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Letter to the editor

Incidence and outcome of ventilator-associated pneumonia (our experience)

Dear Editor,

Ventilator-associated pneumonia (VAP) is the most significant nosocomial infection in patients in the intensive care unit (ICU) who have been on mechanical ventilation (MV) for over 48 hours, and is related to higher morbidity and mortality of these patients (24% to 72%).[1,2] During a prospective study, 813 patients were hospitalized in the ICU of the Clinical Center of Vojvodina, Novi Sad, Republic of Serbia. All patients were on MV for over 72 hours. 40% of our patients were on MV for five to ten days. Dostanic et al.[3] have obtained similar results. The mean duration of MV was 222.3 hours. There were both male and female patients, and their mean age was 55 years. VAP was suspected in 115 patients. Microorganisms were isolated and identified in 82 patients. Of the total number of analyzed patients with suspected VAP, 29% had no bacteria, 28% had only one isolated bacteria, while the remaining 43% of patients had polymicrobial isolates.

Testing bacterial sensitivity to antimicrobial drugs was performed using a standard disc diffusion method by Kirby-Bauer, according to the guidelines of the European Committee. All isolated microorganisms showed over 50% resistance for amoxicillin + clavulanic acid, ampicillin, cefalexin, ceftriaxone, and tigecyclin (Table 1).

Acinetobacter spp. was the most prevalent bacteria (65%) in respiratory secretion of patients on MV, and it presented multidrug-resistance in over 90% of cases. Results from this research showed identification of polymicrobial isolates in 43% of cases; 23% of cases presented two bacteria, 16% presented three bacteria, 3% presented four bacteria, and 1%

Table 1 – Resistance of isolated microorganisms to the tested antimicrobial drugs.

Antimicrobial drugs	Isolated microorganisms									
	Pseudomonas aeruginosa		*Acinetobacter* spp.		*Klebsiella pneumoniae*		*Stenotrophomonas maltophilia*		*Enterobacter* spp.	
	S[a]	R[b]	S	R	S	R	S	R	S	R
Amikacin	63	47	40	60	59	41	9	91	80	20
Amoxicillin and clavulanic acid	0	100	4	96	8	92	0	100	0	100
Ampicillin	0	100	0	100	0	100	0	100	0	100
Cefalexin	0	100	6	94	0	100	0	100	0	100
Cefepime	59	41	0	100	14	86	36	64	40	60
Ceftazidime	78	22	0	100	14	86	55	45	50	50
Ceftriaxone	13	87	-	-	16	84	0	100	40	60
Ciprofloxacin	53	47	12	88	43	57	82	18	80	20
Gentamycin	50	50	10	90	59	41	49	51	70	30
Imipenem	59	41	4	96	100	0	0	100	100	0
Meropenem	75	25	44	56	100	0	0	100	100	0
Tazocin (piperacillin+ tazobactam)	78	22	4	96	78	22	45	55	100	0
Tigecycline	0	100	4	96	0	100	0	100	0	100
Trimethoprim sulfamethoxazole	3	97	0	100	19	81	73	27	80	20

[a] sensitive strains shown as percentage.
[b] resistant strains shown as percentage.

presented five bacteria. Combes et al.,[4] isolated two bacteria in 70% of cases; however, they found 16.7% of tribacterial cases, similarly to our findings.

In our research, *Klebsiella pneumoniae* was resistant to third-generation cephalosporins in over 80% of cases, while in a study from Poland the resistance rate ranged from 56% to 73%.[5]

The mortality rate was 68%, which is in agreement with the literature.[1,2] Based on the data obtained, we can conclude that the incidence of VAP at the ICU was high.

Conflict of interest

All authors declare to have no conflict of interest.

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