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TO STUDY & COMPARE THE EFFECT OF CERVICAL EPIDURAL ANAESTHESIA WITH GENERAL ANAESTHESIA IN PATIENTS UNDERGOING SURGERY FOR CARCINOMA BREAST.

Anaesthesiology

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ABSTRACT

Background: To compare the effects of Cervical Epidural Anaesthesia (CEA) with General Anaesthesia(GA) In Patients Undergoing Surgery for Carcinoma Breast. This surgery can be done under general anaesthesia or regional anaesthesia.

Methods: In prospective randomized fashion, 60 patients were selected for Radical Mastectomy in 2 groups. These were assigned to regional anaesthesia i.e. cervical epidural anaesthesia group(30 patients) & general anaesthesia group(30 patients) respectively. We compared the efficacy of CEA in terms of pulmonary & hemodynamic parameters, quality of block & complications & compared it with general anaesthesia.

Results: Out of 30 patients in CEA group, 3 patients had transient bradycardia & hypotension. 2 patients had insufficient anaesthesia. No other major complications were noted. Patients undergoing GA had continuous tachycardia & increased BP throughout the surgery. The intra operative surgical field was dry in the CEA group as compared to the GA group. The side effect profile was also comparable between the 2 groups with little higher incidence of nausea & vomiting in the GA group post operatively. Patients in this group also complained of pain & demanded "Rescue Analgesia" earlier compared to the CEA group.

Conclusion: We conclude that Cervical Epidural route can be safely used for CA Breast surgeries in view of good pulmonary & hemodynamic functions. It also gives a dry surgical field, adequate post- operative analgesia & less PONV compared to GA.

KEYWORDS

Cervical Epidural Anaesthesia, CA Breast surgeries, Anaesthesia technique.

Introduction:

Carcinoma Breast surgeries are conventionally performed under General Anaesthesia(GA). With the rising concern for GA related implications on cardio-respiratory, metabolic &immune status of the patient, regional anaesthesia technique is being preferred worldwide. Cervical epidural anaesthesia (CEA) using local anesthetics (LA) is a well established technique for the surgeries in the neck, chest and upper arms.

Methodology:

The study was conducted at Yashwantrao Chavan Hospital after getting approval from the appropriate authorities of the hospital. Written informed consent was taken from all the patients after proper counselling. ASA grade 1& 2 patients posted for MRM surgery were randomly put in the R group & the G group. Group R patients were given CEA & group G patients were given GA. All the patients were given tablet Alprazolam 0.5 mg on the night prior to surgery. On arrival to the operation theatre, an IV line was secured with 20 gauge intracath. Inj Glycopyrolate was given intramuscularly half hour before the surgery. Antacid prophylaxis was done with Inj Ondensetron & Inj Ranitidine IV slowly. Patients were loaded with 200 ml Hestar before giving anaesthesia. Standard monitors attached to the patients included ECG, HR, BP, SPO_2& respiratory rate.

Patients in the G group received balanced General anaesthesia. Induction was done with Inj Propofol 2.5 mg iv slowly & Inj Scoline 2mg/kg iv. Intubation was done with no 7.0 cuffed endotracheal tube. Inj Vecuronium 0.08 mg/kg was used as muscle relaxant and the patients were maintained on IPPV on Bain's circuit with N_2O ,O_2 & Sevoflurane. Intraoperative fluid management & blood transfusion was done according to the hemodynamic parameters. At the end of surgery, neuromuscular blockade was reversed with Inj Neostigmine & inj Glycopyrolate and extubation was done.

