

ETIOLOGICAL AGENTS AND THEIR ANTIBIORESISTANCE IN CHILDREN WITH ACUTE DIARRHEAL SYNDROME IN BUCHAREST AREA

Maria Nica*, Iuliana Apostol**, Alma Kosa**, CP Popescu*, Simin Florescu*, Adela Brinzan**, C Strugaru***, Em Ceausu*, Pi Calistru** (*Dr. V.Babes Clinical Hospital of Infectious and Tropical Diseases -SVB, **Dr. V.Babes Foundation, Bucharest, *** "Carol Davila" Medicine and Pharmacy University Bucharest)

Introduction

Acute diarrheal syndrome (ADS) is a major cause of morbidity and mortality in infants and children worldwide. Enteric pathogens frequently acquire resistance when they are exposed to resistant normal flora that colonize intestinal tracts of children, or they may acquire resistance in other environments before infecting human host.

Objective: bacteriologic agents identification and antimicrobial resistance pattern detection in ADS, in children 0-5 years, in our geographic area.

Methods

- A prospective study on children with ADS, hospitalized in Dr "Victor Babes" Hospital of Infectious and Tropical Diseases Bucharest, was run between 01 Sept 2009- 31 Aug 2010 .
- A number of 1449 stool samples were tested using classical isolation and enteric pathogens identification methods: exoenzymatic-API, VITEK systems and antigenic markers (standard stool cultures).
- For antibioresistance patterns detection were used Kirby Bauer disc diffusion standard method; double disk diffusion -DDD and E-test methods (screening for ESBL and MDR strains). The standard used: CLSI 2009/2010; for Intern Quality Control was used E. coli ATCC 25922.

Results

Bacterial etiological agents were identified in 86/1449 (5,9%) samples: 36 Salmonella (BO-18/86; CO-2/86; DO-16/86); 7 Shigella (*Sh. flexneri*- 5/86; *Sh. sonnei*-2/86); 31 E. coli (*EPEC*-30/86; *VTEC*-1/86); 10 Klebsiella (*K. pneumoniae* -10/86) and 2 Campylobacter (*Coli/Jejuni*2/86).

Salmonella strains were resistant to ampicillin (AMP) 15/36, trimethoprim/sulfamethoxazole (SXT) 1/36, ciprofloxacin (CIP) 0/36 and AMP+STX 2/36.

