tobramycin, but 80% were still susceptible to colistin. The MIC ranges for colistin and rifampicin were 1-4 μg/ml and 8-16 μg/ml, respectively. MIC50 and MIC90 of colistin were 1, 2 μg/ml, respectively and MIC50 and MIC90 of rifampicin were 8 μg/ml. The synergy study showed the partial synergy effect of colistin when combined with rifampicin in 26.7% of the isolates. Bactericidal activity of the combination was observed at all incubation times by time-kill study. The more damaging effect of the bacterial cell lysis was clearly observed when the bacteria were grown in the combined antimicrobials as compared with the growth in each antimicrobial agent.

Conclusion: The *in vitro* bactericidal activity of the combination between colistin and rifampicin was superior to the single agent. The combination could be a promising alternative for the treatment of infections due to carbapenem-resistant *A. baumannii*.

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Antibiotic resistance profiles of *Staphylococcus aureus* bloodstream isolates

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Background: *S. aureus* is a common and serious cause of bloodstream infections with high mortality rate.

Objective: To assess the resistance profiles of *S. aureus* bloodstream isolates to commonly used antimicrobial agents.

Methods: We retrospectively evaluated all the cases of *S. aureus* bacteraemia over a two year period from October 2009 through October 2011. Blood samples were routinely obtained in BacTec bottles (aerobic and anaerobic) and incubated in BACTEC 9050 system. Coagulase production, detection of DNase activity onto DNA agar, API STAPH and automated MicroScan system were used for *Staphylococcus* identification. Antibiotic susceptibility testing was performed by disc diffusion technique on Mueller-Hinton agar according to CLSI recommendations and MICs were determined by MicroScan system and Etest (AB Biodisk, Solna, Sweden).

Results: During the study period 61 cases of *S. aureus* bacteraemia were identified. Of the total bloodstream isolates 36.07% (22/61) were found to be methicillin-resistant (MRSA), and 63.93% (39/61) methicillin-susceptible (MSSA). Extended susceptibility testing of the 61 isolates to erythromycin, clindamycin, tetracycline, chloramphenicol, ciprofloxacin, rifampicin, trimethoprim-sulphamethoxazole (SXT), gentamicin, vancomycin, teicoplanin, linezolid and daptomycin showed the following resistance rates: 72.73%, 68.18%, 63.63%, 18.18%, 63.63%, 0%, 4.54%, 18.18%, 9.09%, 0%, 0%, 0% for MRSA and 12.82%, 7.69%, 12.82%, 2.56%, 5.13%, 0%, 0%, 0%, 0%, 0%, 0%, 0% for MSSA respectively. Two of the MRSA bloodstream isolates (2/22) showed increased vancomycin MICs (MICs = 3 μg/ml confirmed by Etest) according to CLSI new susceptibility breakpoint (MIC breakpoint for vancomycin has been reduced to 2 μg/ml). a high resistance rate to erythromycin, clindamycin, tetracycline and ciprofloxacin, whereas a small proportion shows increased vancomycin MICs. (c) MRSA blood isolates remain daptomycin susceptible, even with a vancomycin MIC >2 μg/ml.

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Spectrum of causative agents of nosocomial infections (NI) and their susceptibility to antimicrobials (AM) in multiward clinical hospital: results of one-year surveillance study

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Background: Continued surveillance of etiology and resistance patterns, along with other measures is essential tool in decreasing NI burden and proper resources allocation. Our study aimed to determine the spectrum of microbial agents causing NI in Smolensk regional clinical hospital and assess their susceptibility to commonly used AM.

Methods: All patients with confirmed diagnosis of NI were prospectively screened during 12 months period (November 2010-October 2011). Routine culture and susceptibility testing was performed for clinical samples by disk-diffusion method. Clinically significant mechanisms of resistance were detected by phenotypic techniques (ESBL DDST, MBL DDST, cefoxitin disk). Appropriateness of AM therapy was evaluated in accordance with local guidelines.

Results: A total of 128 patients with 134 NI episodes were evaluated, etiology was determined in 41/134 (30.6%) of NI cases (39 patients). Overall 67% of patients were male, mean age was 57.3 years. The most common HI were skin and soft tissue infections (56%), followed by respiratory tract (22%), urinary tract (20%) and intraabdominal infections (2%). Seventy one pathogens were isolated, the most common were the *Enterobacteriaceae* family members – 23 (32.4%), including 15 (65.2%) ESBL producers, *Pseudomonas aeruginosa* – 14 (19.7%), including 2 (14.3%) MBL producers, *Staphylococcus aureus* – 11 (15.5%), including 10 (90.9%) MRSA isolates, *Acinetobacter* spp., mainly *Acinetobacter baumannii* – 11 (15.5%), *Enterococcus* spp. – 8 (11.3%), other gram-negative non-fermentative rods – 2 (2.8%), *Streptococcus pyogenes* – 1 (1.4%) and *Candida parapsilosis* – 1 (1.4%). Empirical AM choice was appropriate in 24% of cases. The regiment of AM therapy was adjusted on receipt of culture results in 39% of patients and was consider as an adequate in 54% of cases.

Conclusion: Gram negative rods, particularly *Enterobacteriaceae* and *Pseudomonas aeruginosa* represented the most common causative agents of NI in Smolensk regional clinical hospital. High prevalence of ESBL production and MRSA isolates causes grave concern and needs reinforcement of infectious control measures and revision of empirical AM therapy.

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