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Original Research Article

Difference between Analgesic Drugs and the Coeliac Plexus Block in Relieving Pain due to Carcinoma of Pancreas: A Comparative Study

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Abstract: ***Background:*** Pancreatic cancer is a formidable health problem worldwide with increasing incidence. Debilitating pain is very common in patients with pancreatic cancer. The aim of this study is to observe the effectiveness of neurolytic coeliac plexus block for the relief of pain due to carcinoma of pancreas. ***Methods:*** This randomized comparative study carried out in the Department of Anaesthasia, Analgesia and Intensive Care Medicine of Bangabandhu Sheikh Mujib Medical University, Dhaka with a period from July 2008 to June 2010 for two (2) years. ***Result:*** All patients of carcinoma pancreas >18 years of age with both sexes, who were needed palliation for their end stage carcinoma, were included in this study and were divided into two groups of which group A was taken the CPB and group B was taken the conventional treatment. A total number of 30 patients were enrolled in this study of which 15 were in the group A who were treated with the neurolytic celiac plexus block (NCPB) and 15 were in the group B who were treated with conventional analgesic drugs. Maximum were from the age group of 40 to 60 years (60.0%) in group A followed by more than 60 years (26.6 %). The mean age in the group A and group B patients were 48.73 14.26 years and 51.47 ± 12.35 years respectively (p=0.579). Both in group A and B male is predominant than female which were 12 (80%) cases and 3(20%) cases respectively (p=0.999) in each group. In group A mostly were service holder which was 8(53.3%). In group A, the mean (±SD) pain VAS before treatment is 8.80±0.86 and in group B, it is 8.07 ±1.44. The difference between this two group is not statistically significant (p=0.101). ***Conclusion:*** tthe findings of this study permit to conclude that in patients with unresectable pancreatic cancer, neurolytic celiac plexus blockade (NCPB) was associated with improved pain control, and reduced narcotic usage and constipation compared with standard treatment with clinical significance. Along with higher satisfaction and acceptability by the patient and their relatives.

Keywords: Analgesic Drugs, Coeliac Plexus Block, Carcinoma, Pancreas.

INTRODUCTION

Pancreatic cancer remains a major therapeutic challenge [1]. It is the fourth to fifth leading cause of cancer- related death in most Western industrialized countries, with an average survival after diagnosis of three to six months [2]. The annual incidence rate of pancreatic cancer is almost identical to the mortality rate [3]. Advanced disease is associated with a dismal outcome, with a median survival of 3-6 months [3]. Debilitating pain is very common in patients with pancreatic cancer. Up to 70%-80% of patients with pancreatic cancer have pain at the time of diagnosis which may increase to 90% as the disease advances? Neurolytic celiac plexus block (NCPB) is an effective method in the management of pain in patients suffering from upper abdominal malignancies, such as pancreatic cancer, bile duct cancer and primary liver neoplasm [4]. It may be associated also, with prolonged survival [5]. Celiac plexus block (CPB) has been used in the management of pancreatic pain since it was first described by Kappis in 1914. Neurolytic celiac plexus block (NCPB) is commonly used to treat pain of upper abdominal cancer that fails to respond to narcotic

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analgesics. CPB refers to the temporary inhibition of the celiac plexus often achieved with a corticosteroid injection in patients with benign pancreatic diseases like chronic pancreatitis. A local anesthetic such as bupivacaine is often used in combination with the steroid injection to provide a more prolonged analgesic effect compared to the local anesthetic alone. CPB is evaluated mostly by the procedure via a posterior approach, usually under fluoroscopic guidance [5]. However, conventional posterior approach for celiac plexus block sometimes cannot be used in patients, whose anatomical relationship of the retroperitoneal organs is distorted by cancer growth or by a previously performed operation and concern remains about occasional potentially serious complications in such cases like paraplegia, pneumothorax, and liver or kidney puncture [6]. Despite treatment options such as surgery, radiation and chemotherapy the prognosis remains poor. Therefore, an important focus is improving the quality of life by optimal management of the symptoms. However, despite adherence to the World Health Organization analgesic ladder consisting of medication titration which is progressing from nonsteroidal anti-inflammatory drugs to narcotics, pain remains difficult to treat and frequently requires the use of high-dose narcotics causing unwanted side effects. The present study was designed Difference between analgesic drugs and the coeliac plexus block in relieving pain due to carcinoma of pancreas.