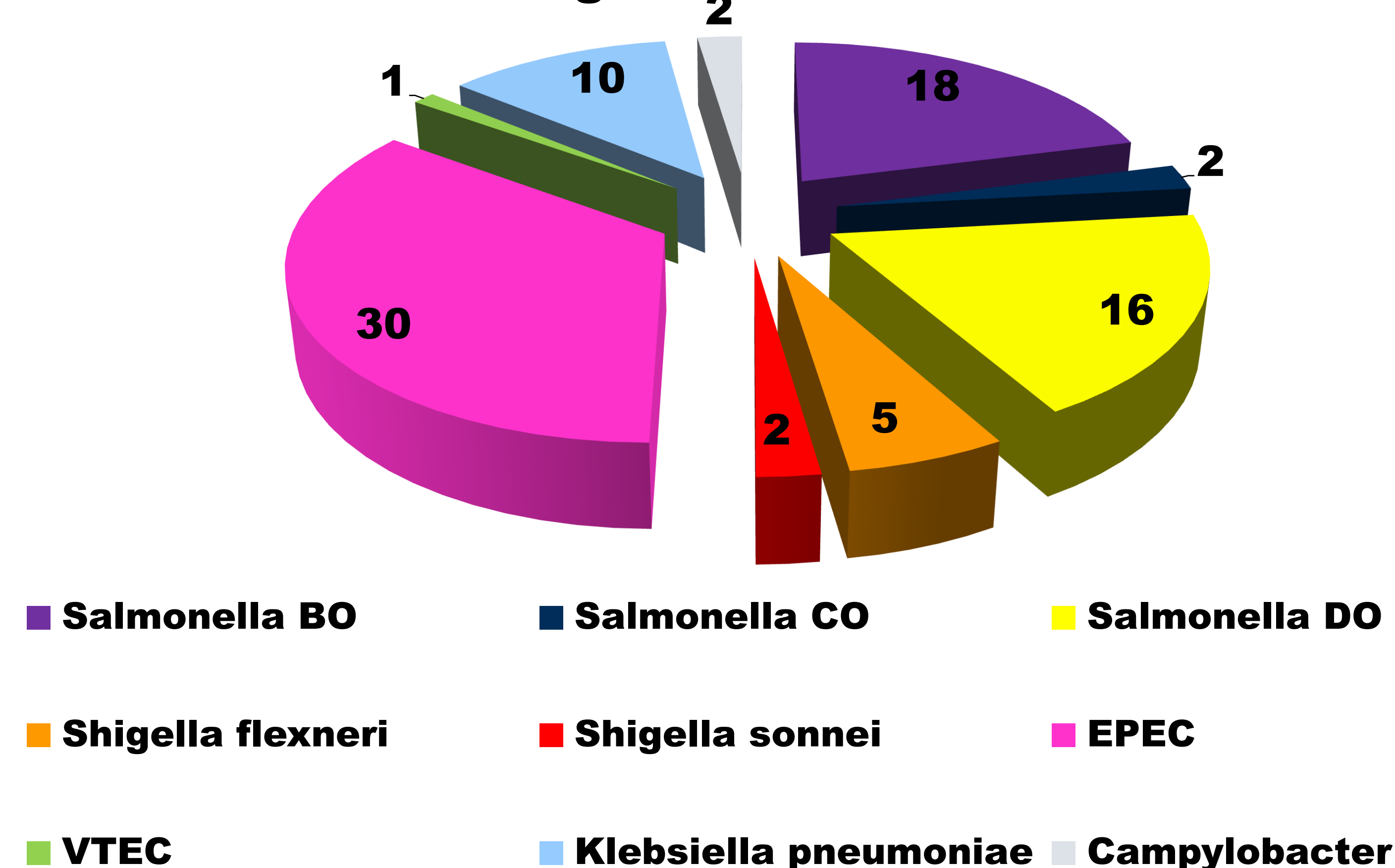
Shigella strains were resistant to AMP 1/7, SXT 3/7, CIP 0/7 and AMP+STX 2/7.

All of E.coli strains were sensitive to cephalosporins/I, II, III generation, exception in 2/31 who were ESBL producing strains; various resistances were found in E. coli strains: 3 strains to one antibiotic-SXT 1/31, AMP 1/31, TE 1/31; 5 strains to two antibiotics-TE+FQ (Quinolones) 1/31, AMP+TE 2/31, AMP+STX 2/31; 2 strains to 3 antibiotics-AMP+STX+TE 2/31.

