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Comparison of Prophylactic and Therapeutic Intravenous Magnesium Sulfate for Postspinal Shivering in Elective Ceasarean Section

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Abstract: ***Introduction: Cesarean sections are performed mostly under spinal anesthesia. Shivering is one of the distressing complications. Some patients find shivering sensation worse than the surgical pain. Therefore, both prevention and treatment of established shivering should be regarded as clinically relevant intervention in the perioperative period. Aim and Objectives: The aim of the study was to compare the efficacy of magnesium sulfate when used for prevention or treatment of shivering following spinal anesthesia in elective cesearean section. Material and Methods: A prospective, comparative study was done in 80 pregnant women aged between 18 and 35 years age, undergoing elective cesarean section under spinal anesthesia. Patients were categorized into 2 groups-Group P and Group T. Following intrathecal injection, Group P (prophylactic) was given MgSO4, 50 mg/kg I.V. bolus + 2 mg/kg/h infusion. Group T (therapeutic) was given MgSO4 50 mg/kg I.V. bolus as a therapy when shivering occurred. If shivering persisted, they received 25 mg/kg I.V. bolus. Shivering grade 3/4 was regarded as significant, incidence of shivering, and side effects were recorded. Results: The incidence of shivering was 40% in Group P, 60% in Group T. Total incidence of shivering was significantly low in Group P when compared to Group T. Hypotension was more frequent in Group P; nausea and vomiting were more in Group T. Conclusion: Magnesium sulfate significantly reduced the incidence of shivering when used as prophylaxis in pregnant women undergoing cesarean section under spinal anesthesia. Magnesium sulfate reduces the severity of the shivering.***

Keywords: MgSO4, Magnesium sulfate P-Prophylactic T- Therapeutic

1. Introduction

Cesarean sections are performed mostly under spinal anesthesia. Shivering is one of the distressing complications. Some patients find shivering sensation worse than the surgical pain. Therefore, both prevention and treatment of established shivering should be regarded as clinically relevant intervention in the perioperative period[2].

Aim and Objectives

The aim of the study was to compare the efficacy of magnesium sulfate when used for prevention or treatment of shivering following spinal anesthesia in elective cesearean section.

2. Materials and Methods

Study design: Prospective, comparative study was done in 80 pregnant women aged between 18 and 35 years age, undergoing elective ceasarean section under spinal anesthesia.

Study setting: Tertiary care hospital.

Study period: 6 months.

Inclusion criteria
Females aged 18-35 years.
Patients posted for elective caesarean section.
Surgery done under spinal anesthesia.

Exclusion criteria

Emergency caeserean section.

History of neuromuscular disorder, hepatic disease, renal disease.

Patients were categorized into 2 groups-Group P and Group T. Following intrathecal injection, Group P (prophylactic) was given MgSO4, 50 mg/kg I.V. bolus + 2 mg/kg/h infusion. Group T (therapeutic) was given MgSO4 50 mg/kg I.V. bolus as a therapy when shivering occurred. If shivering persisted, they received 25 mg/kg I.V. bolus. Shivering grade 3/4 was considered as significant, incidence of shivering, and side effects were recorded.

3. Results

Table 1: Incidence of shivering in both study groups

Severity of shivering	Group P	Group T
Grade 1	23(57.5%)	6(15%)
Grade 2	10(25%)	14(35%)
Grade 3	5(12.5%)	12(30%)
Grade 4	2(5%)	8(20%)
TOTAL	40(100%)	40(100%)

The most common age group found was 20 – 30 years (n= 53/80).

Incidence of shivering were 40%(n=16/40) among Group P , 60%(n=24/40) among Group T. P value was found to be insignificant(P 0.07).

Shivering was considered significant when the patient shivered at least to grade 3.Severity of shivering (grade 1,2) was more found in group P(n=33, 82.5%), whereas grade 3,4 was more in group T(n =20,50%). P value found to be significant (0.001).

Table 2: Side effects seen in both study groups

Side effects	Group P	Group T
Nausea and vomitings	6(15%)	8(20%)
Hypotension	15(37.5%)	2(5%)
Bradycardia	0	0

Nausea and vomitings were more found in group T (n=6,15%).

Hypotension seen more in group P (n=15, 37.5%).

4. Discussion

Post anesthesia shivering is very common following neuroaxial anesthesia[1].

In our study, shivering was found in 40% of patients in group P and 60% in group T was found similar to study done by Ibrahim et.al.The incidence of shivering was significantly reduced when magnesium was used as prophylactic drug for shivering compared to the therapeutic group. The mechanism by which magnesium reduces shivering remains unclear[1].Severity of shivering grade 3,4 was found more in group T(n =20,50%) and found to be significant (P 0.001).Minor side effects as hypotension found in group P whereas nausea, and vomiting were more frequent in the group T and found to be statistically significant. Preoperative magnesium sulfate infusion reduces the postoperative pain and requirement of analgesia in cesarean section. Magnesium sulfate as an antishivering agent was found to be as effective as pethidine, in middle-aged patients who underwent spinal anesthesia[2].

5. Conclusion

- Magnesium sulfate significantly reduced the incidence of shivering when used as prophylaxis in pregnant women undergoing cesarean section under spinal anesthesia. Magnesium sulfate reduces the severity of the shivering.
- It also proved to be an effective treatment when postspinal shivering occurred with minimal side effects.

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