MATERIALS AND METHODOLOGY

This study was a randomized comparative study. This was carried out in the Department of Anaesthasia, Analgesia and Intensive Care Medicine of Bangabandhu Sheikh Mujib Medical University, Dhaka. This study was carried out during the period from July 2008 to June 2009 for a period of one (1) year. A total number of 30 patients were enrolled in this study of which 15 were in the group A who were treated with the neurolytic celiac plexus block (NCPB) and 15 were in the group B who were treated with conventional analgesic drugs.

Inclusion Criteria

- Patients at any age group.
- Patients with both sexes.
- Smokers.
- All Patients with Pancreatic Carcinoma.
- Patients suffering from pain due to pancreatic carcinoma.
- Participants, who gave consent and willing to comply with the study procedure.

Exclusion Criteria

- Major cardiac disease.
- Uncontrolled DM.
- Coagulopathy.
- Patients with known allergy to study drugs.
- Severely ill patients.
- Patients or attendants unwilling to take part in the study.

Statistical analysis was performed by using SPSS (Statistical Package for Social Sciences) for windows version 12.0.95% confidence limit was taken. Probability value<0.05 was considered as level of significance. Prior to the commencement of this study, the thesis protocol was approved by the local ethical committee of Bangabandhu Sheikh Mujib Medical University, Dhaka. The aims and objectives of the study along with its procedure, risks and benefits of this study were explained to the patients in easily understandable local language and then informed written consent was taken from each patient. It was assured that all information and records would be kept confidential and the procedure would be helpful for both the Surgeons and the patients in making rational approach of the case management.

RESULT

Table I: Distribution of study population according to the age by groups

Age (in years)	Groups		
	Group A (NCB)	Group B (Conventional)	P value
≤20	1(6.7)	0(0)	0.579
20-40	1(6.7)	0(0)	
40-60	9(60.0)	11(73.3)	
>60	4(26.6)	4(26.6)	
Total	**15(100.0)**	**15(100.0)**	
Mean± SD	48.73±14.26	51.47±12.35	

Table I shows the distribution of study population according to the age by groups. Among 15 patients in group A maximum was from the age group of 40 to 60 years which was 9 (60.0%) cases followed by more than 60 years which was 4(26.6%) cases. One (6.7%) patient was in the age group of less than or equal to 20 years and 20 to 40 years' age group. In 15 patients of group B the majority was in the age group of 40 to 60 years which was 11(73.3%) cases and the other 4(26.7%) cases were in the age group of more than 60 years. The mean age in the group A and group B patients were 48.73 ± 14.26 years and 51.47 ± 12.35 years respectively, the difference between this two is not statistically significant (p=0.579).

Table II: Distribution of study population according to sex by groups

Sex	Groups		
	Group A (NCB)	**Group B (Conventional)**	**P value**
Male	12(80.0)	12(80.0)	0.999
Female	3(20.0)	3(20.0)	
Total	**15(100.0)**	**15(100.0)**	

Table II shows the distribution of study population according to sex by groups. Both in group A and B male is predominant than female which were 12(80%) cases and 3(20%) cases respectively. the difference is not statistically significant (p=0.999).

Table III: Distribution of patients according to occupation by groups.

