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EFFECT OF RIBAVIRIN ON HOSPITAL STAY OF MEASLES CASES

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ABSTRACT

Objectives: We evaluated the effect of Ribavirin – a broad spectrum virustatic agent, in the hospital stay of measles cases both with and without complications.

Materials & Methods: This is a retrospective study where we examined the Bed Head Tickets of 100 randomly selected measles cases. One group was treated with Ribavirin along with antibiotic and other supportive measures and another group was treated with antibiotic and supportive measures only. We tried to evaluate the effect of Ribavirin on the hospital stay of Measles patients with or without complication.

Results: We found that there was absolute reduction in hospital stay for Ribavirin group than group treated without Ribavirin (4.018 ± 1.92 days versus 6.934 ± 2 days. $p= 0.4$). Mean hospital stay of measles with pneumonia treated with Ribavirin was 3.909 ± 1.02 days among 22 cases which was 8.5 ± 2.5 days among 10 cases treated without Ribavirin. This reduction was statistically significant ($p= 0.02$). Mean hospital stay of 12 cases of measles with encephalitis treated with Ribavirin was 5 ± 1.15 days while it was 8.16 ± 2.07 days for 6 patients received antibiotic and supportive measures only ($p=0.35$). Case fatality rate in Ribavirin group was 0 %, against 4.34% for the group without Ribavirin.

Conclusion: Reduction in the hospital stay of measles cases even in those who had complications, is an encouraging finding. Further studies with large sample size and randomized controlled trials are required to evaluate the effectiveness of Ribavirin in measles along with other RNA viruses.

Key Words: Ribavirin, Measles, Measles pneumonia, Hospital stay

INTRODUCTION

Ribavirin is a broad spectrum non interferon inducing virustatic chemotherapeutic agent, demonstrates activity against a wide range of RNA and DNA viruses including measles viruses. To date the best success as occurred in the use of Ribavirin to treat respiratory syncytial virus infection in infant and young children and to treat influenza A & B virus infection in young adult. Viral infection particularly viral pneumonia, are often life threatening in patients with Severe Combined Immunodeficiency Disease (SCID) and Ribavirin aerosol has been used successfully to treat RSV and parainfluenza virus infection in the immunodeficient children. The drug has also shown significant clinical benefit in treating Lassa fever virus. Additional studies demonstrate the drug efficacy in acute viral hepatitis, herpes virus infection and

measles. Controlled clinical trials are underway to test the drug in patients infected with AIDS virus¹.

Measles is a highly contagious disease which was responsible for high infant mortality before the advent of effective vaccine in 1963. In immuno-competent individual, measles virus infection triggers an effective immunoresponse that start with innate response and than leads to successful adaptive immunity, including cell mediated immunity and humoral immunity. The virus is cleared and life long protection is acquired. However, changing epidemiology of measles due to vaccination as well as severe immunodeficiency has created new pockets of individuals venerable to measles².

In this study we tried to evaluate the effect of oral Ribavirin in the hospital stay of immuno- competent measles with or without complication.

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MATERIALS & METHOD

This study was conducted at Infectious Disease and Beliaghata General Hospital (ID& BGH) where measles cases are referred from different parts of West Bengal and different North Eastern States of India. We retrospectively examined the BHT of 100 randomly selected measles cases. one group was treated with Ribavirin along with antibiotic and other supportive measures and another group was treated with antibiotic and supportive measures only. We tried to evaluate the effect of Ribavirin on the hospital stay of Measles patients with or without complication.

Case definition of measles - cases with 2-4 days of respiratory prodrome like malaise, cough, coryza, conjunctivitis with lacrymation and fever followed by appearance of erythematous, nonpruritic, maculopapular rash which begins behind the hairline and spreads down the trunk, limbs, including palm and sole. Ribavirin was administered in a dose of 10 mg/kg/day for 5 days.

Discharge criteria- when the patients became afebrile and became asymptomatic.

Presenting symptom: Many of the cases had multiple symptoms at a time. Vomiting was a presenting symptom especially among infants.

Clinical case definition for pneumonia was tachypnea with or without sub-costal suction with or without cyanosis or stupor. Suspected cases were confirmed radiologically.

RESULTS

Total 100 cases were examined retrospectively. Among them the minimum age was 6 month and maximum age was 62 years. Among the 100 cases, 62 were male, 38 were female, 68 were hindu, 32 were muslim.

Incidence of complication: Among the 100 cases retrospectively examined 93 cases were having different complications and only 7 cases had no complications. Some of the cases had multiple complications present simultaneously.

