



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3562923>Available online at: <http://www.iajps.com>

Research Article

**THE CORRELATION BETWEEN FIVE DAYS OF ORAL AMOXICILLIN
AND TWO DAYS OF INTRAMUSCULAR CEFTRIAXONE IN
PAEDIATRIC PATIENTS WITH ILLNESS AS WELL AS DIETARY
INSUFFICIENCY**¹Dr Zuriat Khan, ²Dr Zunairah Zafar, ²Dr Seemab Shahid¹Services Hospital, ²Ghurki Trust Teaching Hospital.**Article Received:** October 2019**Accepted:** November 2019**Published:** December 2019**Abstract:**

Objective: The study focuses on the adequacy of correlation between five days of oral amoxicillin and two days of intramuscular ceftriaxone in cases of uncomplicated, fundamentally ailing patients with nutritional insufficiency.

Material and Method: The mode of the research was RCT (Randomized controlled trial) which was carried out at Mayo Hospital, Lahore from April 2018 to November 2018. The number of simple, severe, acute dietary deficiency patients, who enrolled for research were seventy. Both the genders between the ages of six to fifty-nine months, were chosen for research.

Results: The average age of the enrolled patients for research was (29.76 ± 16.91) months. Researcher divides the patients into two categories. In category "A" and "B", the average age of the patients was (29.17 ± 17.57) & (30.34 ± 16.91) , respectively. Effectiveness of therapy was recorded in twenty-five (71.43%) patients of category "A" and sixteen (45.71%) patients in category "B". Statistically, the superior rate of treatment effectiveness was recorded in the category "A" with respect to category "B" with p -value = 0.05. Statistically, substantial-effectiveness variation was recorded among the male patients of both the categories with 0.0014 as P -value; however, unimportant variations of female patients of the dual categories were identified.

Conclusion: Findings of the research presented, expressed huge effectiveness rate in intense dietary deficient patients deals with ceftriaxone IM for two days versus five days of oral amoxicillin. Higher effectiveness ratio was recorded in male patients of ceftriaxone category with respect to amoxicillin category male patients; however, unimportant variation was recorded in females patients of either research category. Inconsiderable relation between effectivity as well as age was recorded.

Keywords: Severe Acute Malnutrition (SAM), Diarrhea, Antibiotic CBC, Cases Fatality Ratio (CFS), TFC (Therapeutic Feeding Centre).

Corresponding author:

Dr. Zuriat Khan,
Services Hospital.

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Please cite this article in press Zuriat Khan et al., *The Correlation Between Five Days Of Oral Amoxicillin And Two Days Of Intramuscular Ceftriaxone In Paediatric Patients With Illness As Well As Dietary Insufficiency.*, Indo Am. J. P. Sci, 2019; 06(12).

INTRODUCTION:

The major effect of dietary deficiency is, morbidity as well as mortality in children, having age less than five years. Universally, approximately half of the under-five years children casualties are mainly because of dietary deficiency. In 2013 almost 6.3 million children of less than five years of age died, worldwide. Pakistan, India, Democratic Republic of Congo, China, and Nigeria's contribution in overall casualties of children is approximately half of the total deaths [1]. The modified shape of acute malnutrition was SAM and it is developed when required amount of minerals, vitamins as well as other nutrients, essential to keep the body function normal were not provided to the body properly. The influential rate of SAM in Pakistan is 3.6%, presenting higher dietary deficiency among children [2].