Occupation	Groups		
	Group A (NCB)	**Group B (Conventional)**	**P value**
Service	8(53.3)	5(33.3)	0.449
Student	1(6.7)	0(.0)	
Housewife	3(20.0)	3(20.0)	
Business	2(13.3)	6(40.0)	
Other	1(6.7)	1(6.7)	
Total	**15(100.0)**	**15(100.0)**	

Table III shows the distribution of patients according to occupation by groups. Among 15 cases in group A mostly were service holder which was 8(53.3%) cases followed by housewife and businessman which were 3(20%) cases and 2(13.3%) cases respectively. In the student and others on (6.7%) case was present in both. Among 15 cases in group & maximum were businessman which was 6(40%) cases followed by service holder and housewife which were 5(33.3%) and (20%) cases respectively. The difference between this two groups are not statistically significant (p=0.449).

Table IV: The distribution of study population according to educational statue by group

Education	Groups		
	Group A (NCB)	**Group B (Conventional)**	**P value**
Primary	1(6.7)	2(13.3)	0.659
Secondary	3(20.0)	3(20.0)	
Higher Secondary	2(13.3)	4(26.7)	
Graduate and Above	9(60.0)	6(40.0)	
Total	**15(100.0)**	**15(100.0)**	

Table I shown the distribution of study population according to educational status by group. Out of 15 case in group A majority were graduate and above educational qualification which was 9(60%) cases followed by secondary higher secondary and primary which were 3(20%) cases 2(13.7%) cases and 1(6.7%) case respectively. In out of 15 case in group B mostly were graduate and above educational qualification which was 6(40%) followed by higher secondary and primary which were 4(26.7%), 3(20.0%) and 2(13.3%) case respectively the differences not statistical significant (p=0.659).

Table V: The comparison of pain in VAS between two groups

Pain in VAS	Groups		
	Group A (NCB)	**Group B (Conventional)**	**P value**
Before treatment	8.80±0.86	8.07±1.44	0.101
1st day	2.30±0.98	5.53±0.99	0.001
2nd day	2.27±0.70	5.60±1.24	0.001
7th day	2.13±1.13	6.07±1.16	0.001
15th day	2.27±1.39	6.40±0.74	0.001

Table V shows the comparison of pain in VAS between two groups. In group A, the mean (±SD) pain VAS before treatment is 8.80±0.86 and in group B, it is 8.07 ±1.44. The difference between this two group is not statistically significant (p=0.101). At 1st day of treatment the pain in VAS of group and group are 2.30±0.98 and 5.53±0.99 respectively. This difference is statistically significant (p=0.001). At 2nd day of

treatment the mean pain in VAS of group A and group B are 2.27±0.70 and 5.60±1.24 respectively. This difference is statistically significant (p=0.001). At 7th day of treatment the mean pain in VAS of group A and group B are 2.13± 1.13 and 6.07±1.16 respectively. This difference is statistically significant (p=0.001). At 15h day of treatment the mean pain in VAS of group A and group are 2.27±1.39 and 6.40±0.74 respectively. This difference is statistically significant (p=0.001).

Table VI: Distribution of the study population according to anorexia by groups

Anorexia	Groups		
	Group A (NCB)	Group B (Conventional)	P value
+	0(.0)	4(26.7)	0.061
++	4(26.7)	5(33.3)	
+++	11(73.3)	6(40.0)	
1st day			
None	7(46.7)	4(26.7)	0.458
+	6(40.0)	7(46.7)	
++	2(13.3)	4(26.7)	
2nd day			
None	9(60.0)	3(20.0)	0.128
+	5(33.3)	8(53.3)	
++	1(6.7)	3(20.0)	
+++	0(.0)	1(6.7)	
7th day			
None	7(46.7)	1(6.7)	0.027
+	5(33.3)	4(26.7)	
++	3(20.0)	7(46.7)	
+++	0(.0)	3(20.0)	
15th day			
None	2(13.3)	0(.0)	0.014
+	7(46.7)	3(20.0)	
++	6(40.0)	5(33.3)	
+++	0(.0)	7(46.7)	

Table IX shows the distribution of the study population according to anorexia by groups. Before starting the treatment mild (+) anorexia is found in 4 (26.7%) cases in group B. Moderately (++) anorexia is found in 4 (26.7%) cases and 5 (33.3%) cases in group A and group B respectively. Severe anorexia (+) is seen in 11 (73.3%) cases and 6 (40.0%) cases in group A and group B respectively. B The difference between this two groups is not statistically significant (p=0.061).

