Original Article

Incidence of postspinal hypotension during cesarean section

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A total of 200 cases were evaluated for post-spinal hypotension during caesarean section in TU teaching hospital Maharajgunj. Hypotension was reported in 76 (38%) cases. P value >0.05.The Maximum dose of mephentermin given was 30mg and minimum was 6mg. One patient had Spinal block as high as T1 sensory level. Another patient had severe drop of blood pressure followed by unrecorded blood pressure and pulse which was treated with endotracheal intubation, 100%oxygen and vasopressor (Mephentermine). Severe bradycardia (heart rate<40) was recorded in one patient. She was treated with Atropine 0.6mg IV The rest had the level of block between T6 - T4 sensory.

Introduction

Recently spinal anaesthesia has become very popular for obstetrical surgical procedures as it is associated with good maternal and foetal outcome. With the availability of smaller needle size with its blunt bevel, post-spinal headache and backache has been reduced to a minimum. Day care surgery is also becoming possible with use of spinal anesthesia both because of it needle size and availability of short acting drug like Xylocaine. Moreover use of spinal opiods has added advantages for post operative pain management. Although post-spinal hypotension has been observed in number of cases this problem has been resolved by the use of prophylactic fluid therapy, vasopressors and many others measures.

Spinal anesthesia is popular in many places for obstetrical surgeries such as caesarean section excluding patients with severe hypovolemia, coagulopathy, and valvular heart disease.

History

Dr. James in New York was the first person to give spinal anaesthesia for caeserian section as early as 1901. In Canada however the use of spinal anesthesia dates back to 1885. In 1940s Adriani and his associates standarised the safety technique of of spinal anesthesia which became popular later by 1950s.Supine hypotension syndrome was first described by Howard,Goodson,and Mengert in 1951[1]. Rapid administration of crystalloid solution to correct established hypotension was first advocated by Greiss and Grandell in 1965 and this has further added to the safety of spinal anesthesia.Complications such as severe headache, backache paraplegia cardiac arrest with ultimate death has been recorded in the past. Nowadays availability of many safety measures such as prehydration, positioning and vasopressors have all minimized the complications of spinal anesthesia which therefore has become more popular.

Materials and Methods

A retrospective study was carried out in T.U Teaching hospital Maharajganj.A total of 200 cases were studied over the period of four and half months (15- May –2005 to 31 August 2005). Incidence of post-spinal hypotension was studied in both the elective and emergency cases.All the cases were preloaded with 300 - 500 ml of ringer lactate solution. Subarachnoid block was made with 2.5ml 0.5% heavy Bupivacaine at L3 – L5 spinal level, with 25G spinal needle in sitting position.Left lateral tilt of operating table was made to avoid aorto-caval compression. Hypotension was defined as systolic pressure < 90mmHg or reduction in > 30% from the base line pressure[2]. Hypotension was treated with rapid IV fluid therapy and vasopressor (mephentermine). Blood pressure was monitored every 2 minutes for initial 10 minutes, afterward every 5 minutes till the surgery was over. Bradycardia was treated with 0.02mg/kg of Atropine IV. Targated level of block was T6 – T4 sensory. Pattern of block was tested with pinprick for sensory, hot or cold for sympathetic and movement for motor. All the patients were given 3L of oxygen till the delivery of baby and patients were monitored with ECG, BP, pulse and oxygen saturation. All the patients were given 5-10 units of syntocinon immediately after delivery of baby.

Results

In this study the incidence of post-spinal hypotension was found to be 38%. In case hypotension occurred they were treated with rapid fluid therapy and IV administration of Mephentermine. Maximum dose of Mephentermine 30 mg was administered in 2 cases, while 6 mg received by 28 patients and 24 patients were administered 12mg of Mephentermine and remaining 13 and 9 patients were given 18mg and 24mg of Mephentermine respectively.

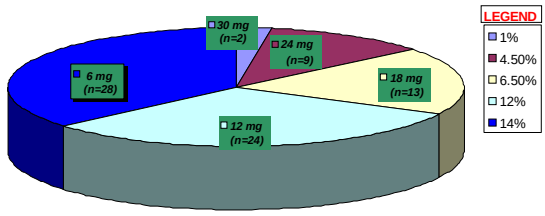

fig (i)
Post Spinal Hypotensive Patients who received Vasopressor mephentermine in 38% cases (n= 76)

Level of spinal block was reached upto T1 sensory in one patient while other 6 patients had upto T4 sensory. One patient had severe bradycardia with heart rate of <40. She was treated with IV administration of 0.6mg atropine. Severe fall of blood pressure was seen in one patient which later was unrecordable and so also the pulse. She was intubated , 100% oxygen was given and vasopressor and fluid therapy administered instantly. By the time she was recovered., no further comlications were noticed.. Regarding the incidence of post-spinal hypotension is concerned our result is similar to result obtained by Rocke DA. Rout CC [3], where the incidence was 30 percent in the patients who were administered prophylactic crystalloid therapy. As high as 83 percent of spinal hypotension has been reported without any prophylactic measures[3].

Discussion

A total of 200 cases of cesarean section were studied for the occurrence of post-spinal hypotension. Among them 78 cases (38 percent) had fall in blood pressure, and needed vasopressor with increased fluid therapy. Various studies have shown different incidence of spinal hypotension. Without preventive measures, the incidence of hypotension has been reported as high as 82 percent. However patients who received prophylactic fluid loading and lateral displacement showed a decrease incidence of hypotension to 53 percent but it did not abolish the problem altogether[4]. In contrast Rehydration with 1000 ml of Ringer lactate solution infused rapidly over 15 – 30 minutes before induction of anesthesia with left uterine displacement was not associated with hypotension[5]. On the other hand it was reported that incidence of hypotension has been seen upto 83 percent for the past 25 years[3]. Left uterine displacement and volume pre-loading has been the corner stone for the prevention of hypotension. Crystalloid therapy however is not sufficient to prevent hypotension and the incidence remains still 30 percent. This study is similar with our study that shows 38% incidence of hypotension even with crystalloid therapy. On the other hand, some study shows that volume preloading is not essential to prevent spinal induced hypotension at caesarean section, where there was no significant difference in hypotension between volume preloaded and without preloaded[2.] Similarly other study demonstrated that rapid infusion of crystalloid 20ml /kg over 10- 20 minutes did not affect in the incidence of hypotension. They found 55 percent hypotension in volume preloaded whereas 71 percent in those not preloaded[6].

By comparing the incidence of spinal hypotension in the studies done by Rocke DA, Rout CC, the result in our study is not statistically significant. But those patients given prophylactic fluids for prevention of hypotension were seen to have a significant difference

To summarise studies have revealed that the Incidence of post-spinal hypotension during caeserian section is very high unless prophylactic measures are taken. It is as much as to > 8o %.,with prophylactic measures to as low as zero percent.Use of fluid prealoading helps improving sympathetic block as well as utero-placental circulation[7]. Similarly Use of vasopressor specially Ephedrine helps preventing nausea vomiting and improving uterine blood flow[8.] Use of Metochlopramide 10mg IV has reduced the incidence of nausea and vomiting from 81 percent to 14 percent[9.]

Conclusion

The incidence of Post-spinal hypotension during caesarean section is very high unless prophylactic measures are taken. The use of fluid preloading, vasopressures, left uterine displacement, application of elasticated Esmarch bandage, and leg raising all have been seen to be effective in preventing post-spinal hypotension and with a good maternal and foetal outcome. Hypotension is not deleterious to mother and foetus if it is corrected within a short period of time of 2 minutes.

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