The undernourished child, particularly with SAM, are greatly inclined towards disease [3]. The multiple localities in the world with a huge percentage of adolescence, who are undernourished have minor to nil diagnostic facilities as well as in these localities, the usual microbe infecting undernourished children has narrowly been differentiated in terms of kinds, frequency as well as antibiotic resistance profile. Additionally, the clinical checkup and basic assessment such as CBC, cannot recommend the area as well as a form of infection, particularly in SAM cases. The antibiotic utilization minimizes the casualties in SAM [4 – 6]. Oral amoxicillin utilization in SAM cases was highly approved by WHO, meanwhile, injectable benzyl penicillin/ampicillin along with oral amoxicillin in addition to gentamycin is more commonly used in complex SAM cases [7]. Utilization of amoxicillin procedure is not ideal due to the amoxicillin time period of five days and ten doses along with probable hazards of weak absorption as well as resistance [8]. Because of the extended action time period, as well as its sensitivity to bacteria isolated in SAM cases, injectable ceftriaxone appeared as an appropriate alternative [9, 10]. A research performed by Dubray C et al in 2008 showed the comparison of oral amoxicillin two doses daily till five days versus intramuscular injection with ceftriaxone till two days in children having six months to five years of age with SAM, but could not find any variation between mortality rates of the two categories [10].

However, World Health Organization has approved the utilization of oral amoxicillin as preferred therapy in simple SAM cases but also approved a few parenteral antibiotics such as ceftriaxone IM in them. The effectiveness comparison between five days of

oral amoxicillin and two days intramuscular ceftriaxone in uncomplicated critical malnutrition dietary deficiency is the aim of the research.

The current research, and, thus formulates the better procedure to choose for saving the liver of simple SAM children. The children are said to be affected with uncomplicated SAM if single parameter is apparent with better effectiveness, having at least one or multiple of the following appearances. Weight to length/height <3SD (standard deviation), and Midarm perimeters <115mm and bilateral pedal oedema.

Treatment effectiveness will be marked as positive, if children subsist up to seven hospitalized days with uncomplicated SAM treatment. Moreover, if the patients expire within seven days of hospitalization with uncomplicated SAM treatment, it is said as mortality.

METHOD AND MATERIAL:

The mode of the research was RCT (Randomized controlled trial) which was carried out at Mayo Hospital, Lahore from April 2018 to November 2018. The number of simple, severe, acute dietary deficiency patients enrolled for research was seventy. Both the genders having age six to fifty-nine month were chosen for research. All of those patients or guardians of the patients who were unwilling to participate in the research, management with any of the research medicines in seven days prior to hospitalization, hospitalization in the final seven days to any health facility centre for SAM, recognized over sensitivity to ceftriaxone or amoxicillin, continuous vomiting cases or the patients having former record of afflicted consciousness in the twenty-four-hour prior to hospitalization were not included in the research. The recommendation was taken from the organizational ethical board. Those children having uncomplicated SAM were hospitalized in the ward via emergency or outdoor, after ascertaining that they were meeting the required addition and exclusion criteria. The written recommendation was also achieved from patients or their guardians. Lottery technique was used for random categorization in the ceftriaxone group (group "A") and amoxicillin group (group "B"). Demographic fact along with previous thorough record and assessment was recorded on Performa. The dietary deficiency recovery was started in accordance with the World Health Organization protocol. The ceftriaxone injection of 50mg/kg was given only for two days to those children who were in category "A" (ceftriaxone category), oral amoxicillin was given to those children who were in category "B". Oral amoxicillin was given in syrup at 25mg/kg/dose two

doses daily till five consecutive days. On 7th day the effectiveness of both the drugs was recorded on pre-formulated Performa.

The composed facts were assessed by SPSS software for quantitative variants such as age, average and the standard deviation was recorded. Percentage, as well as frequency, was measured for qualitative variants such as effectiveness as well as gender for each category. Stratification was carried out for gender as well as age. Moreover, the post-stratification chi-square test was utilized to find out the consequences of these on research variables i.e. efficacy. P-value ≤ 0.05 was assumed as statistically substantial.