In the R group, cervical epidural catheter was placed in the sitting position with neck flexed. Tuohy's needle No 18 guage was pierced at 45° angle to the skin after local infiltration. Needle passes through the ligamentum flavum into the epidural space. The hub & shaft of the needle are held firmly by the thumb & first 2 fingers of both hands while the little fingers & the hypothenar eminences are steadied against the patient's back. With this technique there is less chance of dural puncture or spinal cord laceration. The Tuohy's needle is advanced only during inspiration as it enhances the negative pressure in the epidural space. The epidural space is more wide in the cervical space than in the lumber region. It was confirmed with the 'loss of resistance' technique with saline filled syringe. 1.2 ml of inj Lignocaine(1%)was used for each segment of the desired anaesthesia after a test dose of 2cc. 10 ml of 1% lignocaine resulted in excellent, solid anaesthesia in the desired areas. Some patients required an additional dose of 5ml in case of patchy action or insufficient anaesthesia.

Exclusion criteria for CEA included cervical osteoarthritis, severe restrictive lung disease, anticoagulated patients, local infection, seizures & allergy to local anaesthetics.

Both the groups were sedated with inj fortwin 0.3mg/kg and inj Midazolam 0.05mg/kg. Intraoperative monitoring was done in both the groups and vitals were recorded. Cardiorespiratory variables like ECG,HR,BP,SPO_2 & RR were monitored from baseline upto 2 hours or till the surgery got over. In the CEA group, the vocal cord function was monitored by verbal communication with the patient. Any intraoperative discomfort or pain was managed by giving top-up doses of the local anaesthetic. The block profile was evaluated at 5 & 15 mins for adequate action.

The demographic baseline parameters, hemodynamic parameters, & side effects were compared by using Z test, proportion test & paired T tests. Difference of P value less than 0.05 was considered significant. At the end of surgery, the patients in the R group received inj tramadol 1.5 mg/kg epidurally while patients in the G group received it intravenously. The time at which the patients in both the groups demanded pain relief was noted.

Results:

Total 60 patients were allotted into 2 groups. 2 patients in the CEA group had patchy action & hence had to be supplemented with GA(Inj Ketamin 50mg). 3 patients in the same group had transient bradycardia & hypotension which recovered with Inj Atropine &/or Inj Ephedrine. In the demographic profile even though there was a difference in age, height & weight of the patients in both the groups the readings were comparable to each other. In our study the hemodynamic parameters were studied. The heart rate was less in the R group compared to the G group ($P<0.001$) significantly during the intraoperative period. We also observed that there is a fall in BP in the R group compared to the G group($P<0.001$).These hemodynamic parameters gave a dry surgical field in the R group in comparison to the G group. The SPO_2 remained the same in both the groups & was not statistically significant.

The rescue analgesia in both the groups was compared. The R group the analgesia remained for approximately 7 to 8 hours while the G group patients started complaining of pain within 1.5 to 2 hours which was statistically significant(shown in graph no----) In the postoperative period, 2 patients in the R group had an episode of nausea & vomiting whereas 10 patients in the G group complained of nausea & vomiting. None of the patients developed respiratory insufficiency or hoarseness of voice during the intraoperative period in the R group as the epidural drugs were given in diluted concentrations.

Discussion:

Cervical epidural anaesthesia (CEA) using local anesthetics (LA) is a well established technique for the surgeries in the neck, chest and upper arms. Radical Mastectomy surgeries can be done safely under CEA using local anaesthetics. The blockade of sympathetic fibres originating in the cervical & thoracic region is deemed to occur during CEA. The decrease in heart rate & BP in the R group is beneficial for the patients. These patients have a lower risk of perioperative blood loss & lesser need for blood transfusion. It gives a dry & clean surgical field as compared to those patients who received GA[1]. Patel MG, Swadia VN used CEA for various neck surgeries. A preliminary study of 15 patients from both sex , ASA Grade I, II and III was done. The aim of the study was to evaluate onset, extent and duration of sensory blockade, hemodynamic status and duration of pain relief. In 22% cases bradycardia and hypotension was observed and easily managed. No other complication was found in any of the cases. Postoperative analgesia was provided by Inj. Tramadol 1 mg.kg-1 epidurally and duration of analgesia was 7.4 ± 1.36 hours. They concluded that this technique can provide safe, reliable and effective anaesthesia for neck surgeries with stable hemodynamics, reduction in blood loss and prolonged postoperative pain relief.

