

Original Research Article

Study Of Intravenous Dexamethasone In Laparoscopic Cholecystectomy In Reducing Postoperative Nausea, Vomiting And Pain.

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ABSTRACT

Background: Dexamethasone has been reported to reduce the incidence of post operative nausea, vomiting and pain in patients undergoing various surgical procedures including laparoscopic cholecystectomy. Very few randomized clinical trials have addressed the effect of the administration of a preoperative single dose of a glucocorticoid on surgical outcome.

Aim: The aim of this study was to investigate whether a single dose of dexamethasone before surgery would improve nausea, vomiting and pain in patient undergoing laparoscopic cholecystectomy.

Methods: 100 Patients were randomly selected and were assigned to two groups D1 and D2. D1 group consisted of patients who were given 8 mg of dexamethasone immediately before the surgery and D2 group was given normal saline 5 ml and the incidence of post operative nausea, vomiting and pain in both groups was assessed at 6, 12 and 24 hrs. Administering dexamethasone at the time of induction reduced the postoperative nausea, vomiting, pain, the need for antiemetic, analgesic and patient discomfort which helps in early recovery, ambulation, and timely discharge, besides reducing financial implications to the patient and to the hospital as well.

Conclusion: This study concludes that preoperative dexamethasone (8 mg) reduced pain, nausea and vomiting in patients undergoing laparoscopic cholecystectomy, when compared with placebo, and is recommended for routine use.

Keywords:-Dexamethasone, Postoperative nausea, vomiting and pain, laparoscopic cholecystectomy.

INTRODUCTION

Laparoscopic cholecystectomy (LC) is one of the most common, popular and accepted procedure for the patients with symptomatic cholelithiasis. It has many advantages like keyhole incision, better cosmetic results, short postoperative hospital stay, decreased morbidity, cost effective and early return to work. The origin of postoperative nausea, vomiting and pain after laparoscopic cholecystectomy is not entirely clear. Female sex, prolonged carbon dioxide insufflation, length of procedure, use of nitrous oxide, the utilization of slightly hypoxic mixtures during anesthesia and postoperative opioid administration have been suggested as potential risk factors. Dexamethasone

has been reported to reduce the incidence of post operative nausea, vomiting and pain in patients undergoing various surgical procedures including laparoscopic cholecystectomy.(1) Dexamethasone is a potent synthetic member of the glucocorticoid class of steroid hormones. It acts as an anti-inflammatory and immunosuppressant.(2) Its potency is about 20-30 times that of hydrocortisone and 4-5 times of prednisone.(3) Accordingly, it is worthwhile to study the effect of dexamethasone on post operative nausea, vomiting and pain.(4)

Dexamethasone has been reported to reduce the incidence of post operative nausea, vomiting and pain in patients undergoing various surgical procedures including laparoscopic cholecystectomy (5). Very few randomized clinical trials have addressed the effect of the administration of a preoperative single dose of a glucocorticoid on surgical outcome (6).

MATERIALS AND METHODS

The main study was conducted in SMHS Hospital, an associated hospital of Government Medical college Srinagar, from December 2020 till May 2022. After approval from the hospital ethical committee, 100 patients with ASA I & II were included in the study which were randomly selected and were assigned to two groups D1 and D2. D1 group consisted of patients who were given 8 mg of dexamethasone intravenously immediately before the surgery and D2 group was given normal saline 5 ml. All selected patients were asked for detailed history including age, chief complaints, personal history, associated disorders (Diabetes, hypertension, thyroid dysfunction, past surgery, allergy etc). A complete physical and systemic examination was done. All baseline and other relevant investigations were done for confirmation of diagnosis. Patients were observed for any episodes of nausea, vomiting, pain, need for rescue antiemetic, and complete responses in the postoperative period. The complete response was defined as no nausea, no vomiting, and no need for anti emetic medication during 24-h postoperative period.