Effect of Ribavirin in hospital stay:

Among the 100 cases 54 (Male – 38, Female -16) were treated with Ribavirin and their mean hospital stay was 4.018 ± 1.92 days. 46 cases (M – 24, Female – 22) were treated without Ribavirin and their mean hospital stay was 6.934 ± 2 days and there was an absolute reduction in hospital stay among Ribavirin group but it was not statistically significant ($p=0.4$)

Effect of Ribavirin in hospital stay of measles with pneumonia :

Among 32 pneumonia cases (M – 22, F-10) 22 were (M – 18, F – 4) treated with Ribavirin along with other supportive measures along with antibiotic and 10 (M – 4, F – 6) were not given Ribavirin and they were treated only with supportive measures and antibiotic. Mean hospital stay of pneumonia patients (n = 32) treated with or without Ribavirin was 5.34 ± 1.50 days. Whereas those treated with Ribavirin (n = 22) the hospital stay was 3.909 ± 1.02 days and those treated without Ribavirin (n = 10), mean hospital stay was 8.5 ± 2.5 days. The reduction in hospital stay was statistically significant ($p=0.02$).

Effect of Ribavirin in hospital stay of measles with encephalitis:

Total case of measles with encephalitis was 18 among them 12 (M = 8, F = 4) were treated with Ribavirin and 6 (M = 4, F = 2) were treated without Ribavirin. Mean hospital stay in all cases (n = 18) was 6.65 ± 1.90 days whereas those treated with Ribavirin (n=12) it was 5 ± 1.15 days, and those without Ribavirin it was 8.16 ± 2.07 days. This reduction in hospital stay was not statistically significant ($p=0.35$)

Effect of Ribavirin on out come of measles cases

Case fatality rate(CFR) in the group treated with ribavirin was 0% but CFR in the group treated without ribavirin was 4.34 %. Though sample size was small it was a significant finding.

DISCUSSION

Measles with its complication can sometimes prove fatal. There is very few available specific therapy for measles pneumonia or encephalitis other than supportive care³.

Oguz Uzen et al. reported a case in Turkish Respiratory Journal in 2002 a case of severe measles pneumonia which is a rare condition in an immuno-competent adult. They reported a case, of 20 year old man. Diagnosis was based on clinical, radiologic and serological findings. Corticosteroid, Vit. A, Ribavirin were used in previous cases. But supportive care in this case completely improve the condition.

S Gururangan et al from Dept. of Pediatric Oncology, Royal Manchester Children's Hospital, Manchester, UK⁴ reported a case of 9 year old boy with Hodgkin's lymphoma developed measles 1 month after completing 8 cycles of intensive anti cancer chemotherapy. 7 days of nebulized Ribavirin and intravenous Ribavirin therapy produced apparent recovery. 2 weeks later child presented with measles giant cell pneu-

monia diagnosed on open lung biopsy. Ribavirin therapy was once again successful.

Mustafa MM et al⁵ reported 2 young patients with sub-acute measles encephalitis in 20 year old male and 9 year old girl with acute leukemia. Histologic examination of brain tissue proved useful in establishing the diagnosis. They concluded therapy with iv Ribavirin is effective when administered early.

In our study Ribavirin was administered orally but it has shown statistically significant reduction in hospital stay even in complicated cases of measles. And there was a favorable outcome pattern in patients who were treated with Ribavirin.

CONCLUSION

Incidence of measles has significantly reduced following introduction of measles vaccination. But it is still responsible for significant morbidity and mortality. In these days of increasing health care expenditure reduction in hospital stay even in complicated cases along with favorable outcome pat-

tern in cases treated with Ribavirin is an encouraging finding, keeping in mind that his complication has no specific therapy other than supportive care which can alter the course of the disease. Further studies with large sample size and randomized controlled trials are required to evaluate the effectiveness of Ribavirin in measles along with other RNA viruses.

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Table 1: (Age Distribution)

Age (yrs)	Male	Female	Total
0 - <1	2	1	3
1 - <5	15	11	26
5- <10	7	3	10
10- <20	25	10	35
20- <40	11	11	22
40- <60	2	2	4
Total	62	38	100

Table 2: Effect of Ribavirin in hospital stay

Disease/Condition	Treated with Ribavirin (Mean ± SD)			Treated without Ribavirin (mean ± SD)			P value		
	Male	Female	Total	Male	Female	Total			
Measles (N=100)	38	16	54	4.018± 1.92	24	22	46	6.934 ± 2.00	0.4
Measles with pneumonia (n=32)	18	4	22	3.909± 1.02	4	6	10	8.5 ± 2.50	0.02
Measles with encephalitis (n=18)	8	4	12	5 ± 1.15	4	3	7	8.16 ± 2.07	0.35