During CEA there may be decrease in the pulmonary function because of paralysis of the intercostal muscles[2]. But we observed that none of our case developed any respiratory complaints or variation in the SPO_2 during the perioperative period. In the G group was maintained with IPPV i.e. controlled ventilation. Motor block is an undesirable side effect with CEA which may increase the need for assisted ventilation. We can minimize this effect by diluting the concentration of the local anaesthetic used[4]. Kulkarni K, Namazi IJ, Deshpande S, Goel R. studied Cervical Epidural Anaesthesia with Ropivacaine for Modified Radical Mastectomy. They compared the efficacy of epidural 0.25% bupivacaine with 0.375% ropivacaine for radical mastectomies. Assessment of the block, vital monitoring and complications were noted. They concluded that use of 0.37% ropivacaine is safer than 0.25% bupivacaine for CEA in patients posted for radical mastectomy. It provides good surgical anaesthesia with lesser degree of motor blockade & respiratory effects. In our study we used 10 ml of 1% lignocaine for all patients. In some patients we had to give an additional 5 ml dose in view of patchy or insufficient action. At the end of surgery, the patients in the R group were given inj Tramadol 1.5 mg/kg through the epidural catheter while patients in the G group were given inj Tramadol 1.5 mg/kg intravenously. The timing for rescue analgesia was noted in both the groups. Patients in the G group required it earlier i.e. at 1.5 to 2 hours while the R group was quite comfortable upto 7 to 8 hrs. Also the occurrence of postoperative nausea & vomiting were noted in both the groups. It was significantly more in the G group.

Conclusion:

We conclude that surgeries on CA breast can be safely performed under CEA with dilutional concentration of local anaesthetic solution. CEA requires expertise & is a relatively risky procedure in untrained hands. Although there was fall in the cardiorespiratory parameters it was clinically insignificant & well tolerated by the patient. It also has added advantage of giving a dry surgical field, faster postoperative recovery with adequate analgesia, decreased postoperative nausea & vomiting along with decreased morbidity & improved patient outcome. CEA can thus be an alternative & better anaesthetic technique in patient undergoing MRM surgeries compared to general anaesthesia.

Table 1: Comparison of age in R group and G group

Parameter	R group (n=30)		G group (n=30)		Z Value	P Value
	Mean	SD	Mean	SD		
Age (Yrs)	48.67	8.33	47.70	8.29	0.45	0.65

Bar diagram showing comparison of age in R group and G group

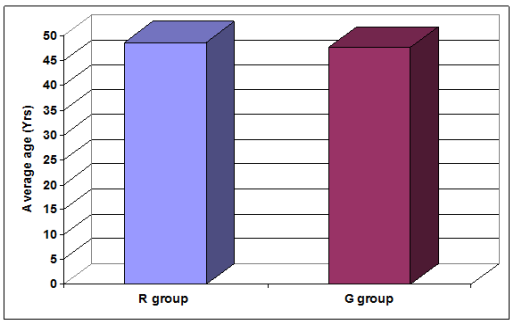


Table 2: Comparison of height and weight in R group and G group

Parameter	R group (n=30)		G group (n=30)		Z Value	P Value
	Mean	SD	Mean	SD		
Height (cm)	155.57	3.80	155.97	3.80	0.41	0.68
Weight (Kg)	51.63	8.16	51.23	7.89	0.19	0.85