RESULTS:

The average age of the enrolled patients for research was (29.76 ± 16.919) months. Researcher divided the patients into two categories. In category "A" and "B", the average age of the patients was (29.17 ± 17.57) & (30.34 ± 16.91) , respectively. Effectiveness of therapy was recorded in twenty-five (71.43%) patients of category "A" and sixteen (45.71%) patients in category "B". Statistically, the superior rate of treatment effectiveness was recorded in the category "A" with respect to category "B" with p-value = 0.05. Stratification with respect to age was carried out. Among eighteen (51.43%) male patients of category "A", treatment effectiveness was recorded in (83.33%) patients. Moreover, sixteen (45.71%) male patients associated with category "B" and treatment effectiveness was recorded in four (25%). Statistically, substantial-effectiveness variation was recorded among the male patients of both the categories with 0.0014 as P-value. A total number of patients in category "A" as well as in category "B" was seventeen and eighteen patients, respectively. Treatment effectiveness was recorded in ten (58.82%) patients of

category "A" and twelve (66.67%) patients of category "B", however, the variation was unimportant with 0.0732 of P-value.

All patients were categorized into four age groups, age group of six to nineteen months, twenty to thirty-two months, thirty-three to forty-five months and forty-six to fifty-nine months. In the first group of six to nineteen months, among thirteen patients of research category "A", treatment effectiveness was recorded in eleven (84.62%) patients. Out of ten (28.57%) research category "B" patients, treatment effectiveness was recorded in six (60.0%) patients. Statistically, inconsiderable effectiveness variation was recorded in both the categories with P-value = 0.3413. In twenty to thirty-two-month age category, there was six (17.14%) patients in category "A" and eight (22.86%) patients in category "B", treatment effectiveness was found in four (66.67%) and four (50.0%) patients of research category "A" and "B", respectively. However, the variation was statistically inconsiderable with 0.6270 of P value. In thirty-three to forty-five-month age category, a total number of patients in category "A" and "B" was ten (28.57%) and eleven (31.43%), respectively. The treatment effectiveness was found in five (50%) & four (36.36%) patients of category "A" and "B", respectively. The effectiveness variation between both the categories was statistically inconsiderable with P value = 0.6699. In forty-six to fifty-nine-month age category, out of six (17.14%) patients of category "A", treatment effectiveness was found in five (83.33%) patients, out of six (17) patients of category "B" treatment effectiveness was found in two (33.33%) patients, only. However, treatment effectiveness in both the category was statistically inconsiderable with P value = 0.2424.

Table – I: Group-wise efficacy

Efficacy	Yes		No		P-value
	Number	Percentage	Number	Percentage	
Group - A (Ceftriaxone)	25	71.43	10	28.57	0.05
Group - B (Amoxicillin)	16	45.71	19	54.29	

