

## AMINOGLYCOSIDE USAGE IN OPEN FRACTURE ORTHOPAEDI-TRAUMATOLOGIC PATIENTS

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1

## BACKGROUND

-Open fracture (OF) is fracture with contamination/dirty wound

-OF Classification –Gustilo et al

Type I: OF with a skin wound less than 1 cm long and clean

Type II: OF with a laceration more than 1 cm long without extensive soft tissue damage, flap and avulsions

Type III: an open segmental fracture, OF with extensive soft tissue damage or traumatic amputation

→further stratified → III-a, III-b, III-c

**The rate of infection:**

type I : 0-2%

II : 2-7%

III-a : 7%, III-b : 10-50%, III-c: 25-50%



2

## BACKGROUND (cont.)



The Goal of treatment : prevention infection,  
healing of the fracture, restoration of function of the extremity



Effective antibiotic therapy is one major factor in management of OF.  
Type II and III : Comb. of Cephalosporin – aminoglycoside

Aminoglycoside → narrow index therapeutic  
→ ototoxicity, nephrotoxicity  
Precaution must be given in using these antibiotic

3

## OBJECTIVE

To know the profile of OF patients,  
aminoglycosides usage , and  
its drug related problems in these patients

## METHODS

Data were taken from patient's medical records – Hospitalized Patients  
in dr Sutomo General Hospital Surabaya, Indonesia.  
prospectively data : August – September 2007  
retrospectively data : April – July 2007

4

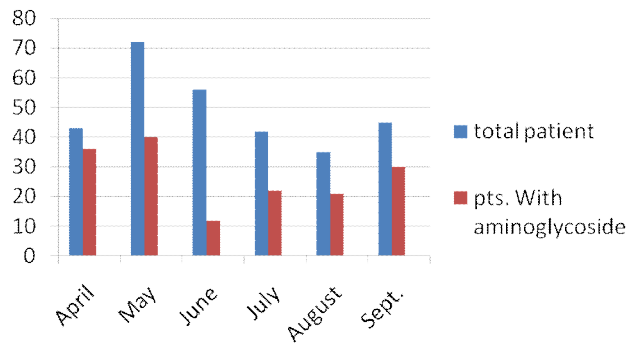
## RESULTS AND DISCUSSION

**Total OF patient from April-September 2007 : 243**

**Patients with aminoglycoside antibiotic : 161**

**April – July : 99**

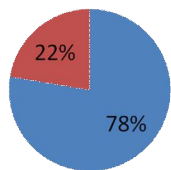
**August – Sept. : 62**



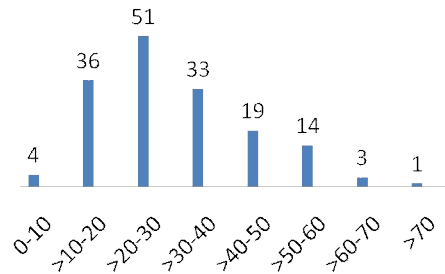
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## RESULTS AND DISCUSSION (cont.)