Bar diagram showing comparison of height and weight in R group and G group

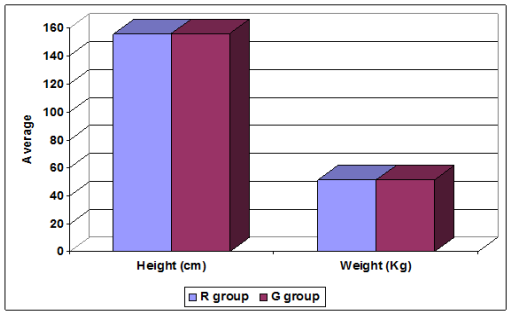


Table 3: Comparison of heart rate in R group and G group

Heart rate/ min at	R group (n=30)		G group (n=30)		Z Value	P Value
	Mean	SD	Mean	SD		
0 Min	112.93	5.285	100.10	7.355	7.76	<0.0001
5Min	106.10	4.405	122.60	8.873	9,12	<0.0001
15Min	72.30	9.333	110.43	7.868	17.11	<0.0001
30Min	72.73	8.233	109.93	9.745	15.97	<0.0001
45Min	72.83	7.344	108.87	8.411	17.68	<0.0001
60Min	72.53	6.852	110.30	8.065	19.55	<0.0001
90Min	72.03	7.039	113.90	7.513	22.27	<0.0001
120Min	73.07	6.973	116.10	7.876	22.41	<0.0001

Line diagram showing comparison of heart rate in R group and G group

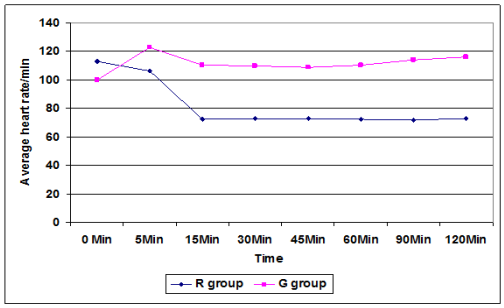


Table 4: Comparison of Systolic Blood Pressure in R group and G group

SBP (mmHg) at	R group (n=30)		G group (n=30)		Z Value	P Value
	Mean	SD	Mean	SD		
0 Min	145.60	7.546	126.80	4.992	11.38	<0.0001
5Min	120.03	14.104	147.83	6.103	9.91	<0.0001
15Min	106.07	7.114	129.97	8.853	11.53	<0.0001
30Min	103.33	5.996	125.80	8.755	11.60	<0.0001
45Min	103.10	6.920	126.57	8.291	11.90	<0.0001
60Min	102.67	6.551	125.63	7.753	12.39	<0.0001
90Min	103.47	5.894	127.30	7.953	13.19	<0.0001
120Min	103.93	5.789	147.83	6.103	28.58	<0.0001

Line diagram showing comparison of Systolic Blood Pressure in R group and G group

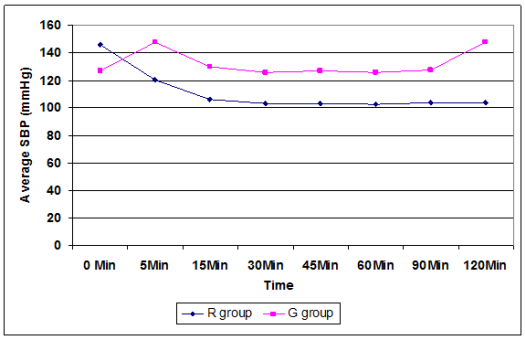


Table 5: Comparison of Diastolic Blood Pressure in R group and G group

DBP (mmHg) at	R group (n=30)		G group (n=30)		Z Value	P Value
	Mean	SD	Mean	SD		
0 Min	75.10	4.936	77.50	4.353	1.99	0.05
5Min	70.37	10.522	89.50	2.662	9.65	<0.0001
15Min	71.40	7.276	80.57	4.368	5.92	<0.0001
30Min	71.00	6.187	80.97	4.382	7.20	<0.0001
45Min	71.43	5.894	81.47	4.232	7.57	<0.0001
60Min	71.67	5.762	82.97	5.143	8.01	<0.0001
90Min	72.00	5.983	84.67	4.686	9.13	<0.0001
120Min	72.23	6.021	89.50	2.662	14.37	<0.0001

Line diagram showing comparison of Diastolic Blood Pressure in R group and G group

