HOSPITAL-ACQUIRED INFECTIONS IN THE ELDERLY IN INTENSIVE CARE UNIT (ICU)

Ayse Batirel[1], Nur Benzonana[1], Oznur Ak[1], Mahperi Kavak[2], Deniz Akay[2], Yasemin Cag[1], Serdar Ozer[1]

[1] Kartal Dr. Lutfi Kirdar Education and Research Hospital, Infectious Diseases and Clinical Microbiology, Istanbul

[2] Kartal Dr. Lutfi Kirdar Education and Research Hospital, Infection Control Committee, Istanbul

INTRODUCTION–PURPOSE

With the increase in the elderly population worldwide, there is also an increase in the rate of hospitalizaton, frequency of invasive procedures, intensive care unit (ICU) admissions, and accordingly hospital-acquired infections in this population (1,2). We aimed to evaluate the epidemiology of nosocomial infections in elderly patients (≥65 years) followed in our intensive care units.

METHODS

≥65 year old patients admitted to 41 ICU beds of our 706 bed teaching hospital between January 2010 and July 2013 and who developed ventilator-associated pneumonia (VAP), bloodstream infection (BSI), and catheter- associted urinary tract infections (CAUTI) after 48 hours of admittance were included in the study. Nosocomial infection diagnosis were done according to CDC (Centers for Disease Control and Prevention) criteria.

Table 1. Most common causes of ICU admission.

Cause	n (%)
Respiratory failure	40 (27.2)
Cerebrovascular disease	35 (23.8)
Pneumonia / COPD	14 (9.5)
Gastrointestinal pathology	11 (7.5)
Others	48 (32)

Table2. Most common co-morbidities of the patients.

	n (%)
Hypertension	53 (35.8)
Congestive Heart Failure	29 (19.6)
Diabetes Mellitus	27 (18.2)
Malignancy	17 (11.5)
Cerebrovascular Disease	15 (10.1)
COPD	14 (9.5)
Alzheimer's Disease	14 (9.5)
Chronic Renal Failure	9 (6)

RESULTS

During this time period a total of 2927 patients of all age groups were followed for 27437 patient days and 704 nosocomial infections were observed. 148 of the patients were elderly [mean age: 77.8±7.2 (65-98) years, 76 (51.7%) female], mean length of ICU stay and mean duration of ICU stay before development of hospital-acquired infection were 40±43.6 (8-375) days and 16.9±12 (2-66) days, respectively. Most common causes of ICU admission were respiratory failure (27.2%), cerebrovascular disease (23.8%), pneumonia/exacerbation of chronic obstructive pulmonary disease (9.5%), and gastrointestinal pathology (7.5%) in this patient population (Table 1). Most common co-morbidities are listed in Table 2. Ninety-two (62.2%) patients had 98 microbiologically proven VAP episodes, 57 (38.5%) had 74 BSI episodes, and 39 (26.4%) had 42 CAUTI episodes. Nosocomial infection rates in the elderly were significantly higher than overall ICU patient rates; 48.4 vs 27.4 in 1000 ventilator days for VAP, 17.37 vs 11.21 for BSI and 40.6 vs 8.96 for CAUTI. Thirty-eight (25.9%) patients had more than one infectious foci. Most common comorbidities were hypertension (35.8%), congestive heart failure (19.6%) and diabetes mellitus (18.2%). Crude mortality rates for VAP was 76% , for BSI 78.9% and for CAUTI 65.1%. 33 (35.5%) patients with VAP, 11 (18%) patients with BSI, and 6 (15.4%) patients with CAUTI had more than one comorbidities.

While *Acinetobacter baumanii* was the most prevalent cause of VAP and BSI, *P. aeruginosa, K. Pneumoniae,* and *E. coli* were equally prevalent causes of CAUTI (Figures 1, 2 and 3). Risk factors significantly associated with mortality were surgical procedures (p=0.02) for VAP patients; having more than one infectious foci and surgical procedures (p=0.04 ve p=0.01) for BSI patients.

CONCLUSIONS

VAP, BSI, and CAUTI rates are higher in elderly patients, in relation to all patients admitted to ICU. Early diagnosis and treatment of these highly mortal infections is of paramount importance and most probable causes of infection should be borne in mind while planning antimicrobial therapy. While *Acinetobacter baumanii* was the most prevalent cause of VAP and BSI, *P. aeruginosa, K. Pneumoniae,* and *E. Coli* were equally prevalent causes of CAUTI in our intensive care units.

Disclosures: None to declare

REFERENCES

1. Avcı M, Ozgenc O, Coskuner SA, Olut AI. Hospital-acquired infections (HAI) in the elderly: Comparison with the younger patients. Archieves of Geriontology and Geriatrics; 54 (2012): 247-250.

2. Blot s, Koulenti D, Dimopoulos G, Martin C, Komnos A, Krueger WA, et al.; EU-VAP Study Investigators. **Prevalence, risk factors, and mortality for ventilator-associated pneumonia in middle-aged, old, and very old critically ill patients.** Crit Care Med. 2014 Mar;42(3): 601-9. doi: 10.1097/01.ccm.0000435665.07446.50.

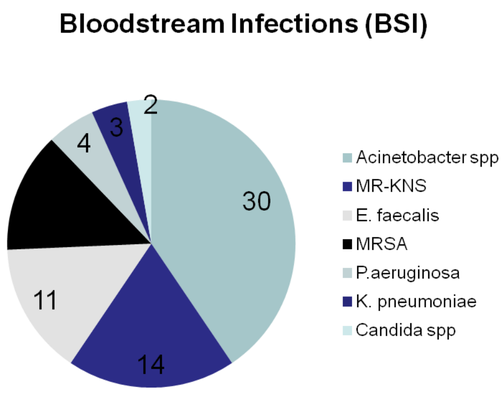

Figure 1. Most common causes of BSI.

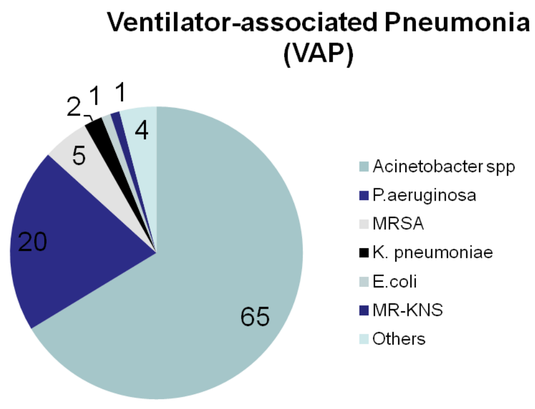

Figure 2. Most common causes of VAP.

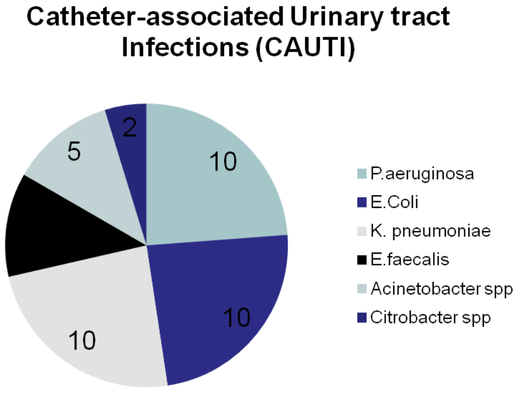

Figure 3. Most common causes of CAUTI.