The outcome of this study was assessed by following factors:

The incidence of post operative nausea, vomiting and pain in both groups assessed at 6, 12 and 24 hrs.

Total requirement for antiemetic and analgesics in both groups.

Exclusion criteria:

Patients with history of motion sickness, migraine, Pregnant and lactating females, Immunocompromised patients, Patients with any acute infection, terminally ill patients or with any co- morbid conditions and Emergency cases were excluded from the study.

Conflict of Interest: Nil

Funding: Nil

RESULTS

Study population was comparable with regard to age, sex, weight and ASA class [Table 1].

Table.1: Demographic profile of the study population:-

<i>variables</i>	<i>Group D1N=50</i>	<i>Group D2 N=50</i>	<i>P Value</i>	<i>Remarks</i>
<i>Age (years)</i>	<i>44.5±15.254</i>	<i>43.9±13.316</i>	<i>0.648</i>	<i>NS</i>
<i>Gender M/F</i>	<i>34/16</i>	<i>36/14</i>	<i>0.73</i>	<i>NS</i>
<i>Weight</i>	<i>63.50±8.89</i>	<i>42.67±10.74</i>	<i>0.82</i>	<i>NS</i>
<i>ASA I/II</i>	<i>40/10</i>	<i>39/11</i>	<i>0.431</i>	<i>NS</i>
<i>Duration of surgery</i>	<i>47.50±11.92</i>	<i>45.80±10.93</i>	<i>0.652</i>	<i>NS</i>

NS-not significant

In D1 group nausea was present in 25 patients and absent in 25 cases at 6hrs .In D2 group nausea was present in 37 cases and absent in 13 cases only .The result of the study is significant both numerically as well as statistically. Since the p value derived was 0.013 which is lower than 0.05 hence statistically significant. However at 12 and 24 hrs we did not find any statistical difference between the two groups .At 12 hrs in D1 group only 9 patients had nausea and was absent in 41 patients as compared to D2 group in which nausea was present in 14 cases and absent in 36 cases but result were not statistically significant. At 24 hrs no patient had nausea in D1 group and in D2 group only one patient had nausea .Thus we can conclude that dexamethasone can be recommended for the use of reducing post operative nausea.

Table 2: Postoperative nausea among the study population

Nausea	Group D 1	Group D2	P value
6 Hrs	25	47	<0.001
12 hrs	9	14	<0.001
24 Hrs	0	01	>0.001

Vomiting was assessed at 6,12 and 24 hrs .In D1 group out of total 50 patients vomiting was absent in 34 cases and present in 16 patients .In D2 group it was present in 23 and absent in 27 cases, so study at 6hrs was not significant. At 12 and 24 hrs p value was derived and fishers exact test applied at 24 hrs again showed results to be insignificant.

Table 3: Postoperative vomiting among the study population

Vomiting	Group D 1	Group D2	P value
6 Hrs	16	23	>0.001
12 hrs	5	7	>0.001
24 Hrs	0	0	>0.001

Pain in the work up was categorized into four grades as per the verbal rating scale as mild, moderate, severe and none .The pain scale was totally subjective. Some patients could not tolerate moderate pain and rescue analgesics were used and for others it was tolerable and hence no rescue medication was given. At 6 hrs after the surgery 23 cases had mild pain, 22 had moderate pain, one patient had severe pain and 4 cases had no pain in D1 group. In D2 group 18 cases had mild, 28 had moderate pain, 4 patients had severe pain and none of the patients was pain free. The p value derived was 0.68, the value is close to statistically being significant. In total pain was present in 46 cases in D1 group and in all cases in D2 group at six hours. More patients had mild tolerable pain in D1 group than in D2 group. At 12 hrs 13 patients were pain free, 31 had mild pain, and 6 had moderate pain in D1 group. In group D2, 33 patients had mild pain, 5 had moderate pain and 12 patients were pain free. It can be observed that none of the patients had severe pain in both the groups at 12 hrs thus effect of dexamethasone at 12 hrs was statistically insignificant. At 24 hrs none of the patients had either moderate or severe pain in D1 group, 12 had mild pain and 38 were pain free. In D2 group, 7cases had mild pain and 43 had no pain. The result was statistically insignificant as p value was 0.202 which is greater than 0.05.