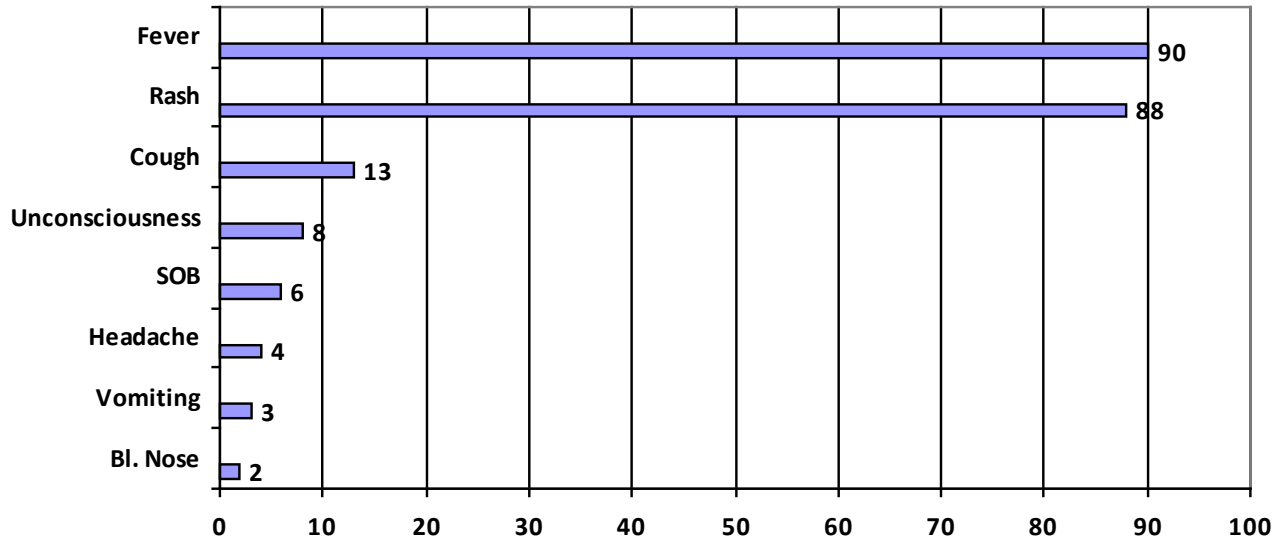


Figure 1: Presenting symptoms of cases.

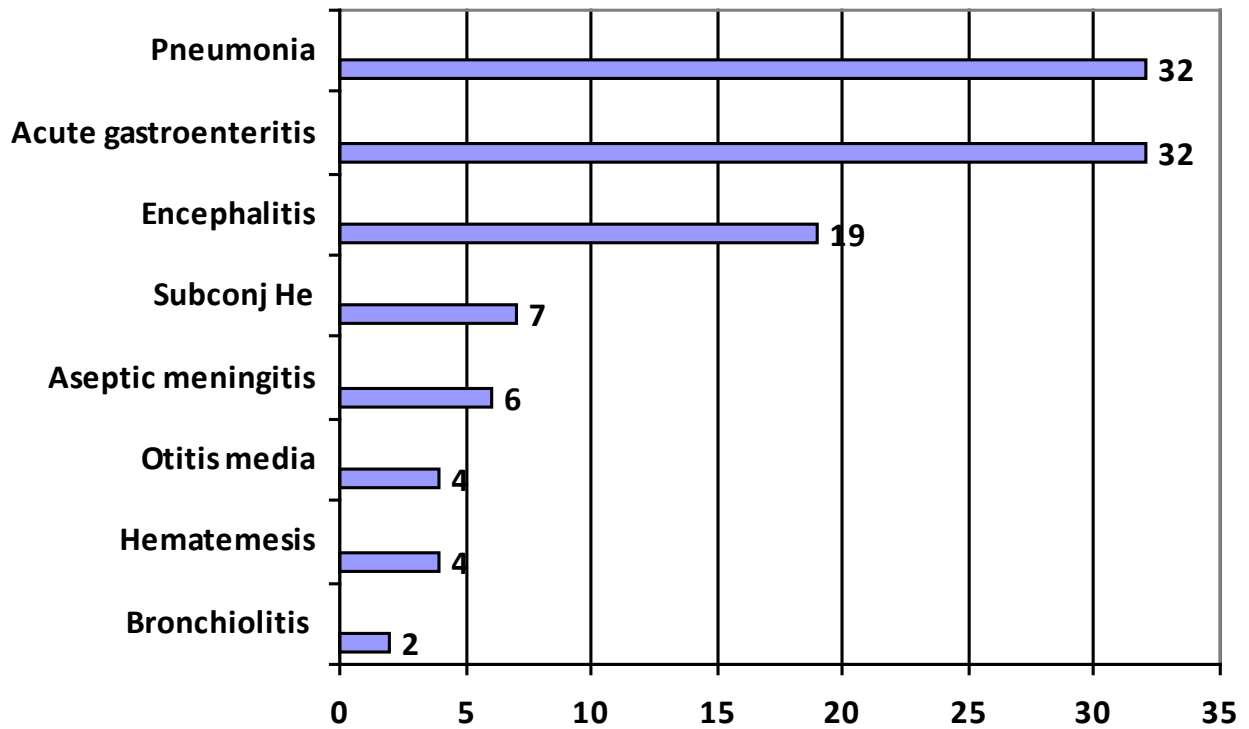


Figure 2: Incidence of complications.