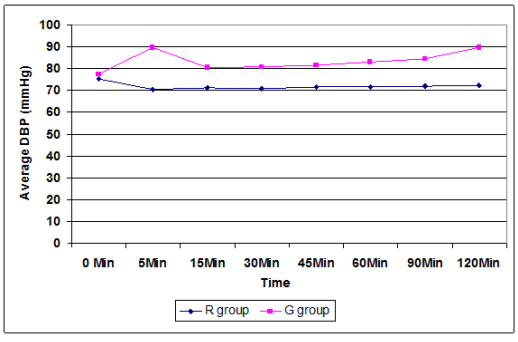


Table 6: Comparison of SPO2 in R group and G group

SPO2 (%) at	R group (n=30)		G group (n=30)		Z Value	P Value
	Mean	SD	Mean	SD		
0 Min	98.33	1.093	98.33	1.093	0	1
5Min	94.93	17.770	94.93	17.770	0	1
15Min	98.40	1.037	98.40	1.037	0	1
30Min	98.37	.850	98.37	.850	0	1
45Min	98.03	.999	98.03	.999	0	1
60Min	98.40	1.133	98.40	1.133	0	1
90Min	99.27	1.081	99.27	1.081	0	1
120Min	100	0	100	0	0	1

Line diagram showing comparison of SPO2 in R group and G group

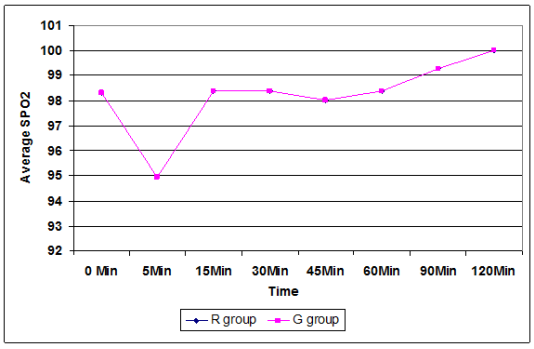


Table 7: Comparison of rescue analgesia in R group and G group

Parameter	R group (n=30)		G group (n=30)		Z Value	P Value
	Mean	SD	Mean	SD		
Rescue analgesia (Hrs)	7.10	.923	1.38	.429	30.76	<0.0001

Bar diagram showing comparison of rescue analgesia in R group and G group

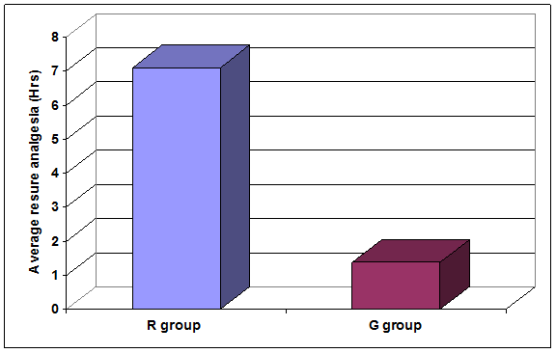
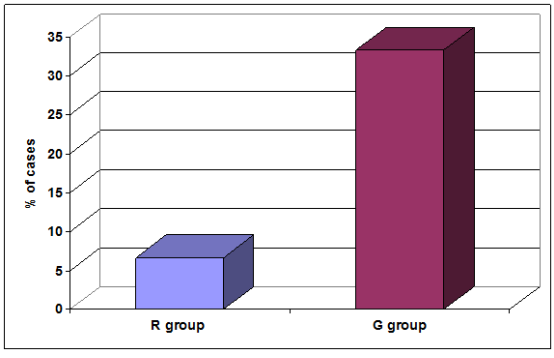


Table 8: Post operative nausea vomiting wise distribution of cases in R group and G group

Parameter	R group (n=30)	G group (n=30)	Z Value	P Value
PONV	2 (6.67)	10 (33.33)	2.74	0.006

Bar diagram showing post operative nausea vomiting wise distribution of cases in R group and G group



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