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Original Research

Assessment of the effect of high dose dexamethasone in dengue fever

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ABSTRACT:

Background: An estimated 50 million cases of dengue illness are reported each year, making it the virus that spreads the fastest in the world through mosquitoes. The present study was conducted to assess the effect of high dose dexamethasone in dengue fever. **Materials & Methods:** 60 suspected patients with dengue fever of both genderswere put in group I and control in group II. The patients were screened for Dengue NS1Ag, IgG ELISA, IgM ELISA, Quantitative Buffy Coat for the malaria parasite, the serology for enteric fever, scrub typhus, leptospirosis, Haemoglobin, Total leukocyte count, Differential leukocyte count, Platelet count, Haematocrit, Peripheral Blood smear and LFT. **Results:** T h e mean days illness in group I was 6.1 and in group II was 6.3. The mean haemoglobin was 13.2 g/dl in group I and 13.9 g/dl in group II. The mean hematocrit was 40.6 in group I and 39.2 in group II. The difference was non- significant (P> 0.05). The mean platelet counts at day 1 was 32345.6 and 29543.1, at day 2 was 56934.5 and 44501.2, at day 3 was 79420.5 and 75128.4 and at day 4 was 12623.4 and 11793.2 in group I and II respectively. The difference was non- significant (P> 0.05). **Conclusion:** A high dose dexamethasone regimen was not effective in achieving a higher rise in the platelet count in the acute stage of dengue fever.

Keywords: dengue, Haematocrit, Platelet

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INTRODUCTION

An estimated 50 million cases of dengue illness are reported each year, making it the virus that spreads the fastest in the world through mosquitoes. South-east Asia has a 1% case fatality rate, while concentrated outbreaks in India, Indonesia, and Myanmar have reported 3-5% rates.[1] Uncertainty surrounds the pathophysiology of thrombocytopenia in dengue fever (DF). The potential mechanism has been highly suspected to be the enhanced peripheral degradation of the antibody-coated platelets. The reticuloendothelial system's increased platelet destruction and acute bone marrow suppression, which results in a megakaryocytic state, are the other ways.[2]

A persistent symptom of dengue fever is thrombocytopenia, which frequently results in the potentially fatal Dengue Shock Syndrome (DSS) and Dengue Haemorrhagic Fever (DHF). The two deadly side effects of a dengue infection are circulatory collapse and hemorrhagic diathesis.[3] Common dengue symptoms include thrombocytopenia and bleeding tendencies, which worry both the patient and the treating physician.In order to address these deadly dengue infection consequences, efforts have been conducted worldwide to create novel therapeutic methods.[4] Idiopathic thrombocytopaenic purpura is treated with steroids to boost platelet counts, which are mediated by autoantibodies. This theory would back up the usage of steroids to treat dengue illness.[5]Studies evaluating the advantages and risks of corticosteroid therapy for thrombocytopenia in dengue infections are scarce in the literature. Numerous steroid regimens have been employed; some have produced positive results, while others have produced none.[6]The present study was conducted to assess the effect of high dose dexamethasone in dengue fever.

MATERIALS & METHODS

The study was carried out on 60 suspected patients with dengue fever of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. A thorough clinical examination was done.The patients were screened for Dengue NS1Ag, IgG ELISA, IgM ELISA, Quantitative Buffy Coat for the malaria

parasite, the serology for enteric fever, scrub typhus, leptospirosis,Haemoglobin, Total leukocyte count, Differential leukocyte count, Platelet count, Haematocrit, Peripheral Blood smear and LFT, were done in all patients. Patients were put in group I and control in group II. The study group received intravenous dexamethasone 8mg initially, followed by 4 mg every 8 hrs, thereafter for 4 days and IV fluids were given whenever they were required. The control Group received only IV fluids andantipyretics whenever necessary. Daily monitoring of the platelet count, temperature, pulse, BP, weight, fluid intake output chart, oedema, haematocrit value, blood glucose and electrolytes was done. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Haematological features

Features	Group I	Group II	P value
Days illness	6.1	6.3	0.94
haemoglobin (g/dl)	13.2	13.9	0.85
Hematocrit	40.6	39.2	0.62

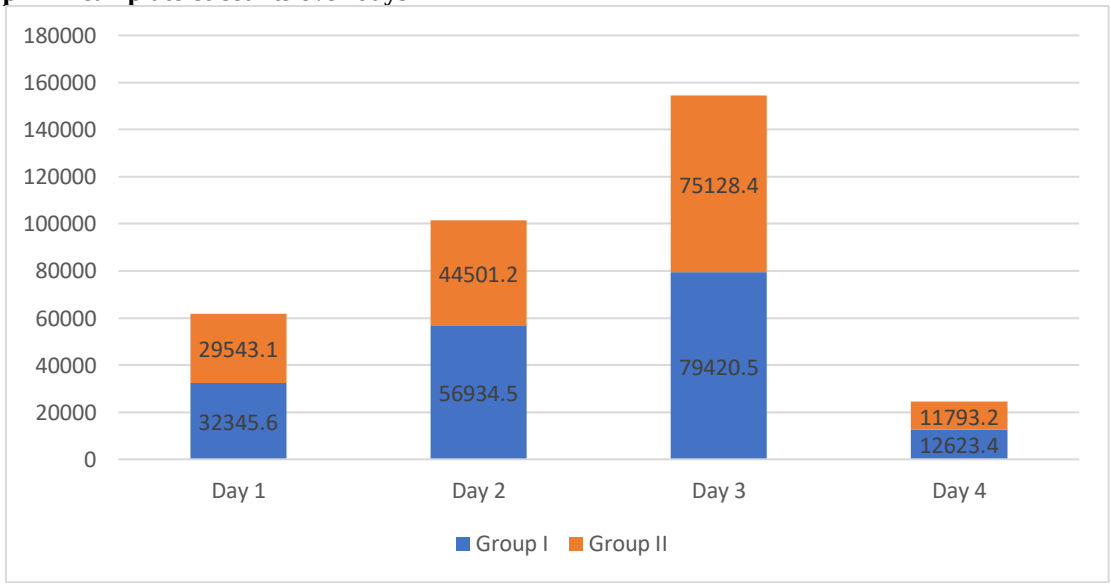
Table I shows that mean days illness in group I was 6.1 and in group II was 6.3. The mean haemoglobin was 13.2 g/dl in group I and 13.9 g/dl in group II. The mean hematocrit was 40.6 in group I and 39.2 in group II. The difference was non- significant (P> 0.05).