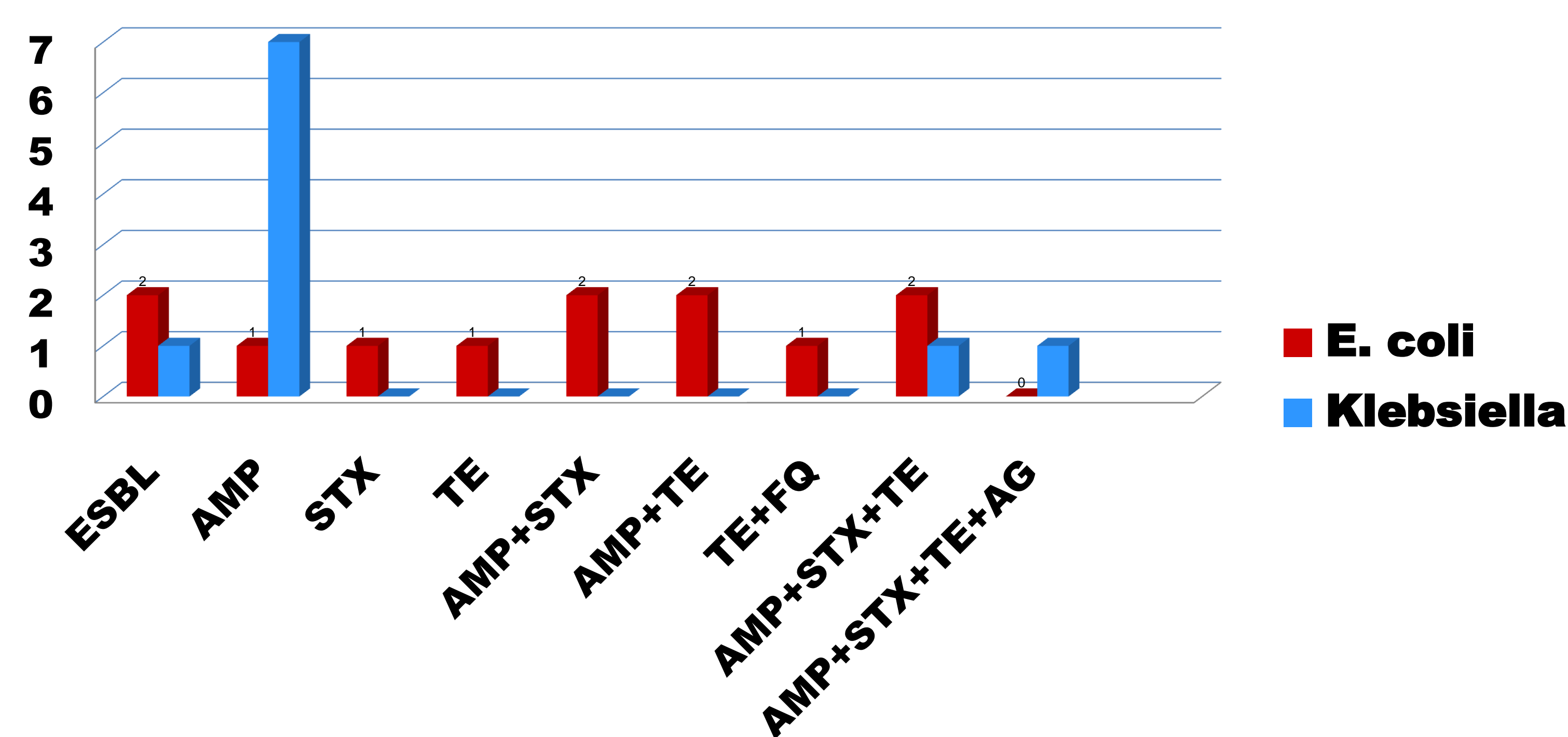
All 10 strains of Klebsiella strains were sensitive to carbapenems and furazolidone; resistance only to AMP were registered in 7/10 (natural resistance), AMP+STX+TE 1/10, AMP+AG (aminoglycosides)+TE+STX 1/10. One strain of *Klebsiella pneumoniae* was ESBL-producing strain, being included in MDR strains (beta-lactams, aminoglycosides, sulphonamides, tetracycline, quinolones).

Campylobacter strains: 1/2 strain was found to be a MDR strain (Cefalotin+Fluoroquinolones+Macrolides+TE)

