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Changing epidemiology of shigellosis in a paediatric population of Athens during the recent years

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Objectives: The aim of this study was to evaluate the epidemiology of Shigellosis in children examined in a tertiary pediatric hospital in Athens during the period 2011- 2016.
Methods: A total of 111 *Shigella* spp. isolates yielded from stool samples of children with diarrhoea during this period. Isolates were identified by standard biochemical methods and antimicrobial susceptibility testing by the disk diffusion method according to the current CLSI guidelines. All isolates resistant to cefotaxime and/or ceftazidime were tested for extended-spectrum β-lactamases (ESBLs) by the double disk diffusion test. *Shigella* group and types were identified by a slide agglutination method using specific antisera.
Results: *Overall,* 111 *Shigella spp*. isolates were recovered (boys; 50%, age range;0.73 months-14 years, median age; 30 months). For the period 2011-2016, 53 patients were Roma (53/111, 47.7%). *Shigella flexneri* was predominant in our study(76%), followed by *S. sonnei* (23%) and *S. dysenteriae* (n=1.1%). No *S. boydii* serogroup was identified during the study period. A gradual increase in the incidence of *S. sonnei* from 0% in 2011 to 40% in 2016 among *Shigella spp* isolates was observed. Also, a serotyping switch occurred in 2015 with the emergence of new *S. sonnei* types[(F (II) and S(I)], which replaced the existing types 1 and 2. Antimicrobial resistance rates were as follows: ampicillin:

81.1%, ciprofloxacin: 2.7%, cotrimoxazole 21.6%, cefotaxime: 8.1%, nalidixic acid: 18%. There was no statistically significant variation in resistance pattern distribution in all antimicrobials tested through the 5-year period for both *Shigella* serogroups. Nine isolates (8.1%) were ESBL-producers (4 *S. flexneri*and 5 *S. sonnei*), with the highest incidence in a limited period of summer 2015 (July to September 2015) when a big wave of refugee arrival was noticed. This fact, along with the serotyping switch is linked to five shigellosis cases with ESBL strains isolated from refugees, mainly from Afghanistan. Both *S. flexneri*(n =2) and *S. sonnei* (n =3) were identified, distributed in various serotypes. Among *S. sonnei*, two isolates were identified as serotype F(II) and one as serotype S(I), while the two *S. flexneri* isolates were identified as serotype 2b.

Conclusions: The presence of multidrug ESBL isolates in our population in recent years is of growing concern. Intensive measures should be taken in populations at risk such as refugee, to prevent an ongoing trend towards the dominance of these stains in our country. Shigellosis prevention interventions should be also focused on Roma population.