic *shigella* infections are recommended for understanding the transmission of this organism and identifying changes in the epidemiology of shigellosis in endemic communities.

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