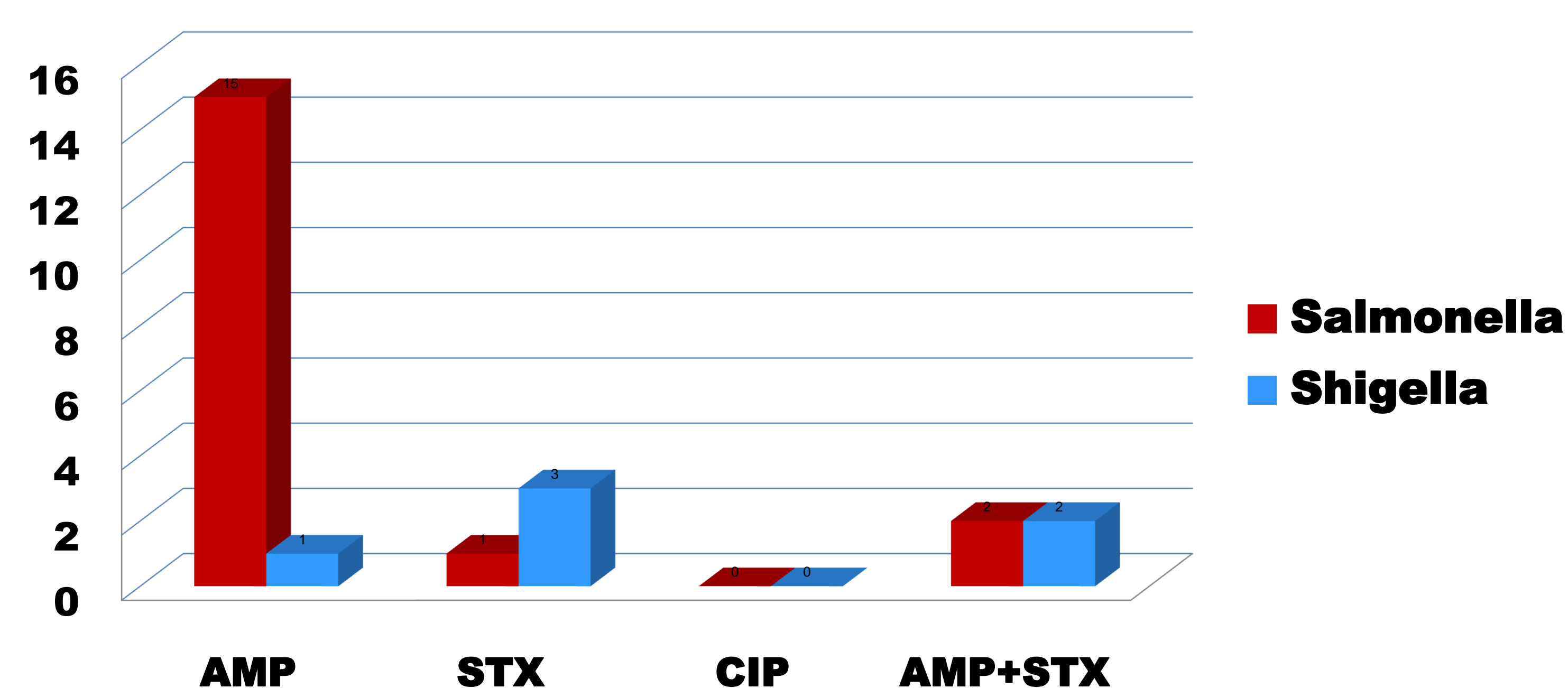
Bacterial agents in BDA



Antibioresistance in E.coli and Klebsiella



Antibioresistance in Salmonella and Shigella



Conclusions

1. The high antimicrobial resistance observed in our study suggest either improper use of antimicrobials or high risks of self-medication.
2. Antimicrobial agents for ADS should be prescribed with an appreciation of local antimicrobial resistance patterns. Beta-lactams, quinolones and furans are good choices for ADS treatment in our geographic area.
3. Antibiotic resistance of Enterobacteriaceae isolates is a trait of infectious agent as important as its intrinsic virulence.

References

1. Clinical and Laboratory Standards Institute (CLSI). Performance Standards for Antimicrobial Susceptibility Testing; Eighteenth Informational Supplement. CLSI Document M100-S19. CLSI, Wayne, Pennsylvania, 2009.
2. Cheryl A. Bopp, Frances W. Brenner, Patricia I. Fields, Joy G. Wells, and Nancy A. Strockbine. 2007. Manual of Clinical Microbiology, cap. 42, vol. 1, pg. 654-671