**SEX**  
■ male ■ female

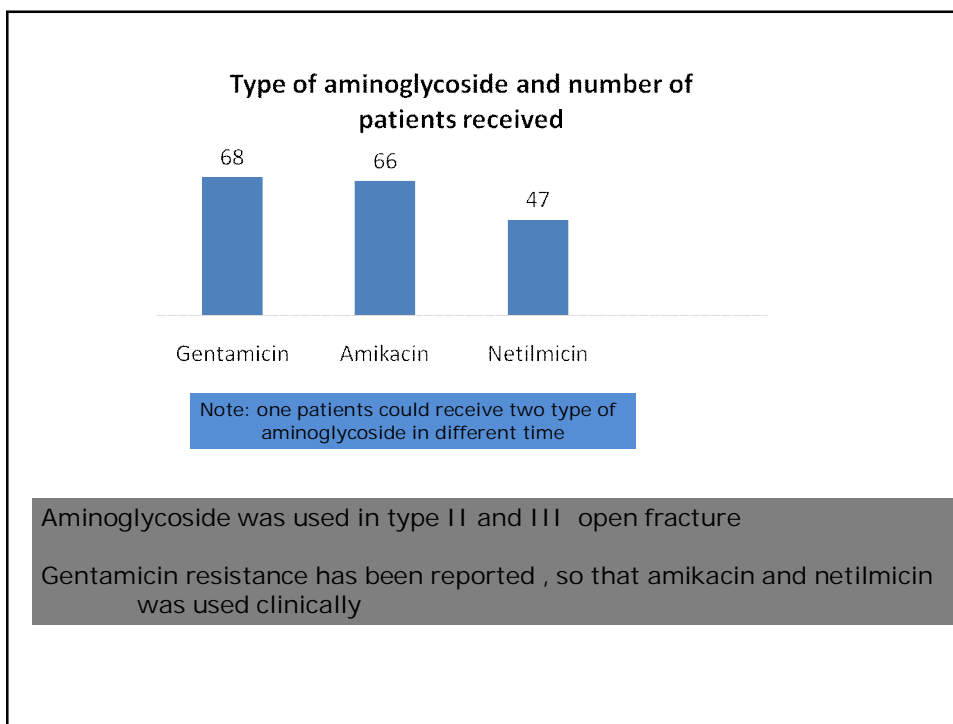
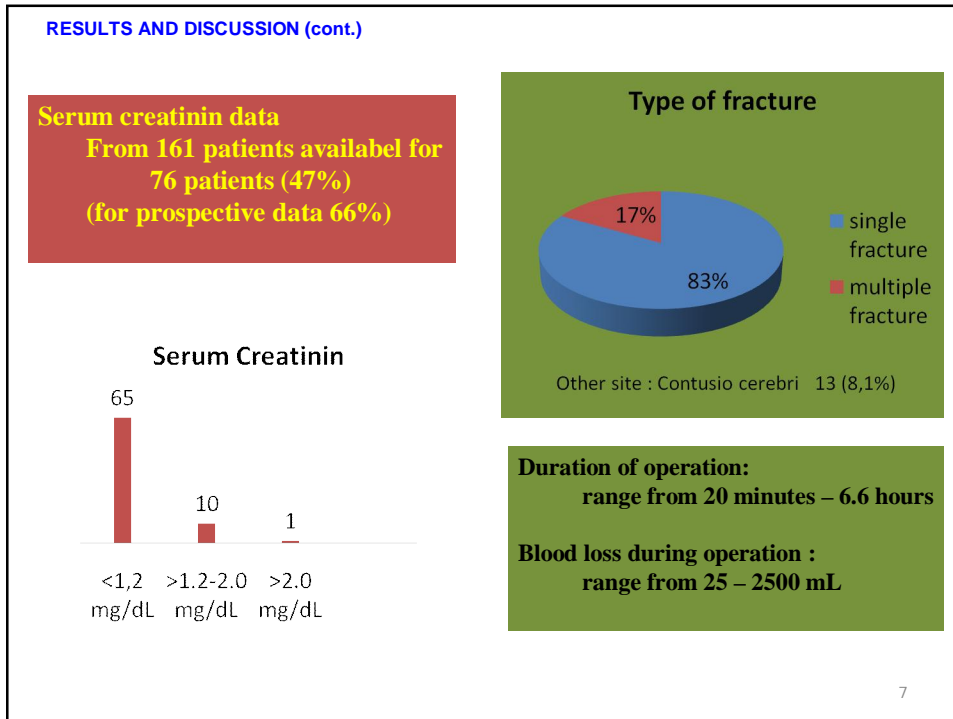


**AGE**



**Distribution of patient with aminoglycoside (161 patients)**

6



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Time of administration:  
On admission → patients with over golden periode  
Pre operation and  
Post operation

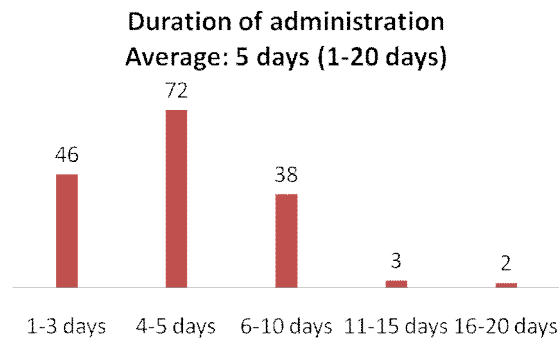
Route of adm. : IV bolus injection

Dose : DDD (2 times a day) with the dose:

Gentamicin 80 mg  
Amikacin 500 mg  
Netilmisin 100 mg

Lower dose was given to geriatric and patients with age less than 17 years old

Ref. Dose : 15 – 20 mg/kg BW/day



Standard therapy - Orthop.Traumatology Dept. Sutomo Hosp., Ref.  
1<sup>st</sup> Gen Cephalosporin + Aminoglycoside  
→ Type II – 3 days  
→ Type III – 5 days

Prolonged administration → by considering the wound infection and clinical condition of patient

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## DRUG RELATED PROBLEMS:

Not a proper substitution

- amikacin/netilmicin → switch to gentamicin
- There is a fact of gentamicin resistance  
(Clinical Microbiology Dept. Dr. Sutomo Hospital)

Some patients without renal test function data

- adm. should be based on renal function, Body weight

Patients with therapy more than 3 days without monitoring of renal function

- aminoglycoside → nephrotoxicity
- Nephrotoxicity → increase Scr  $\geq 0,5$  mg/dL

Drug Interaction

- Aminoglycoside – furosemide  
mannitol
- increased its ototoxicity and nephrotoxicity
- monitoring these adverse effect must be done carefully

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**Thank You**