



BACTERIAL AND ANTIMICROBIAL SUSCEPTIBILITY PROFILE AND PREVALENCE OF SEPSIS AMONG BURN PATIENTS AT THE BURN UNIT OF CIPTO MANGUNKUSUMO HOSPITAL

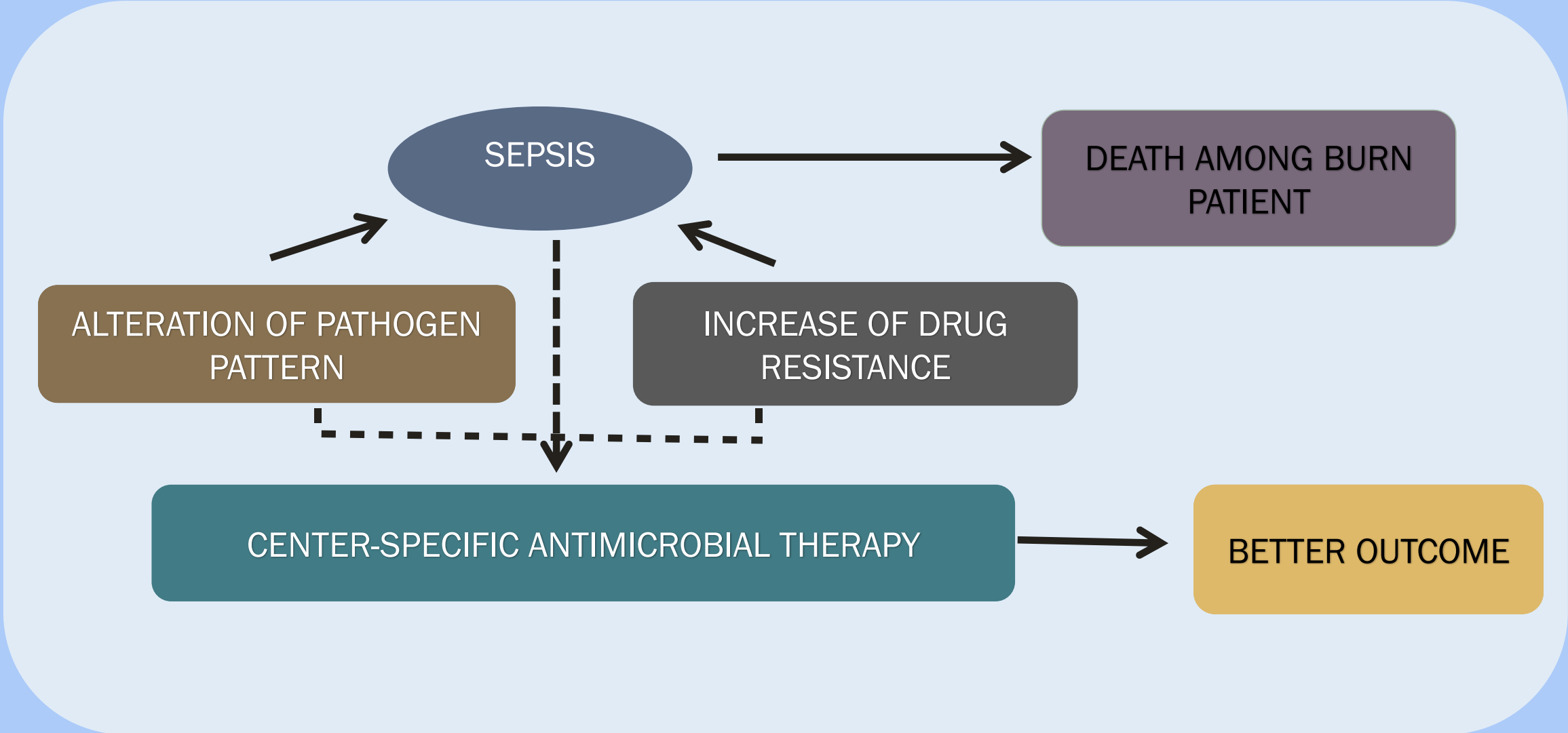
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Introduction

- Infection is a major cause of mortality and morbidity among burn patients.
- An effective measure to reduce infection is routine monitoring of bacterial infection and antimicrobial susceptibility patterns at the burn unit.
- This will help to create a burn center-specific empirical antibiotic therapy protocol.

Introduction (2)



Method

- A retrospective, descriptive study was conducted at the Cipto Mangunkusumo Hospital (RSCM) Burn Unit between September-November 2016.
- Data regarding bacterial culture isolates, antimicrobial susceptibility spectrum, and the number of burn patients diagnosed with sepsis were collected.

