



ORIGINAL RESEARCH PAPER

Anaesthesiology

A COMPARISON OF EFFICACY OF ALCOHOL AND PHENOL FOR COELIAC PLEXUS BLOCK IN PATIENTS WITH CHRONIC UPPER ABDOMINAL CANCER PAIN FOR PAIN MANAGEMENT

KEY WORDS: Celiac Plexus, Nerve Block, Alcohol, Phenol, Pain, Cancer Pain, Abdominal Pain, Visceral Pain, Symptom Assessment.

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ABSTRACT

BACKGROUND: Several modalities of chronic pain management for upper abdominal cancers have been proposed. Among all, coeliac plexus block is being widely applied due to its increased success rate. Various techniques and drugs are being tried to improve its accuracy and prolong the duration of analgesic action and thus improve the quality of life of such patients. This is a comparative study between two drugs used for coeliac plexus block.

OBJECTIVES: To compare the efficacy between alcohol and phenol in coeliac plexus block by assessing the pain scores at after the procedure on 1st day, 1week, 1month, 3months, 6months

MATERIALS AND METHODS: Retrospective study consisting of 28 patients with chronic pain due to upper abdominal malignancy, unresponsive to NSAID's and having severe side effects with strong opioids who underwent coeliac plexus block for pain management. The patients were divided into two groups- Group-A: 14 Patients who underwent Coeliac plexus block with 8% Phenol, Group B: 14 Patients who underwent Coeliac plexus block with 60% alcohol. Pain scores using Numerical Rating Scale (NRS) assessed on the 1st day, 1stweek, at 1st month, 3rd month and 6th month with the help of hospital records were compared between the two groups using mann whitney u test.

RESULTS: The pain scores post procedure on day one, at 1 week, 1 month, 3rd month, 6th month were noted and mean pain scores were 4.92, 3.35, 4.14, 5.85 in group A and 5.07, 3.5, 4.5, 6.28 in group B respectively with p values remained more than 0.05

CONCLUSION: In our study we found that there was no significant difference in pain outcomes with either alcohol or phenol in patients undergoing coeliac plexus block for chronic/cancer pain management proving them to be equally effective.

INTRODUCTION

Malignancy related chronic upper abdominal pain, most of the times is debilitating and affects survival and quality of life⁽¹⁾. The pain in abdomen can be attributed to stretching, distension, compression, invasion, of the visceral structures by the tumor mass or tissue, or could be secondary to radiation therapy, chemotherapy or surgery itself which can lead to tissue destruction/ damage. Patient usually presents with crampy/colicky type of pain. The cancer pain prevalence is about 60% with gynecological malignancies, 59% with gastrointestinal malignancies, 52% with urogenital malignancies⁽²⁾ and Pancreatic adenocarcinoma is an aggressive tumor and is the fourth leading cause of cancer deaths in the United States⁽³⁾ and patients with this TUMOR usually present at a later stage of disease when surgical resection is very difficult/not possible. Involvement of the coeliac plexus, typically by a pancreatic mass and or lymph nodes, remains another known etiology of epigastric pain⁽⁴⁾. A strong association between cancer pain and distress is evident across the disease spectrum^(5,6). Pain from cancer and its treatments can result in anxiety, depression, fear, anger, helplessness, and hopelessness, and those with both pain and depression have an amplification of disability and poor quality of life^(6,7). This is one of the leading causes of morbidity and mortality. In these patients, the primary intension would be good analgesia and better quality of life.

In peripheral settings and in the present era with increasing number of malignancy cases being detected and with timely interventions, a majority of people are benefited with early diagnosis and treatment. But, there are also a small subset of patients who are not fortunate enough and are diagnosed very late and in whom a surgical or medical treatment might not bare fruits.

In these patients, the primary intension would be good analgesia and better quality of life, but due to unavailability of advanced medical care facilities and logistical issues and tertiary health centers in the periphery, many patients are forced to go through pain due to advancement of the

malignancy and inadequate awareness.

The purpose of this study is to determine the relative effectiveness of alcohol versus phenol used during coeliac plexus block for chronic pain management thus to aid in improving the quality of life of such patients with the usage of more potent drug with minimal side effects.

In our study, we hereby would like to compare the efficacy of alcohol versus phenol in coeliac plexus blockade for chronic upper abdominal cancer pain management.

MATERIALS AND METHODS

After obtaining the Ethical committee clearance, a retrospective study was conducted which included patients of ASA physical status III and IV of both the sexes, aged between 35-75yrs suffering from carcinomas involving one of the following: gall bladder carcinoma, pancreatic carcinoma, hepatic carcinoma presenting with chronic upper abdominal pain who were unresponsive to NSAIDS, opioids and were hence managed with coeliac plexus block for pain management.

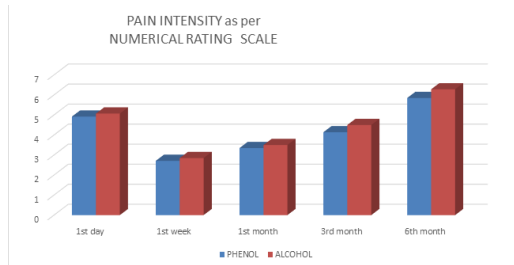
The list of the patients fulfilling the above criteria's who underwent coeliac plexus block was obtained by department of Anaesthesia, pain and palliative care medicine. The patients were divided into two groups- group A consisting of patients who underwent coeliac plexus block with 8% phenol while the group B was with 60% alcohol. Then 14 patients in each group were selected randomly by closed envelope method. The demographic data including age, sex, medical and past history including the severity and duration of pain, time of the diagnosis of carcinoma, treatment history for the same, investigations (both blood and radiological) were collected. The patients on analgesics including strong opioids and whose pain scores were more than or equal to 7 out of 10 as per numerical rating scale score were managed by coeliac plexus block as per the institutional guidelines. The technique of coeliac plexus block used was noted-fluoroscopic trans aortic approach. Group-A: n=14 Patients

underwent Coeliac plexus block with 10ml 8% phenol, 1ml non-ionic iodine dye, 2 ml 1% lignocaine, 15cm 22g spinal needle. Group B: n=14 Patients underwent Coeliac plexus block with 10ml 60% alcohol, 1 ml non-ionic iodine dye, 2ml 1% lignocaine, 15cm 22g spinal needle.