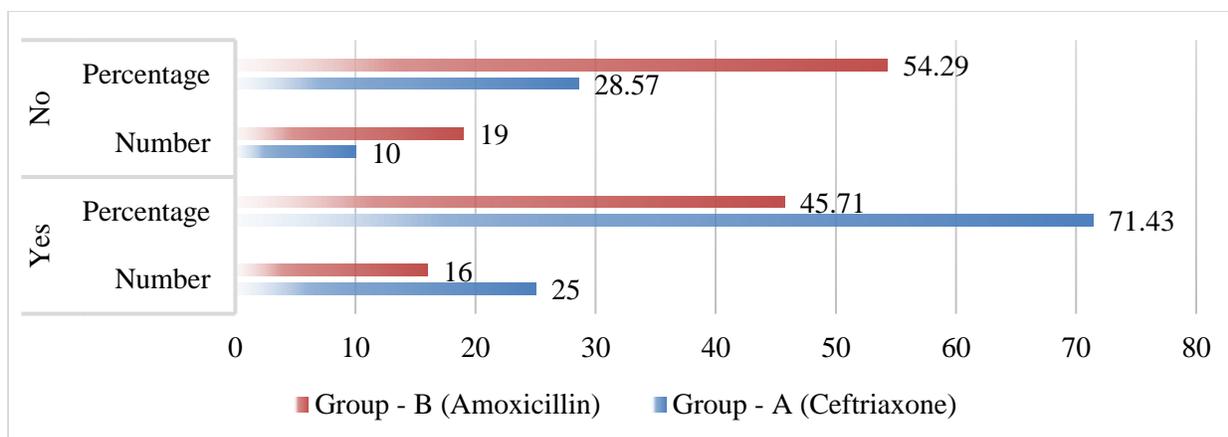
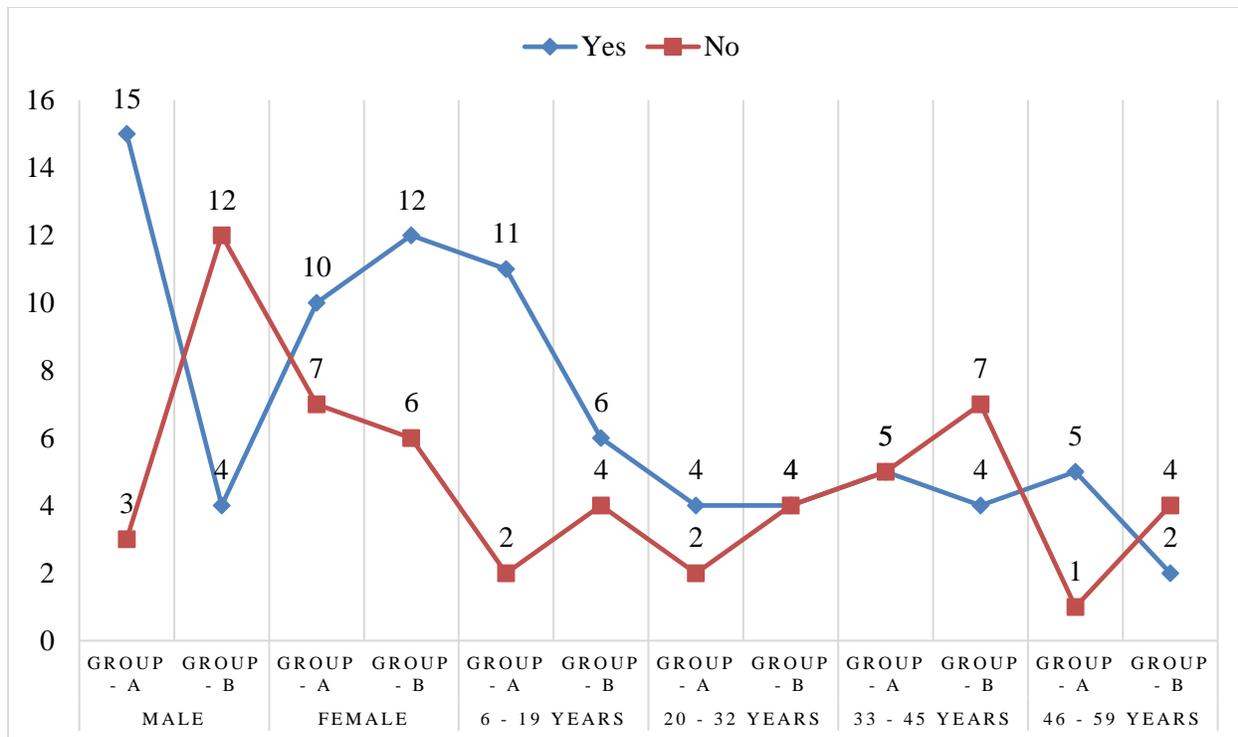


Table – II: Age Versus Gender

Efficacy		Yes		No		P-Value
		Number	Percentage	Number	Percentage	
Male	Group - A	15	83.33	3	16.67	0.0014
	Group - B	4	25	12	75	
Female	Group - A	10	58.82	7	41.18	0.7332
	Group - B	12	66.67	6	33.33	
6 - 19 Years	Group - A	11	84.62	2	15.38	0.3413
	Group - B	6	60	4	40	
20 - 32 Years	Group - A	4	66.67	2	33.33	0.627
	Group - B	4	50	4	50	
33 - 45 Years	Group - A	5	50	5	50	0.6699
	Group - B	4	36.36	7	63.64	
46 - 59 Years	Group - A	5	83.33	1	16.67	0.2424
	Group - B	2	33.33	4	66.67	