Results

There were 36 patients with positive bacterial cultures, with the isolates changing continuously between *Klebsiella pneumoniae*, *Pseudomonas Aeruginosa* and *Acinetobacter baumannii*

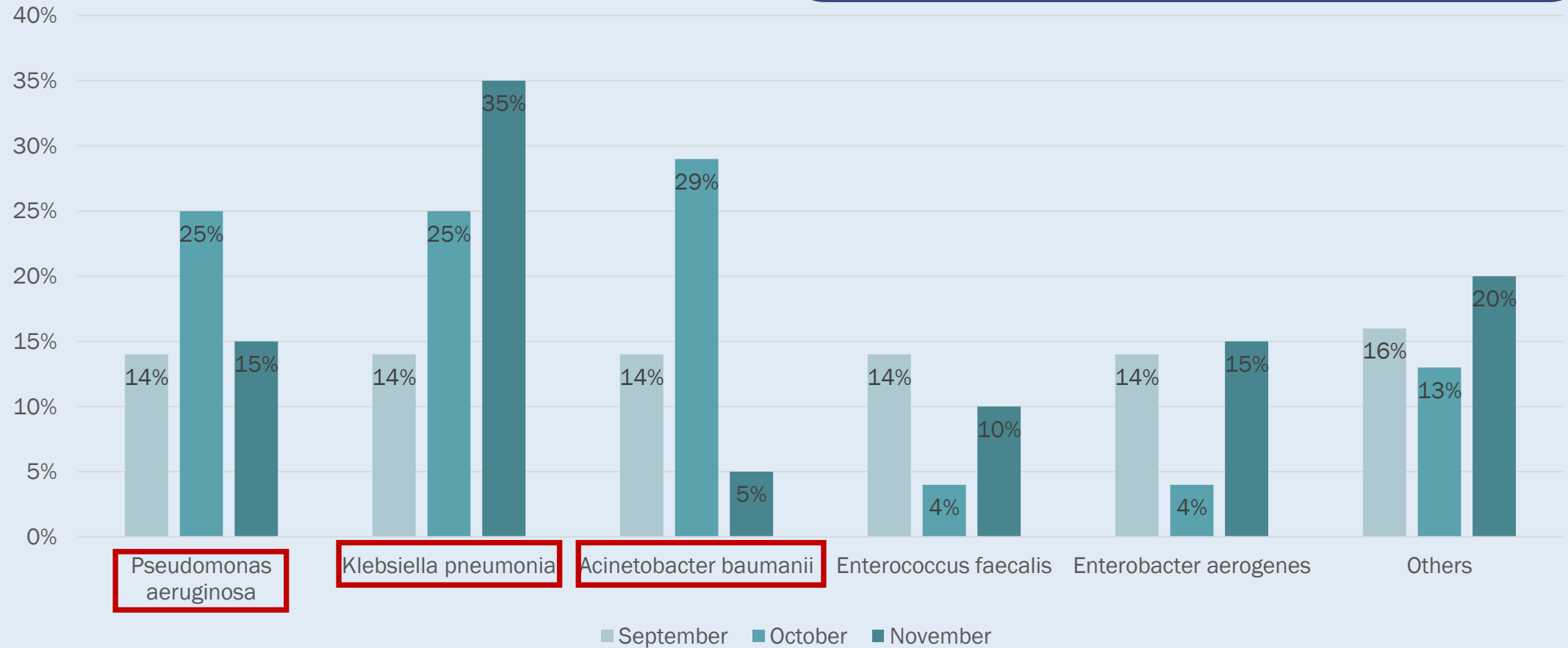


Figure 1. Bacterial Isolates Pattern in the RSCM Burn Unit September – November 2016

Results (2)

High resistance was found for 10 antimicrobials, particularly cephalosporins

Table 1. Patterns of Antibiotic Resistance among Common Organisms at the RSCM burn unit

Resistance Antibiotics (n=9)	Organisms		
	Klebsiella pneumoniae (n=15)	Pseudomonas aeruginosa (n=11)	Acinetobacter baumannii (n=10)
Cephalosporin			
Ceftriaxone	10 (67%)	10 (91%)	9 (90%)
Cefoperazone / Sulbactam	5 (33%)	8 (73%)	2 (20%)
Carbapenem			
Doripenem	8 (53%)	7 (64%)	7 (70%)
Meropenem	3 (20%)	8 (73%)	7 (70%)
Imipenem	2 (13%)	8 (73%)	7 (70%)
Aminoglycosides			
Gentamicin	11 (73%)	8 (73%)	8 (80%)
Amikacin	4 (27%)	8 (73%)	7 (70%)
Tetracycline			
Tetracycline	9 (60%)	9 (82%)	9 (90%)
Glycylcycline			
Tigecycline	2 (13%)	10 (91%)	5 (50%)

Results (3)

The three bacteria were only sensitive to carbapenem, aminoglycosides and tigecycline.