Two patients among the selected in alcohol group had been dropped off the procedure as they had developed local burning on initiation of alcohol neurolysis. Hence, two more patients were selected from the remaining set of patients in that group. Rescue analgesia was given as per institution protocols in both the groups. The pain intensity assessed by numerical rating scale in all the patients post-procedure was collected and utilized for the study. The mean pain scores were calculated in each group at the intervals mentioned below and they were analyzed using mann whitney u test and statistical significance is assessed.

RESULTS

Duration From Block	Group A (Mean NRS Pain Score)	Group B (Mean NRS Pain Score)	P Value
1 day	4.92	5.07	0.64552
1 week	2.71	2.85	0.34722
1 month	3.35	3.5	0.53526
3 months	4.14	4.5	0.11184
6 months	5.85	6.28	0.11184



- The pain scores post procedure on day one, at one week, at one month, at 3rd month and at 6th month were noted. The pain scores post procedure on day one, at 1 week, 1 month, 3rd month, 6th month were noted and mean pain scores were 4.92, 3.35, 4.14, 5.85 in group A and 5.07, 3.5, 4.5, 6.28 in group B with p values 0.64, 0.34, 0.53, 0.11, 0.11 respectively, which is more than 0.05.

DISCUSSION ANATOMY

Knowing the nerve supply to the organs involved is an important part of managing the pain. Pertaining to the carcinoma of the upper abdominal organs like lower esophagus, liver, gall bladder, pancreas, stomach, the afferent sensory supply goes through the coeliac plexus via splanchnic nerves. The coeliac plexus receives sympathetic supply from T5 to T12 through the greater, lesser and the least splanchnic nerves. It forms the main junction of the autonomic nerve supply of the upper abdominal organs. It is also called the 'Solar Plexus' because of its radiating nerve fibers. It is located in front of the crus of the diaphragm behind the stomach and the omental bursa inferior to the coeliac artery origin, retroperitoneally at the level of T12-L1. The parasympathetic nerve supply is from the vagus nerve to these areas. Its relationship with the coeliac artery forms an important landmark in its identification and thus makes it possible to deliver the coeliac plexus block.

COELIAC PLEXUS BLOCK TECHNIQUE

There are multiple techniques for coeliac plexus blockade like trans crural approach, retrocrural approach, trans aortic technique. These can be performed by with ultrasound guidance, endoscopic guidance, CT guidance, fluoroscopy guidance. Here, in this institution they follow fluoroscopy with C-arm guided transaortic approach.

Phenol and alcohol, both act by denaturation of proteins in the exposed nerve endings, thus damaging these nerves by precipitation and dehydration of the protoplasm which in turn blocks or interferes in the conduction through these nerves and impairs⁽¹⁾. Phenol is typically used at concentrations between 5% - 8%, and alcohol is used in concentrations between 45% - 100%. Phenol itself has some local anaesthetic property and thus doesn't cause burning sensation or much irritation on injection while alcohol causes irritation, burning sensation which may be severe sometimes, and even backache after injection. Hence, by knowing which among these two is more efficient would help in choosing one over the other drug by weighing their pros and cons.

Overall many study shows that coeliac plexus block is effective in treating upper abdominal cancers. In a randomized study conducted by by Wong et al.⁽¹⁾ on 100 patients with pancreatic cancer, they found that pain scores documented over a duration of 6-week post procedure were to be lesser in the Coeliac plexus neurolysis group than with the group that received a sham block plus systemic therapy, and there were no significant differences noted regarding opioid consumption or its side effects nor the quality of life of the patient. But, in a same type of randomized study conducted by Polati et al⁽⁸⁾ the results showed no superiority of coeliac plexus neurolysis in pain relief but showed a decrease in the need of opioids and thus showing lesser side effects related to opioids. But, there are very less studies to compare alcohol and phenol. There exists a controversy whether alcohol is better over phenol. And as pain management and its duration plays an important role in improving the quality of life of the such patients this study was conducted to know the supremacy of drug among these two. In a study conducted by Dhanalakshmi koyyalgutta etal⁽¹⁰⁾ to compare the effectiveness of alcohol versus phenol based splanchnic nerve neurolysis for treatment of intraabdominal cancer pain, the pain intensity post procedure was assessed statistically using a Wilcoxon rank sum tests which one month post-procedure pain scores were not different between those treated with alcohol (4.23 ± 2.69, 4 [1, 9]) versus phenol (3.87 ± 2.53, 4 [0, 10]; P = 0.66) and in addition, ESASs and MEDD weren't significantly different either. There was a small difference in the volume of neurolytic agent used between the 2 agents with 24.73 ± 8.89 mL (20 [10, 50]) used for alcohol and 20.24 ± 5.05 mL (20 [10, 30]) used for phenol (P = 0.0044). similarly, pain relief with both alcohol and phenol remained same in our study.

CONCLUSION

In this retrospective study we found that there was no significant difference in pain outcomes with either of 60% alcohol or 8% phenol in patients who underwent coeliac plexus block for chronic abdominal cancer pain management, proving them to be equally effective.

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