Table 3: Postoperative pain among the study population

pain	Group D 1	Group D2	P value
6 Hrs	16	23	>0.001
12 hrs	5	7	>0.001
24 Hrs	0	0	>0.001

Rescue anti emetics: There was a need for rescue anti emetics in 9 cases among D1 group, while as in D2 group 17 required anti emetics. The p value derived was 0.68 which is close to statistically significant 0.05 [Fig 1].

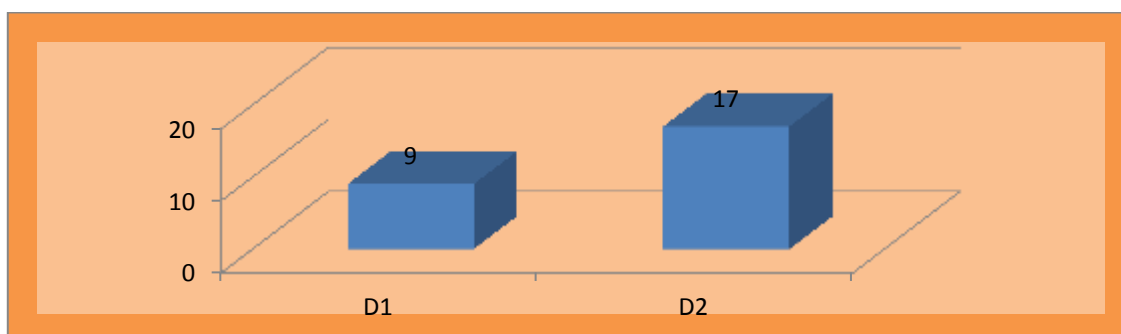


Fig 1

Rescue analgesics: In 28 % of cases rescue analgesics were given in group D1 as compared to 66% (33 cases)in D2 group, the p value derived was highly significant [Fig 2].