Table 2. Patterns of Antibiotic Sensitivity among Common Organisms at the RSCM burn unit

Sensitive Antibiotics (n=9)	Organisms		
	Klebsiella pneumoniae (n=15)	Pseudomonas aeruginosa (n=11)	Acinetobacter baumannii (n=10)
	Carbapenem		
Imipenem	12 (80%)	3 (27%)	2 (20%)
Meropenem	11 (73%)	3 (27%)	2 (20%)
Doripenem	10 (67%)	3 (27%)	2 (20%)
	Aminoglycosides		
Amikacin	9 (60%)	3 (27%)	2 (20%)
Gentamicin	2 (13%)	3 (27%)	1 (10%)
	Glycylcycline		
Tigecycline	1 (7%)	0	1 (10%)
	Cephalosporin		
Cefoperazone/Sulbactam	3 (20%)	2 (18%)	3 (30%)
Ceftriaxone	0	1 (9%)	0
	Tetracycline		
Tetracyclin	0	0	0
	Colistin		
Polymixin B	0	4 (36%)	0

Results (4)

Table 3. Bacteria Etiology of Sepsis in Burn patients (September – November 2016)

Organism Etiology of Sepsis	No. of Isolates* (n=45)	Wound Swab	Tissue	Sputum	Blood
Pseudomonas aeruginosa	15 (33,3%)	7	6	2	0
Klebsiella pneumoniae	13 (28,9%)	2	4	5	2
Acinetobacter baumannii	5 (11,1%)	2	1	2	0
Enterobacter aerogenes	3 (6,7%)	1	1	1	0
Enterobacter cloacae	3 (6,7%)	0	0	3	0
Staphylococcus saprophyticus	2 (4,4%)	1	0	0	1
Proteus mirabilis	2 (4,4%)	1	0	1	0
Enterococcus faecalis	1 (2,2%)	0	1	0	0
Staphylococcus aureus	1 (2,2%)	0	1	0	0
Total	45	14	14	14	3

Two major sepsis-causing bacteria were *P. aeruginosa* (33.3%) and *K. pneumoniae* (28.9%).

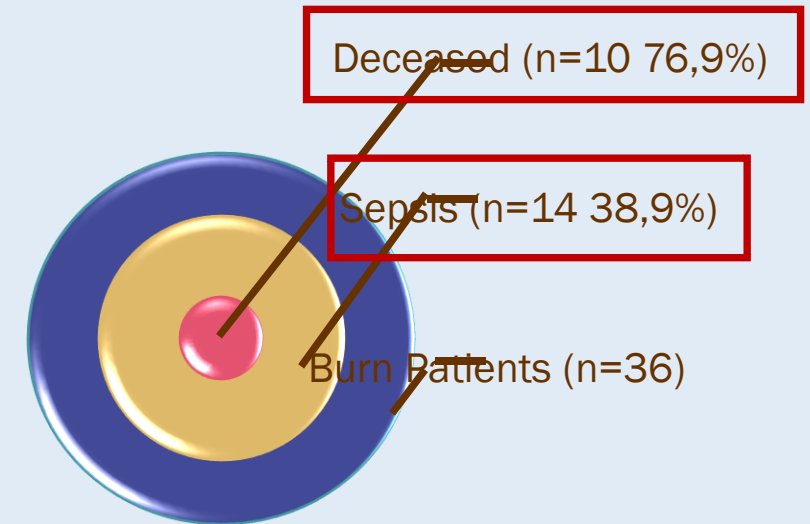


Figure 2. Sepsis Prevalence in RSCM Burn Unit September - November 2016

14 patients were diagnosed with sepsis (38.9%), 10 died

Conclusion

- Etiologic agents of burn infection in our setting alternated continuously every month.
- Almost all bacterial isolates are classified as multi-drug resistant, with high resistance rates to our empirical therapy (ceftriaxone) leading to outbreak of sepsis and mortality rates.
- Combination of Carbapenem (Imipenem, Meropenem and Doripenem) and Aminoglycosides (Amikacin) are selected as empirical therapy.

Future Prospective

- Combination of Carbapenem group and Aminoglycosides group antibiotics can be used as the therapy for sepsis caused by burn infection.
- This study might need to be continued in the other setting, especially in the other hospital and countries to make the universal guidelines therapy of burn infection cases.

References

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