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ROLE OF CARBOHYDRATE DRINK IN ELECTIVE SURGERIES UNDER GENERAL ANAESTHESIA FOR ENHANCED AND EARLY RECOVERY

Dr. Yashasvini Lawania - Postgraduate Resident, Department Of Anaesthesia, Peoples Medical College And Research Centre, Bhopal.

Dr. Shalini Sahu - Assistant Professor, Department Of Anaesthesia, Peoples Medical College And Research Centre, Bhopal.

Dr. Abhilekh Jain - Professor, Department Of Anaesthesia, Peoples Medical College And Research Centre, Bhopal.

Dr. Mahima Batra - Professor & HOD, Department Of Anaesthesia, Peoples Medical College And Research Centre, Bhopal.

Abstract

Aim is to compare the role of giving carbohydrate drink preoperatively to a group of patients undergoing elective surgeries under general anaesthesia in preventing postoperative nausea and vomiting, return of gut motility and duration of hospital stay with a group of patients not receiving the carbohydrate drink. With objectives of :-

1. To study the efficacy of carbohydrate drink given preoperatively in prevention of postoperative nausea and vomiting, return of gut motility and number of days of stay in hospital of the patient.

2. To study that the carbohydrate drink does or does not have any side effects postoperatively.

3. To compare the effects of the carbohydrate drink on the group of patients undergoing elective surgeries under general anaesthesia receiving it to the group of patients undergoing elective

surgeries under general anesthesia not receiving it.

INTRODUCTION

Patients requiring surgical procedures are often asked to stop eating and drinking for several hours before the procedure. This is due to concerns that such patients are at risk of lung damage caused by stomach contents entering their lungs while they are asleep (aspiration of gastric contents called Mendelson's syndrome).

However, fasting patients for long periods of time can lower their ability to heal well and slow their recovery from surgery. Fasting increases anxiety levels and leads to poor patient satisfaction with the care received.

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Recent studies have shown that allowing patients to drink clear, easily absorbed sugar rich liquids (carbohydrate drinks) until two hours prior to their anaesthetic dose, does not expose them to extra risks while preventing the deleterious effects of starvation.

Carbohydrate drinks with a few other measures aimed at facilitating early recovery after surgeries are collectively termed Enhanced recovery after surgery (ERAS). The benefits and safety of enhanced recovery have been demonstrated in patients undergoing gastrointestinal surgeries have been widely adopted.

200 ml of this carbohydrate drink consists of pre-biotic inulin and antioxidants, zinc, selenate and it is free from gluten, lactose, fat and proteins.

Materials and Methods

Patient posted for elective surgical procedure under general anaesthesia will be selected for the study.

After taking consent for study protocol patient will be registered for study. Data will be collected by an independent person and entered in the attached patient proforma.

Patients will be allocated into 2 groups including Control groups (P), Study groups (C).

Odd IPD number- For placebo drink

Even IPD number –For carbohydrate drink

Control group ‘P’(n=30): In control group we will give a placebo drink of same amount as the carbohydrate drink to the patients 2 hrs prior to the surgery.

Study group ‘C’(n=30): In study group we will give 200 ml of carbohydrate drink to the patients 2 hrs prior to the surgery.

Apparatus and materials required are carbohydrate drink solution, placebo drink solution, detailed history, clinical examination and blood investigations.

Methodology

One day before surgery, all patients will receive a pre-anesthetic evaluation by the anesthesiologist. The night before surgery, patients will be counselled by the anaesthesiologist that they will be given a solution to drink 2 hrs before the start of their surgical procedure. Patients will be randomly allocated in 2 groups, study group and control group (C and P) in double blinded manner. Both groups will be otherwise kept nil per oral (nothing by mouth) after 10:00 p.m. Then on the day of surgery control group will be given 200ml of placebo drink and study group will be given 200ml of carbohydrate drink 2 hrs prior to the start of the surgical procedure. Upon arrival in the operation theatre, intravenous fluids will be started; monitors for electrocardiogram, pulse-oximeter, and non-invasive

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blood pressure (NIBP) will also be connected and set at monitoring mode. Patients will be premedicated with an injection of ondansetron (0.15mg/kg), midazolam (0.05 mg/kg) , glycopyrrolate (0.2 mg) ranitidine (50mg) and fentanyl (2mcg/kg).

For induction injection Propofol (2-2.5mg/kg) will be used. All patients will receive a succinylcholine (2 mg/kg) injection for relaxation and then will be intubated with an appropriate size endotracheal tube. Anesthesia will be maintained with nitrous oxide (N_2O) (50%) and Isoflurane in oxygen. Patients will be given intermittent positive pressure ventilation to maintain end-tidal carbon dioxide ($EtCO_2$) between 30 and 35 mmHg. Parameters will be monitored at 10 min intervals included heart rate (HR), BP, $EtCO_2$, SpO_2, and urine output (UO). Muscle relaxation will be maintained with an injection of Vecuronium (0.05 mg/kg). Routine prophylaxis will be performed with intravenous injection of Ceftriaxone (1 g). Once the surgical procedure will be completed, Isoflurane and nitrous oxide will be discontinued and the patient will be ventilated with 100% oxygen. Patients will be reversed with injections of neostigmine (0.05 mg/kg) and glycopyrrolate(0.4mg/kg). They will be extubated, then patients will be transferred to a post-anesthetic care unit (PACU). Once adequate recovery will be achieved, the patients will be transferred to the department wards.

