

DOOR TO NEEDLE TIME ESTIMATION IN ACUTE BACTERIAL MENINGITIS

Said Amin¹, Afsheen Mahmood², Anwar UIHaq¹

ABSTRACTS

Objective: The objective of this study was to determine the current door to needle time in acute bacterial meningitis.

Material and Methods: The descriptive study was carried out at the Department of Medicine Hayat Abad medical complex Peshawar from 15 March 2015 to 31st march 2016 after ethical approval. After informed written consent from patient or guardian 90 patients of either gender aged 15 to 60 years were enrolled in this study fulfilling the inclusion criteria, having clinical features of meningitis, e.g. fever, headache, neck stiffness with altered mental status with CSF Showing elevated protein (>100mg/dl), decreased glucose (>50mg/dl), and leukocytosis (>100 leukocytes) with more than 80% neutrophils.

Door to needle time was estimated from time of arrival at emergency department printed on emergency slip to time of administration of first dose of intravenous antibiotic. The patients were grouped into eleven categories for I.V antibiotics delay. Each grouped spanned 60minutes.

Variables were recorded in restructured proforma. Statistical Package of Social Sciences (SPSS) version 11.0 was used for descriptive statistics such as age, gender, clinical features, time of arrival, time of lumbar puncture, and time of I.V antibiotic administration.

Results: A total of 90 patients were recruited in this study. Male gender dominated 50(56%) female patients were 40(44%). Mean age was 29 years ranging from 15 years to 57 years. The patients were grouped into eleven categories for I.V antibiotics delay. Each grouped spanned 60minutes. 3.3% received I.V antibiotics in first hour, 3.3% in 1 to 2 hour, 4.4% in 2 to 3hours, 3.3% in 3 to 4 hours, 7.7% in 4 to 5 hours, 10% in 5 to 6 hours, 13.3% in 6 to 7 hours, 15.5% in 7 to 8 hours, 16.6% in 8 to 9 hours, 12.2% in 9 to 10 hours and 10% >10 hours (Graph 1).

Conclusion: acute bacterial meningitis is medical emergency. First dose antibiotic is significantly delayed in are setup.

Key Word: Acute Bacterial Meningitis, Door to Needle Time.

INTRODUCTION

Acute bacterial meningitis is an important cause of mortality and morbidity with high rates of long-term neurological sequelae. Duration of disease, age and early treatment and type of organism are independent risk factors for outcome acute bacterial meningitis.¹

The diagnosis of meningitis is complicated by the variability of presenting features.² The prompt diagnosis and therapy of bacterial meningitis remain enduring clinical challenges, for no physician would knowingly delay appropriate therapy. However, whether a delay in the initiation of antimicrobials in fact causes a worse outcome.³

Besides proper supportive treatment and empirical therapy, the time between the arrival of the patient

and administration of antimicrobial agents is a very important variable and correlates with better outcome.⁴

Door to needle time was defined as the time from the recorded time of arrival at hospital until the parenteral administration of appropriate antibiotics. Based on these studies we presumed that door to needle time is an important denominator for treatment outcome and therefore should be a standard component of quality of care for patients with a severe infection. Despite availability of treatment guidelines for the most serious infections, the efficiency of the process depends on many factors. Patients arriving at the emergency department are seen by a multidisciplinary team of professionals in an often busy and chaotic setting.⁵ This study will provide the existing status of antibiotic delay in acute bacterial meningitis.

MATERIAL & METHODS

The descriptive study was carried out at the Department of Medicine Hayatabad Medical Complex, Peshawar from 15 March 2015 to 31st March 2016 after ethical approval. After informed written consent from patient or guardian 90 patients of either gender aged 15 to 60 years were enrolled in this study fulfilling the inclusion criteria, having clinical features of meningitis, e.g. fever, headache, neck stiffness with altered mental

¹ Department of medicine Hayatabad medical complex Peshawar

² Department of Physiology Khyber Girls Medical College Peshawar

Address for correspondence:

Dr. Said Amin

Assistant Professor Department of medicine Hayatabad medical complex Peshawar
Email: saidamin@live.com

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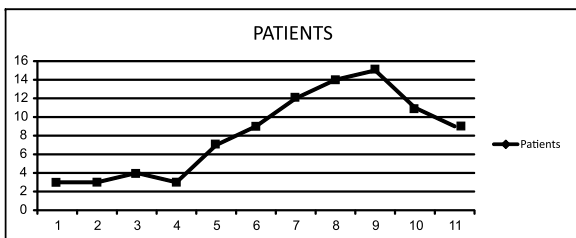
RESULTS

A total of 90 patients were recruited in this study. Male gender dominated 50(56%) female patients were 40(44%). Mean age was 29 years ranging from 15 years to 57 years. The patients were grouped into eleven categories for I.V antibiotics delay. Each grouped spanned 60minutes. 3.3% received I.V antibiotics in first hour, 3.3% in 1to 2hour, 4.4% in 2 to 3hours, 3.3% in 3 to 4 hours, 7.7% in 4 to 5 hours, 10% in 5 to 6 hours, 13.3% in 6 to 7 hours, 15.5% in 7 to 8 hours, 16.6% in 8 to 9 hours, 12.2% in 9 to 10 hours and 10% >10 hours. (Table 1)

DISCUSSION

Table1: Time categories and patient percentage

Category	Time duration (hour)	Patients	Percentage
1	0 to 1	3	3.3%
2	1 to 2	3	3.3%
3	2 to 3	4	4.4%
4	3 to 4	3	3.3%
5	4 to 5	7	7.7%
6	5 to 6	9	10%
7	6 to 7	12	13.3%
8	7 to 8	14	15.5%
9	8 to 9	15	16.6%
10	9 to 10	11	12.2%
11	>10	9	10%



Graph 1: Number of patients and time duration to antibiotics

Despite the existence of antibiotic therapies against acute bacterial meningitis, patients with the disease continue to suffer significant morbidity and mortality in both high and low-income countries, we need to accurately diagnose patients with bacterial meningitis and then rapidly administer antibiotics and adjunctive therapies for this life-threatening disease.⁷

Our study shared by 44% female patients comparable other international studies as van Tuijnet al.⁸ The mean age was comparable with other studies as observed by Hiraniet al.⁹ The management of suspected adult acute bacterial meningitis requires early administration of antibiotics. Although it has been suggested that delays in the administration of antibiotics is associated with adverse clinical outcome. Striking results were observed in our study revealing very delayed antibiotic treatment in our patients. In an audit Stockdale the median time to administration of antibiotics was 79 min while in our study only 6% received the relevant treatment in this window of opportunity.¹⁰

A retrospective Canadian single center study of 123 cases of acute bacterial meningitis showed that door-to-antibiotic time of >6h was associated with an adjusted odds ratio of death of 8.4. While in our study only 30% received antibiotic in <6 hour period.⁴

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