TRAMAL AS A MONOTHERAPHY;
PAIN BUPRENORPHINE WITH CONTROL – A COMPARISON

ORIGINAL
PROF-1875

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ABSTRACT… Purpose of study: To achieve reduction in postoperative pain and improved quality of analgesia accompanied by reduction in side effects. **Material and methods:** This study was carried out by the anaesthesia department and intensive care unit, Nishtar Hospital, Multan from June 2009 to May 2010. A total of 200 patients were observed, which were undergoing for thyroidectomy and were divided into two groups. **Results:** The duration of analgesia in the two groups was almost similar. Rescue analgesia was given to 10 patients out of 100 patients in Buprenorphine and 24 patients out of 100 patients in tramadol. Pain scores were more in group-I than group-II, although nausea/vomiting were more in group-I than in group-II. **Conclusions:** This analgesia regimen of intramuscular buprenorphine was found to be an improved, balanced and safe analgesic technique for postoperative pain relief.

Key words: Buprenorphine, thyroidectomy, tramadol

INTRODUCTION

The word pain is derived from the Latin word “poena” meaning punishment. Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage[1]. Pain has been something with which any doctor could be expected to cope and it is only within the last few years that the medical profession has come to the unpalatable conclusion that its innate capacity for providing analgesia is severely flawed[2].

Provision of analgesia in the immediate postoperative period is the most important part of anaesthetic care[3]. This aspect is being ignored in our country, especially due to non-availability of patent and safe drugs. Thyroidectomy is a major operation and moreover respiratory care in the immediate postoperative period sis vital also. The comparative study of the drug regiments will highlight the effective and safe way of providing analgesia to these patients.

Postoperative analgesia is required differently in different surgical procedures and various methods have been used to alleviate postoperative pain in the preceding years.

The opioids remain the mainstay of postoperative management and these opioids have been used effectively by various routes of administration include traditional intramuscular on demand[4] intravenous bolus. Continuous I/V infusion, subcutaneous, transdermal, oral, sublingual, patient controlled analgesia, spinal, intrathelial, extradural and intra-articular to control post-operative pain after various surgical procedures but the methods which the opioids are employed often display poor pharmacokinetic and clinical logic with incomplete control of postoperative pain and also not devoid of adverse effects caused by the drugs and their modes.

This study was carried out to minimize the side effects of opioids and NSAID, relieve the pain without causing respiratory and recovery problems and create an awareness of pain relief in post-thyroidectomy patients.

MATERIAL AND METHODS

This study was carried out by the anaesthesia department and intensive care unit, Nishtar Hospital, Multan from June 2009 to May 2010. A total of 200 patients were observed, which were undergoing for thyroidectomy and were divided into two groups. There were 100 patients in groups-I (buprenorphine) and 100 patients in group-II (tramadol).

RESULTS

Patients in both the groups were comparable with regard to age, weight, ASA grade, duration and type of surgery. Results are shown in tables.

Table-I. Demographic data

Description	G-I	G-II
No. of patients	100	100
Male female ratio	1.5:1	1.3:1
Average age in years	35	38
Average weight (kg)	62	67
Average duration of surgery in minutes	120	150
ASA grade-I ASA grade-II	80 20	78 22

Table-II. Comparison of different parameters in two groups

Feature	G-I (n=100)	G-II (n=100)
No. of patients requiring rescue analgesia	10	24
Incidence of nausea and vomiting	28	12
Sedation (maximum)	08	04
Respiratory depression (rate <10min)	04	-
Average duration of surgery in minutes	120	150
ASA grade-I ASA grade-II	80 20	78 22

Table-III. Comparison of oxygen saturation (PO2) respiratory rate and heart rate

Time (hours)	Group-I			Group-II		
	S PO_2	RR	HR	S PO_2	RR	HR
0 hour	96	17	80	96	17	82
1 hour	96	17	81	96	17	80
2 hours	96	17	81	96	17	79
3 hours	96	17	82	86	17	79
4 hours	96	18	84	96	18	86
6 hours	96	18	83	96	18	85
12 hours	95	16	75	95	16	76
24 hours	94	16	74	95	16	75
26 hours	93	16	72	94	16	71

DISCUSSION

The problem of inadequate relief of postoperative pain has been recognized for many years and has been the subject of considerable research. After major upper abdominal, thoracic, orthopaedic and thyroid surgery; it has been reported that most of the patients experienced severe nature of postoperative pain4.