Table II Mean platelet counts over days

Days	Group I	Group II	P value
Day 1	32345.6	29543.1	0.82
Day2	56934.5	44501.2	0.75
Day3	79420.5	75128.4	0.16
Day4	12623.4	11793.2	0.24

Table II, graph I shows that mean platelet counts at day 1 was 32345.6 and 29543.1, at day 2 was 56934.5 and 44501.2, at day 3 was 79420.5 and 75128.4 and at day 4 was 12623.4 and 11793.2 in group I and II respectively. The difference was non-significant (P> 0.05).

Graph I Mean platelet counts over days



DISCUSSION

The Dengue infection results in significant morbidity and mortality worldwide. The current recommended treatment is largely supportive, with careful fluid replacement and with no specific treatment being available at present.[7,8] The common goal in treating these patients with severe thrombocytopaenia is to stabilize the platelet count, which will prevent the major risk of bleeding. Corticosteroids are potent anti-inflammatory agents that have a wide range of effects on the immunological processes.[9] Although corticosteroids are not mentioned in the WHO guidelines on the management of dengue, clinicians use corticosteroids empirically, based on the presumed immunological basis of the complications of dengue, particularly in the south east Asian countries. They are thought to be effective for stabilizing the capillary permeability and have been used in addition to the fluid replacement.[10]The present

study was conducted to assess the effect of high dose dexamethasone in dengue fever.

We found that mean days illness in group I was 6.1 and in group II was 6.3. The mean haemoglobin was 13.2 g/dl in group I and 13.9 g/dl in group II. The mean hematocrit was 40.6 in group I and 39.2 in group II. Shashidhara et al[11]tested whether an intravenous high dose dexamethasone waseffica cious in increasing the platelet count in acute stage ofdengue fever with thrombocytopenia.127 patients were screened for denguefever with thrombocytopenia (<50000/cumm) and 61patientswere randomly allocated, 30 to the study group and 31 tothe control group, in an open labeled study. The study groupreceived intravenous dexamethasone 8mg initially followed by4 mg every 8 h thereafter for 4 days and IV fluids wheneverrequired. The control Group received only IV fluids andantipyretics whenever it was indicated. The daily measurementof platelet count was carried out in all patients from the day ofenrolment to the fourth day of post treatment.The baseline data (age, sex, and the mean durationof the illness, Hb%, haematocrit, and platelets) were similar inboth the groups. The analysis of variance (ANOVA) statisticsshowed a significant linear association of the mean plateletcounts with the days in either group. The mean platelet countsincreased steadily in both the groups from days 1 to 4: day1(0.687), day2 (0.34), day3 (0.530) and day4 (0.844). There wasno significant difference between the two groups.

We found that mean platelet counts at day 1 was 32345.6 and 29543.1, at day 2 was 56934.5 and 44501.2, at day 3 was 79420.5 and 75128.4 and at day 4 was 12623.4 and 11793.2 in group I and II respectively. Kularatne SAM et al[12] in their study patients with thrombocytopenia (platelet count <50x10(9)/l) were allocated to the treatment and placebo groups using the sealed envelop method. The treatment group received an initial intravenous dose of 4 mg dexamethasone, followed by 2 mg doses every 8 h for 24 h, and the placebo group received normal saline. The primary outcome was the degree of mean platelet count rise.Each group comprised 100 patients and their baseline data and other variables (headaches, nausea, flush, temperature, pulse, blood pressure, haematocrit, white cell count and haemoglobin) were similar. The mean platelet count (x10(9)/l)increased steadily in both groups from day 1 to 4 and showed no significant difference between the two groups ($p>0.05$): day 1, 35 vs 35 ($p = 0.70$); day 2, 47 vs 43 ($p = 0.19$); day 3, 64 vs 59 ($p = 0.31$); day 4, 72 vs 78 ($p = 0.55$). Analysis of variance (ANOVA) statistics showed a significant linear association of mean platelet counts by days in either group ($p<0.001$). Regression analysis identified the day of the illness and patient age as the independent predictors of platelet count change.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that a high dose dexamethasone regimen was not effective in achieving a higher rise in the platelet count in the acute stage of dengue fever.

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