UNIVERSITI TEKNOLOGI MARA

ASSESSMENT OF BLOOD SAMPLING TIME OF GENTAMICIN FROM PATIENTS AT TENGKU AMPUAN RAHIMAH HOSPITAL

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ABSTRACT

Gentamicin is an aminoglycoside antibiotic used to treat many types of bacteria, mainly Gram-negative. The reason why blood sampling is important is because gentamicin has a narrow therapeutic index, which means, if the concentration exceeded normal range, toxicity will occur. Trough must be taken 30 minutes before and peak 30 minutes after 30 minutes of IV infusion is blood sampling time guideline for gentamicin in HTAR. Methodology for this study is retrospective study which was conducted from January 2011 until July 2011. There are a total of 30 patients who met the inclusion criteria. For demographic data, 23 males (77%) and 7 females (23%) were documented. 25 Malays (83%), 4 Indian (14%) and followed by 1 Chinese (3%) was recorded for ethnic group. The mean weight and creatinine clearance was 67.47 kg and 154.31 ml/min respectively. For diagnosis and indication for patients on gentamicin, Pneumonia has the highest percentage, 6 (20%) and sepsis 1, 3% scores the lowest percentage for indication of gentamicin in HTAR. 24 patients with appropriate indication (80%) and 6 patients without indication (20%) were found in HTAR. 24 TDM patients with indication were further investigated to look at the completeness of TDM form. 13 patients (54%) have their form filled completely while 11 patients (46%) have their form incompletely filled. Any incomplete data will affect attempts to calculate the dose of gentamicin. Therefore, cost has been wasted for every test that has been run. From 13 of the complete TDM forms, 2 patients had appropriate pre and post sampling time and the concentration of trough and peak within therapeutic range. A total of wrong sampling times for 10 out of 13 patients were recorded. In conclusion, HTAR has good practice with 80% use of gentamicin had indication. However, 46% of incomplete data recorded has lead to wastage of sampling and also effect time spent.

CHAPTER 1

INTRODUCTION

1.1 Introduction

Gentamicin is an aminoglycoside antibiotic used to treat many types of bacteria, mainly Gram-negative. Even though the side effects of gentamicin include irreversible damage to kidney and ear, its bactericidal effects outweigh the side effects to treat life-threatening infections especially for micro-organisms that are resistant to other antibiotics.

The usual dose for gentamicin is 5 to 7 mg/kg/day, administered over 30 to 60 minutes as a single daily dose or in divided doses every 8 or 12 hours (Winter, 2006). The reason why blood sampling is important is because gentamicin has a narrow therapeutic index, which means, if the concentration exceeded normal range, toxicity will occur.

On the other hand, low concentration of gentamicin will lead to ineffectiveness of treatment as MIC is not achieved. Volume of distribution for gentamicin is 0.25kg/L (Winter, 2006). It is renally eliminated therefore, gentamicin clearance can be estimated from the formulas used to estimate creatinine clearance