Assessment Plan

Postoperatively, all patients will be assessed at the PACU and department wards for episodes of nausea, vomiting, return of gut motility and duration of hospital stay at intervals of 0-1, 1-3, 3-6, 6-12 and 12-24 hours and 1-2 days. Complains of PONV will be identified by spontaneous complaints from patients or by direct questioning. The patients will be observed for 24 hours postoperatively for PONV and 1-2 days for return of gut motility and further till discharge for duration of hospital stay and the incidence of complete response and side effects.

The severity of nausea and vomiting will be assessed by verbal analog scoring (VAS) as:

*Score 0 (no nausea or vomiting),

*Score 1 (nausea),

*Score 2 (retching or mild vomiting),

*Score 3 (two or more vomiting in 30 min duration).

Return of gut motility will be assessed by auscultation of bowel sounds as:-

*Score 0 (normal bowel sounds)

*Score 1 (hypoactive bowel sounds)

*Score 2 (no bowel sounds)

Hours of stay in the recovery room/ICU before shifting to the ward :-

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*Score 0 (2-4 hours)

*Score 1 (4-6 hours)

*Score 2 (6-8 hours)

*Score 3 (>8 hours)

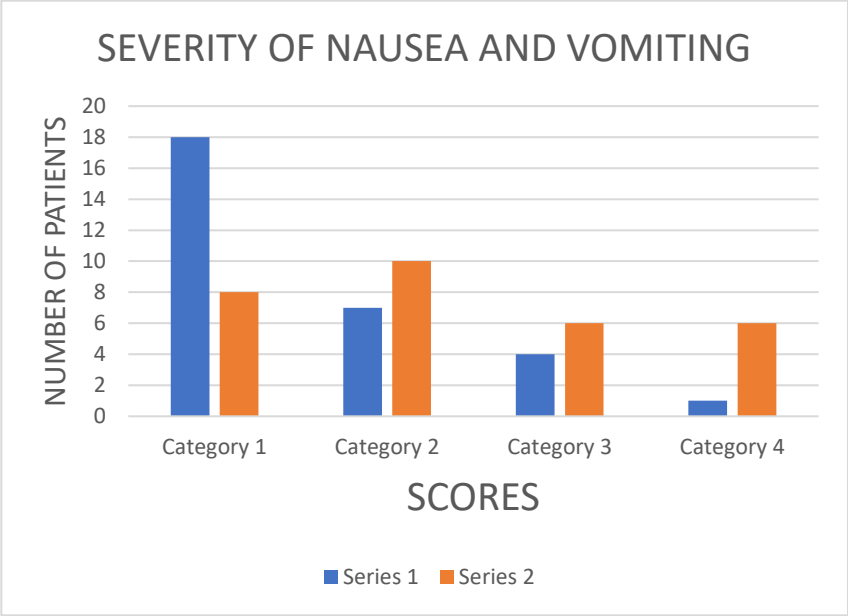
- Scale for assessment (after adding the above observed results):-

*Score <3 - Excellent recovery

*Score 3-5 - Satisfactory recovery

*Score 5-8 - Delayed recovery

Results



Category 1- Score 0 i.e., No nausea or vomiting
Category 2- Score 1 i.e., Nausea
Category 3- Score 2 i.e., Retching or mild vomiting
Category 4- Score 3 i.e., Two or more vomiting in 30 minutes duration

SCORES	GROUP 'C' (n=30)	GROUP 'P' (n=30)
SCORE 0	18 (60%)	8 (26.6%)
SCORE 1	7 (23.3%)	10 (33.3%)

