

OUTBREAKS OF *SERRATIA MARCESCENS* BACTERIURIA IN A NEUROSURGICAL INTENSIVE CARE UNIT OF A TERTIARY CARE TEACHING HOSPITAL: A CLINICAL, EPIDEMIOLOGIC, AND LABORATORY PERSPECTIVE

(Running Title: OUTBREAKS OF *SERRATIA MARCESCENS* BACTERIURIA)

^{1,2}Hee Jung Yoon, ^{1,2}Jun Yong Choi, ^{1,2}Yoon Soo Park, ^{1,2}Chang Oh Kim, ^{1,2}Yoon Seon Park, ^{1,2}So Youn Shin, ¹Young Hwa Kim, ^{1,2}June Myung Kim, ³Dong Eun Yong, ³Kyung Won Lee and ^{1,2}Young Goo Song

¹Department of Internal Medicine, ²AIDS Research Institute, ³Department of Laboratory Medicine, Yonsei University College of Medicine, Seoul, Korea

ABSTRACT

OBJECTIVES: The aims of this study were 1) to identify the risk factors associated with the development of *Serratia marcescens* bacteriuria in neurosurgical intensive care units (NSICU) 2) to genotype the pathogens in order to determine a source of infection 3) to compare these results with the antibiogram and 4) to implement the appropriate control measures.

METHODS: A retrospective case-control study of the epidemiological data, the surveillance of environmental cultures and the genotyping of strains using arbitrarily primed polymerase chain reaction (AP-PCR) were performed in a 750-bed, tertiary care teaching hospital. Seventy-four bacteriuria patients were compared with 74 age-gender-matched control-patients in the NSICU between March 2002 and March 2004. The factors assessed included the patients' demographics, the duration of the hospital stay and the indwelling catheter before and during admission to the NSICU, a chronic underlying illness (diabetes mellitus, cardiovascular disease, malignancy), other sites of infection, a history of trauma, exposure to a nasogastric tube, mechanical ventilation, urinary catheterization, central venous catheterization, surgical drainage, tracheostomy, or brain or spine surgery, and receipt of total parenteral nutrition (TPN), antimicrobials (beta-lactams, aminoglycosides, quinolones, carbapenems, vancomycins) or steroids.

RESULTS: Patients with *S. marcescens* bacteriuria were more likely to have a longer NSICU stay and other sites of infection. Environmental surveillance showed the handling of urine jugs to be a point source of contamination. Genotyping and an antibiogram of 14 patients were the same except for two patients.

CONCLUSIONS: The patient-related risk factors were identified, and a rapid identification of the organism was made. Altering the method for handling urine jugs provided a focus for the heightened surveillance, infection control measures, and empirical therapy, terminating outbreaks.

Key words: *Serratia marcescens*, outbreak, bacteriuria, risk factor, genotype

Gentamicin 고도내성 장구균의 임상양상과 치료결과

장희창*, 박관범, 이기덕, 이창섭, 김홍빈, 오명돈, 최강원
서울대학교 의과대학 내과학교실

목적: 1980년대 이후 gentamicin에 고도내성을 지니는 장구균에 의한 감염이 증가하였으나, 이러한 고도내성이 임상양상과 치료결과에 어떠한 영향을 미치는지에 대한 연구는 적다. 이에 저자들은 gentamicin에 고도내성을 지니는 장구균에 의한 균혈증의 임상양상과 치료결과를 살펴보기 위해 이 연구를 수행하였다.

방법: 1999년 1월부터 2003년 8월까지 서울대학교병원에서 혈액배양에서 장구균이 동정된 환자를 대상으로 하였다. NCCLS의 지침을 따라, 120µg gentamicin 디스크(Oxoid)를 사용하여 Gentamicin에 대한 고도내성을 판별하였다. Gentamicin 고도내성 장구균에 의한 균혈증과 고도내성을 보이지 않은 장구균에 의한 균혈증의 임상 양상과 결과를 비교하였다.

결과: 임상적으로 의미 있는 *E. faecalis* 및 *E. faecium* 균혈증은 215례였다. 이중 135례(63.3%)가 gentamicin 고도내성 장구균에 의한었다. 임상 양상의 차이는 아래 표에 기술하였다.

Table. Clinical features and outcome of 215 patients with enterococcal bacteremia with or without high level gentamicin resistance (HLGR).

	HLGR-(N=79)		HLGR+(N=136)		P value
	n	%	n	%	
<i>E. faecium</i>	45	57	105	77	0.003
Nosocomial	51	65	115	85	0.001
Polymicrobial	30	38	22	16	<0.001
Hematologic disease	4	5	27	20	0.002
Neutropenia	4	5	39	29	<0.001
Biliary tract	35	44	33	24	0.004
ICU at culture	7	9	36	26	0.002
APACHE II scores	14.4 (±7.3)		20.7 (±8.3)		<0.001
14 day mortality	12	15	50	37	0.001
30 day mortality	17	22	66	49	0.002

14일 및 30일 사망률은 gentamicin 고도내성군에서 37%, 49%였고, 고도내성이 없는 군에서 15%, 22%였다(p<0.01).

결론: Gentamin 고도내성 장구균에 의한 균혈증에서 병원 획득 감염, *E. faecium* 균혈증, 단일균에 의한 균혈증이 많았고, 기저질환의 중증도와 사망률이 높았다.