Inadequate and uncontrolled relief of the postoperative pain induces various systemic postoperative consequences[6,7]. Leading to restlessness haemodynamic and cardio- respiratory changes, enable increased morbidity and mortality[8].

The standard method of providing post-operative analgesia has been intermittent on demand administration of intramuscular injections of the opioids with undesirable side effects including sedation, nausea, vomiting and respiratory depression[9]. The various methods of administration of opioids remain the main stay in the management of postoperative pain but not devoid of adverse reactions, risks, disadvantages and inadequacies in the pain control10.

Tissue injury leads to nociception by direct mechanical and thermal damage to nerve endings and to inflammation, by release of chemical and enzymes including prosta-glandins and other arachidonic acid metabolites. There is also hyperalgesia, generated by alogenic substances and sprouting of damaged nerves into injured tissue[11].

The cells in the tissue are capable of synthesizing prostagladins, which are released in response to trauma or disruption of the cell membranes[12]. There is evidence

that if different neuronal barrage to the spinal cord resulting from peripheral tissue injury can be blocked or reduced, the hyper excitable central state in the dorsal horn of the spinal cord can be prevented[13].

The opioids act at the specific opioid receptors in the central nervous system[14] to alternate pain related signals while NSAIDS act mainly at the periphery[15] inhibiting prostaglandins biosynthesis.

The mode of regular fixed interval dosing of intramuscular infections of buprenorphine and tramadol in this study has contributed in improving quality of postoperative analgesia as this provides regular drugs concentrations in the plasma and tissues which is responsible for sustained analgesic effect as demonstrated that regular fixed interval method of intra-muscular injections of opioids provides better analgesia as compared to on demand regimen[16].

Experimental studies have demonstrated that acute pain behaviour on hyper excitability of dorsal horn neurons may be eliminated or reduced if the afferent barrage is prevented from reaching the CNS by pre-injury neural block or if excitability of CNS is suppressed by opioid before one receives nociceptive input[17].

Buprenorphine in the current clinical trial has certain impact on postoperative pain relief as first dose of the drug was given half an hour prior to stress incision which has played role as pre-emptive analgesia as mentioned in a study[18].

The opioids given in various methods, needs continuous respiratory monitoring as shown in a study has potentially dangerous depression of respiration occurring particularly between midnight and early morning with the opioids[19].

These results are comparable with the study in which combination therapy has shown lesser respiratory depression. In this study it was found that no patient had real respiratory depression in the study hour and found that buprenorphine tends to affect on the tidal volume. The opioids predominantly have central nervous system effects including sedation and these are dose related. At the small dosages, drowsiness is the principle subjective effect with decreased awareness of external and internal stimuli, then followed by dreamy sleep[20]. The central sedative effect produced by the opioids is mediated by Kappa opiate receptor[21].

Nausea and vomiting accompanies the administration of even small therapeutic dosage of the opioids and increases with the higher age. It is a direct response to opiate stimulation chemoreceptor trigger zone of the area postrema of the medulla, which contributes vagal input to gut, and causes vomiting even in low dosage[22]. However in our study nausea and vomiting are more observed in buprenorphine as compared to tramadol.

The formation of thromboxanes and prostaglandins is essential for normal human haemostasis. Both prostaglandin endoperoxide and thromboxane are induced rapid and irreversible aggregatin of human platelets[23]. Arachidonic acid, the precursor of prostaglandin, prostacyclins and thromboxane are metabolized to the prostaglandin endoperoxide by the enzyme, cyclo-oxygenase[17].

There was no significant difference observed not only among both the groups in this study but also between their pre and 36 hours postoperative values as regards to the data on coagulation casade i.e. bleeding time, partial activated thromboplastin time, platelet count was concerned. Similar findings in this study are comparable with those by Laitinen and Nutinin[24] where there was no significant difference observed in extensive data analysis of coagulation casade in hip replacement surgery, despite having difference in the surgical procedures and methodology.

The results in present study indicate that buprenorphine when given alone for short period do not interfere significantly with coagulation profile and prove to be the safe drug in this respect.

CONCLUSIONS

It is concluded from the study that both buprenorphine and tramadol provide adequate pain control, however

results were slightly better with buprenorphine.

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