



A PROSPECTIVE OBSERVATIONAL STUDY OF THE ROLE OF INTRAVENOUS IMMUNOGLOBULINS AND MANAGING CHILDREN WITH SEVERE DENGUE UNRESPONSIVE TO STANDARD WHO PROTOCOL

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Abstract: Dengue/severe dengue is a serious public health problem in Rayalaseema Districts of Andhra Pradesh. Plasma leaks producing shock, bleeds due to dysfibrinogenemia and severe Thrombocytopenia and end organ dysfunction including hepatitis, Myocarditis, encephalopathy/ encephalitis and ARDS contribute to mortality in Dengue. Majority of children respond to standard WHO protocol. Role of Iv Ig in severe dengue non responsive to standard WHO protocol was studied. Over a period of four years from 2010 jan to 2014 jan around 936 cases of dengue who are serologically positive for IgM and IgG were admitted. 779 children were responsive to standard WHO protocol and 157 were unresponsive. Out of 157 children Ivlg was administered to 97 children remaining 60 children did not receive Ivlg. Chi square analysis was done using 2x2 contingency table to know the statistical significance of Ivlg therapy. 157 children out of 936 children (16.77%) were unresponsive to who standard protocol. Out of 157 nonresponsive children to standard treatment, 97 children were administered Ivlg and in the rest 60 no Ivlg. The mortality as primary outcome was measured using chi square test. Chi square statistic is 7.0005. The 'P' value is 0.008149 which is statistically very significant. The role of Ivlg was studied in severe dengue unresponsive to WHO standard protocol. Ivlg is proved to have statistically significant value in decreasing the mortality in severe dengue.

Key words: Severe Dengue; Unresponsive to Standard WHO Protocol; Role of IVIG

INTRODUCTION

Dengue is a very common infectious illness affecting mostly children caused by four strains of dengue viruses (Dv1, Dv2, Dv3, Dv4). Dengue illness is easily treatable and potentially fatal. First time infection are called primary infections and subsequent ones are referred as secondary infection. Secondary infections are always due to strains other than primary infection. The IgG of past infection react with antigens of secondary infection leading to enhancing ag-ab complexes (2,3,4) which are responsible for clinical expression of severe dengue illness with plasma leaks, bleeds and end organ dysfunctions.

Majority of children respond to simple WHO standard protocols. A set of children with severe dengue unresponsive to standard WHO protocol was taken as study group.

MATERIALS AND METHODS

Study objective

To study the effect of Ivlg in severe dengue unresponsive to WHO standard protocol in relation to mortality.

Place of study

Department of paediatrics, Government General Hospital, Kurnool Medical College, Kurnool.

Time of study

January 2010 to January 2014.

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Type of study

Prospective observational study. Inclusion and exclusion criteria were as per WHO protocols.

After standard treatment was given children were categorized into responsive and nonresponsive as follows.

Children responsive to standard protocol.

- A) Improved interaction with parents
- B) Increased appetite.
- C) Increased urine output.
- D) Decreased respiratory rate.
- E) Increased pulse volume.
- F) Decreased abdominal girth.
- G) Decreased liver size and tenderness.

Children nonresponsive to standard protocol evidenced by

- A) Increased resp distress with low pulse volume.
- B) Increased resp distress with normal to high pulse volume.

Criteria to give Ivlg

- A) Nonresponsive children with increased resp distress with low pulse volume if continued to deteriorate even after two colloid boluses at 10ml/kg/hr were subjected to Ivlg treatment.
- B) Allocation of Ivlg group is at random



RESULTS

A total of 936 children with dengue were admitted. All of them were subjected to standard WHO protocol management. Out of 936 children 157 were unresponsive to standard protocol (16.77%) in the form of increased resp distress with decreasing pulse volume even after two colloid boluses at 10ml/kg/hr.

	Survived	Died	Marginal Row Totals
Ivlg	96 (92.68) (0.12)	1 (4.32) (2.56)	97
No Ivlg	54 (57.32) (0.19)	6 (2.68) (4.13)	60
Marginal column Totals	150	7	157 (Grand Totals)

The chi- Square statistic is 7.0005. The 'P' value is 0.008149. This result is significant at $P < 0.05$. Overall mortality in this study was 7 out of 936 children accounting for 0.75%. But the mortality in relation to severe dengue with Ivlg therapy is 1.03%. Which could have been 10% (6/60) without (1/97) Ivlg therapy.

DISCUSSION

We are able to document unresponsiveness of severe dengue to standard WHO protocol of management in 157 out of 936 children (16.77%) in the form of increased resp distress with low pulse volume.

Case fatality rate was found to be 8.3% in a study by Kamath *et al.*, from Chennai Agarwal *Et al.*, from New Delhi Projected mortality figure of 6% from Delhi. None of the previous studies reported the usefulness of Ivlg in this subset of children with severe dengue unresponsive to standard WHO protocol. Hence the comparison could not be made. Though Alejandria M *et al.*, and Rajapakse S *et al.*, studied role of Ivlg the no of study subjects were small.

CONCLUSIONS

- 16.77% of children were found to be up responsive to standard WHO protocol.
- Mortality was 1.03% in Ivlg group in nonresponsive children.
- Mortality was 10% in non Ivlg group in non-responsive children.

- Overall mortality in present study is 0.75%.

This is a large study involving 157 children not responding to standard WHO protocol. There was uniformity in management of dengue throughout Study period. All cases managed by same picu team using WHO protocol and Ivlg as indicated in material and methods. This is the 1st study to look into efficacy of Ivlg in unresponsiveness to standard WHO Protocol.

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