

## Antimicrobial resistance of *Escherichia coli* to betalactams is age-dependent.

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Older age has been identified in previous studies as an independent risk factor for *Escherichia coli* antimicrobial resistance against certain drugs. But in Venezuela as well in Latin America, there are few studies correlating age with *E. coli* antimicrobial resistance. In this study we tried to demonstrate higher betalactam resistant-*E. coli* strains rates isolated from older individuals. This could be guide age-specific considerations in antibiogram-oriented therapies. We evaluated *E. coli* strains isolates collected from patients in a hospital of Caracas, Venezuela (West General Hospital) between 1997–2003. A total studied population of 3633 individuals from different age-groups, grouped as: children (<12 y-old), teenagers (12-21 y-old), young adults (21-45 y-old), mature adults (45-65 y-old) and elder adults (>65 y-old). Clinical samples were processed and identified with standard cultures and biochemical tests. In vitro antimicrobial susceptibility of the isolates was assessed by an agar disk diffusion method using Mueller-Hinton agar as recommended by the National Committee for Clinical Laboratory Standards (NCCLS). Isolates were tested against 8 betalactam drugs, including: ampicillin/sulbactam, cefotaxime, ceftazidime, cefoperazone, cephalotin, cefepime, imipenem and meropenem. Beta-lactamase activity also was measure (BLEE). Age-group statistical comparisons were made with Epi Info v.6.0 (95% confidence). For this period, 1947 *E. coli* strains were isolated. From this total, 22.86% correspond to children, 11.61% to teenagers, 31.07% to young adults, 19.16% to mature adults and 15.31% to elder adults. Resistance rate to betalactam drugs tested was higher in relation to older groups (i.e.: cephalotin: 32.6% in children, 35.0% in teenagers, 33.7% in young adults, 39.9% in mature adults and 45.3% in elder adults,  $p<.05$ ). Betalactamases (BLEE) was significantly higher in older groups: 4.04% in children, 4.87% in teenagers, 5.62% in young adults, 6.97% in mature adults and 8.39% in elder adults; with a significant trend association between older age and higher rate of betalactamase (BLEE) producer *E. coli* strains ( $r^2=0.98$ ,  $p<.01$ ). Efforts should be directed at recognition and modification of these and other risk factors to curb the rise in betalactams resistance and preserve the utility of these agents in the treatment of *E. coli* infections. Age is related to a higher risk of betalactam resistant-strain infections. Surveillance of antimicrobial activity should be done periodically to guide antimicrobial therapy of clinical infections, especially in older people where many age-associated conditions could affect antimicrobial therapy.