DISCUSSION:

The higher percentage of casualties among children with SAM take place specifically while in nutritional crisis [11, 12]. The childcare with severe acute malnutrition in TFC or in hospital is established on nutritional reclamation arrangement as well as the related entanglements treatments, generally hyperglycemia, dehydration, hypothermia and infection [13]. The utilization of absolute protocol from the last twenty years, assisted in minimizing CFR among children with severe acute malnutrition [14, 15]. In South African hospital, care facility ratio minimized from twenty percent to six percent after absolute nutrition reclamation protocol utilization which comprises of gentamycin as well as ampicillin of antibiotic regimen [16].

There is a common accord that management with fundamental broad-spectrum antibiotic treatment on hospitalization ameliorates the findings of severe acute malnutrition [17]. The WHO approved that all patients with uncomplicated severe acute malnutrition daily take ampicillin as well as gentamycin or erythromycin to minimize causalities and modify nutritional feedback to feeding [18]. Additionally, there is no accord on the most appropriate anti-microbial treatment. Amoxicillin has been utilized on a daily basis in therapeutic feeding centers as a treatment of choice in first-line antibiotic treatment but less information is recorded regarding feedback and its

effect on infection in children with severe acute malnutrition. The amoxicillin treatment also lost its effectiveness due to its extended time period with five doses and ten days as well as its potential hazards of weak absorption and resistance [18]. Development of antibiotic resistance, an element hardly managed for in resource-poor setting could also badly damage the utilization of broad-spectrum antibiotic. A research conducted in Kenya on children affected with dietary deficiency narrates higher resistance to generally utilized antibiotic just like ampicillin, erythromycin, cotrimoxazole, chloramphenicol as well as even oxacillin [19]. A limited course of IM ceftriaxone could be an option to a five days treatment of an oral ceftriaxone, as it has the extended half-life of the cephalosporin. In pediatric AOM (acute otitis media) treatment, one intramuscular injection of ceftriaxone 50mg/kg has been presented as effective as oral amoxicillin-clavulanate, thrice time in a day up till ten days [20]. In Boston children hospital two ceftriaxone 50mg/kg intramuscular injection were given to a febrile child with nil infection sources, identified on physical assessment. It was recognized an alternative to hospitalization [21].

Total number of children selected for research were seventy. The average age of the enrolled patients for research was (29.76 ± 16.91) months. Researcher divided the patients into two categories. In category "A" and "B", the average age of the patients was

(29.17 ± 17.57) & (30.34 ± 16.91), respectively. Effectiveness of therapy was recorded in twenty-five (71.43%) patients of category “A” and sixteen (45.71%) patients in category “B”. Statistically, the superior rate of treatment effectiveness was recorded in the category “A” with respect to category “B” with p value = 0.05. A research performed by Dubray C et al in 2008 carried out comparison of oral amoxicillin two doses daily up till five days versus intramuscular injection with ceftriaxone up till two days in children having six months to five years of age with SAM and could not find any variation between mortality rates of the two categories i.e. seventy and seventy-four percent with amoxicillin and ceftriaxone, respectively with P -value = 0.27, however, treatment at all recorded effectiveness in (39.8%) severe acute malnutrition children with amoxicillin [11].

CONCLUSION:

Findings of the research presented expressively huge effectiveness rate in intensely dietary deficient patients with ceftriaxone IM for two days versus five days of oral amoxicillin. Higher effectiveness ratio was recorded in male patients of ceftriaxone category with respect to amoxicillin category male patients; however, unimportant variation was recorded in females' patients of either research category. Inconsiderable relation between effectivity as well as age was recorded.

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