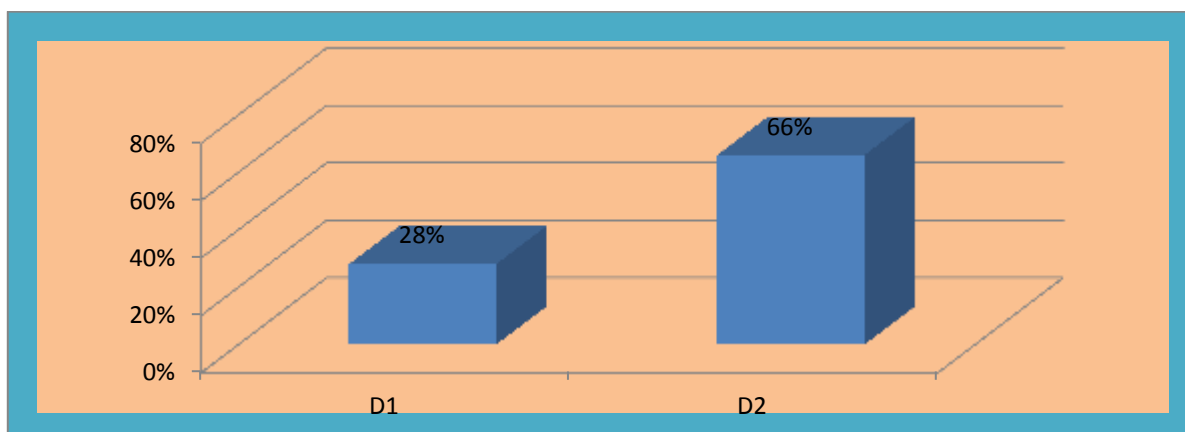


Fig 2

DISCUSSION

Preoperative dexamethasone has been well documented to have significant effect in reducing post operative nausea, vomiting and pain.(7) This prospective study was conducted to evaluate the effectiveness of dexamethasone in reducing post operative nausea, vomiting and pain. The study was confined to elective laparoscopic cholecystectomy. These cases are amply available in our hospital. Giving dexamethasone at the time of induction reduces the need for antiemetics, analgesics and ameliorates patient discomfort which helps in early recovery and ambulation, and timely discharge, besides reducing financial implications to the patient.(8) Despite numerous publications and guidelines, post operative nausea and vomiting is still the most common reason for poor patient satisfaction in the postoperative period.(9) There are many reasons for this; lack of understanding of the mechanisms involved, difficulties in estimating the risk in individual patients, lack of a 'gold-standard' anti-emetic intervention, and variability of dose-response relationships for current interventions. In an attempt to avoid post operative nausea and vomiting, there is an inclination to provide all patients with anti-emetic prophylaxis. Another common practice is to only treat patients once they become symptomatic. Treatment of established nausea and vomiting, however, has been demonstrated as inferior to prophylaxis.

CONCLUSION

Nausea, vomiting and pain in the postoperative period in elective laparoscopic cholecystectomy significantly increase the morbidity to the patient, besides having the financial burden to the patient and the hospital. Thus many attempts are made to reduce the post operative nausea, vomiting and pain. Among these methods the use of intravenous dexamethasone at the time of induction has significantly reduced the nausea, vomiting and pain in the postoperative period of the patient thus helping in reducing the postoperative hospital stay, decreased morbidity, making the surgery cost effective and early return to job. The conclusion of the study was that preoperative Dexamethasone (8 mg) reduced pain, nausea and vomiting in patients undergoing Laparoscopic cholecystectomy, when compared with placebo, and is recommended for routine use.

REFERENCES

1. Wang JJ, Ho ST, Liu HS, Ho CM. Prophylactic antiemetic effects of dexamethasone in woman undergoing ambulatory laparoscopic surgery. *BJA*.2000;84:459–62.
2. Bisgaard T, Klarskov B, Kehlet H, Rosenberg J. Preoperative dexamethasone improves surgical outcome after laparoscopic cholecystectomy-a randomized double blind placebo controlled trial. *Ann Surg*. 2003;238:651–60.
3. Wang JJ, Ho ST, Uen YH, Lin MT, Chen KT, Huang JC, et al. Small dose dexamethasone reduces nausea and vomiting after laparoscopic cholecystectomy- a comparison of tropisetron with saline. *Anaesth Analg*. 2002;95:229–32.
4. Henzi I, Walder B, Tramer MR. Dexamethasone for prevention of postoperative nausea and vomiting: A quantitative systemic review. *Anaesth Analg*. 2000;90:186–94.
5. Wang JJ, HO ST, Liu YH, Lee SC, Liu YC, Liao YC, et al. Dexamethasone reduces nausea & vomiting after laparoscopic cholecystectomy. *BJA*.1999;83:772–5.
6. Callery MP. Preoperative steroids for laparoscopic surgery. *Ann Surg*.2003;238:661–2.
7. M. A. Daabiss: Ephedrine- Dexamethasone Nausea and Vomiting in Patients Undergoing Laparoscopic Cholecystectomy *The Internet Journal of Anesthesiology*. 2008 Volume 18 Number1
8. Fujii Y, Saitoh Y, Tanaka H. Ramosetron vs. granisetron for the prevention of postoperative nausea and vomiting after laparoscopic cholecystectomy. *Can J complication Anaesth* 1999;46:991–3.
9. Bisgaard Thue; Klarskov Birthe; Kehlet Henrik; Rosenberg Jacob Preoperative dexamethasone improves surgical outcome after laparoscopic cholecystectomy: a randomized double-blind placebo-controlled trial.*Ann Surg*. 2003 Nov; 238(5): 651–660.