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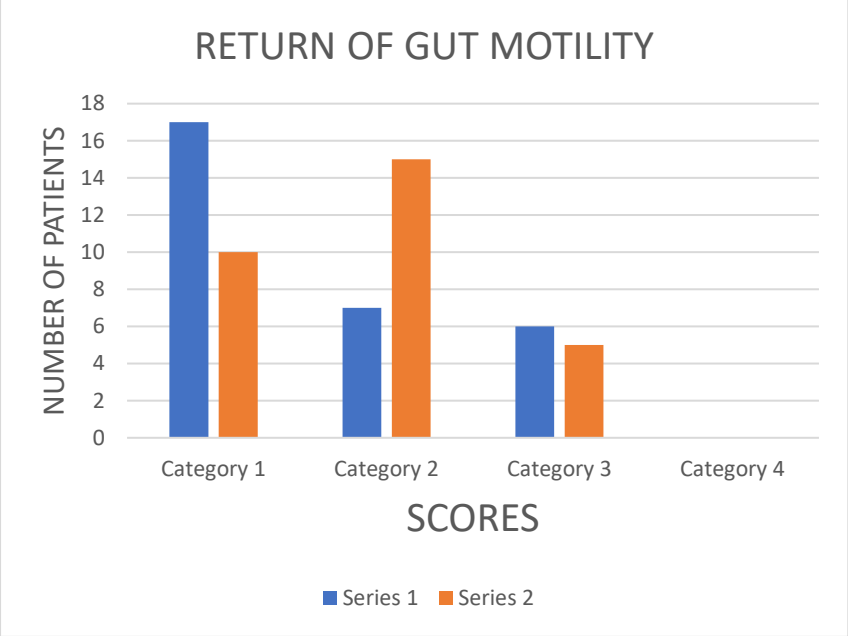
SCORE 2	4 (13.3%)	6 (20%)
SCORE 3	1 (3.33%)	6 (20%)

Series 1- Group 'C' - Study Group (n=30) Series 2- Group 'P' - Placebo Group (n=30)



Category 1- Score 0 i.e., Normal bowel sounds
Category 2- Score 1 i.e., Hypoactive bowel sounds
Category 3- Score 2 i.e., No bowel sounds

SCORES	GROUP 'C' (n=30)	GROUP 'P' (n=30)
SCORE 0	17 (56.6%)	10 (33.3%)
SCORE 1	7 (23.3%)	15 (50%)
SCORE 2	6 (20%)	5 (16.6%)

Series 1 - Group 'C'- Study Group (n=30)
Series 2- Group 'P'- Placebo Group (n=30)

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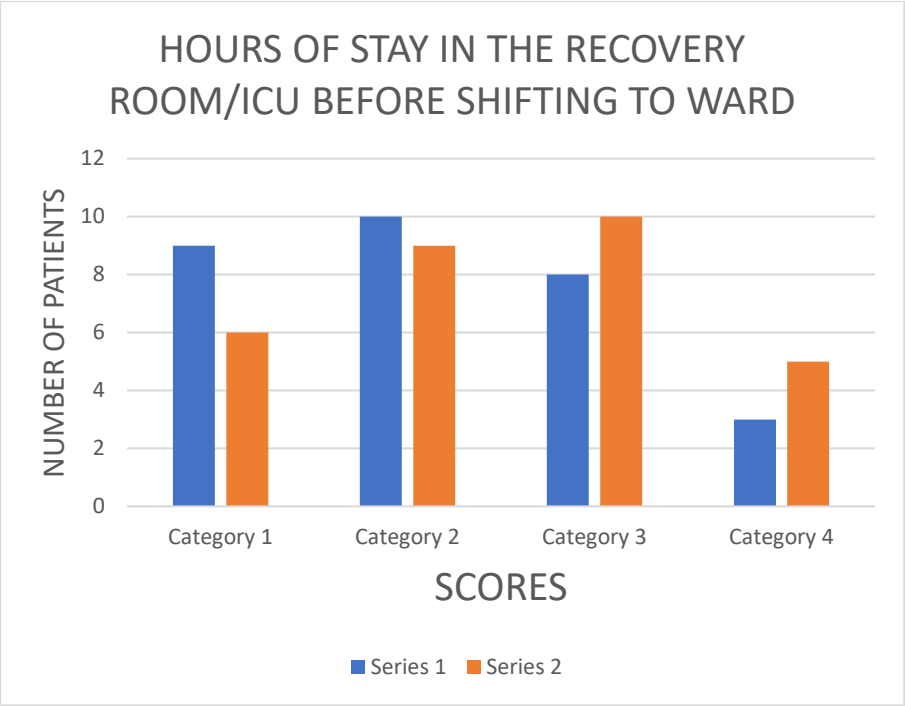

Category 1- Score 0 i.e., 2-4 hours
Category 2- Score 1 i.e., 4-6 hours
Category 3- Score 2 i.e., 6-8 hours
Category 4- Score 3 i.e., >8 hours

SCORES	GROUP 'C' (n=30)	GROUP 'P' (n=30)
SCORE 0	9 (30%)	6 (20%)
SCORE 1	10 (33.3%)	9 (30%)
SCORE 2	8 (26.6%)	10 (33.3%)
SCORE 3	3 (10%)	5 (16.6%)

Series 1- Group 'C'- Study Group (n=30)
Series 2 - Group 'P'- Placebo Group (n=30)

DISCUSSION AND CONCLUSION

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The two groups were compared for elective surgeries under general anaesthesia, we observed that group 'C' i.e., the group that received carbohydrate drink had less post operative nausea and vomiting, early return of gut motility and lesser hours of recovery room/ICU stay as compared to group 'P' i.e., the group that did not receive the carbohydrate drink.

Carbohydrate drink therefore helps in enhanced and early recovery of patients undergoing surgeries under general anaesthesia. Hence, it can also be used in patients undergoing surgeries under regional anaesthesia.

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