Table VII shows the distribution of acceptability by groups

Acceptability	Groups		
	Group A (NCB)	Group B (Conventional)	P value
By patients			
Not	0(.0)	10(66.7)	0.001
Mild	0(.0)	4(26.7)	
Moderate	4(26.7)	1(6.7)	
High	11(73.3)	0(.0)	
By relatives			
Not	1(6.7)	4(26.7)	0.001
Mild	0(.0)	9(60.0)	
Moderate	2(13.3)	2(13.3)	
High	12(80.0)	0(.0)	

Table VII shows the distribution of acceptability by groups. The treatment is highly accepted by the patients in 11(73.3%) case in group A and none in group B, moderately accepted in 4(26.7%) cases and 1(6.7%) cases in group A and group B respectively. Mildly accepted is in 4(26.7%) case in group B. Not accepted is in 10(66.7%) cases in group B. The difference is statistically significant (p=0.001). The treatment is highly accepted by the relative of the patients in 12(80.0%) case in group A and none in group B, moderately accepted in 2(13.3%) cases and 2(13.3%) cases in group A and group B respectively.

Mildly accepted is in 9(60.0%) case in group B. Not accepted is in 1(6.7%) case and 4(26.7%) cases in group B. The difference is statistically significant (p=0.001).

DISCUSSION

Pancreatic cancer is a formidable health problem with increasing incidence [7]. Worldwide, over 200000 people die annually of pancreatic cancer [8]. Although this tumor represents only 2% of new cancer diagnoses in both men and women it is the fourth most common cause of all cancer deaths [9]. The highest incidence and mortality rates of pancreatic cancer are found in developed countries. In the United States, pancreatic cancer is the 4th leading cause of cancer death with more than 28,000 people deaths attributed to the disease each year and in Europe it is the 6th in position [10]. Because of high fatality rates, pancreatic cancer incidence rates are almost equal to mortality rates [8]. Pancreatic cancer is diagnosed late in the natural history of the disease, given the few early indicators of illness, and the lack of screening tests for this disease [8]. Considered by many to be one of the deadliest malignancies, pancreatic cancer is associated with a death: incidence ratio of approximately 0.99 [11]. Despite this grim picture, significant advances have been made, both in the pathogenesis of the disease and in its clinical management. Despite advances in the understanding of the pathology and biology of the disease, as well as improved diagnostic imaging and staging studies, the overall 5-year survival rate remains 4% for all stages and races [9]. Adenocarcinoma of the pancreas comprises 90% to 95% of all malignant tumors of the exocrine pancreas [9]. There is often a history of mild but progressive discomfort or pain in the mid-abdomen, occasionally with radiation to the back, and usually noted worse at the end of the day. A total number of 30 patients were enrolled in this study of which 15 were in the group A who were treated with the neurolytic celiac plexus block (NCPB) and 15 were in the group B who were treated with conventional analgesic drugs. Among 15 patients in group A maximum was from the age group of 40 to 60 years which was 9 (60.0%) cases followed by more than 60 years which was 4(26.6%) cases. One (6.7%) patient was in the age group of less than or equal to 20 years and 20 to 40 years' age group. In 15 patients of group B the majority was in the age group of 40 to 60 years which was 11(73.3%) cases and the other 4(26.7%) cases were in the age group of more than 60 years. Similar result was found by Wang *et al.,* (2003) and stated that the majority of pancreatic cancer were seen in the age group of 60 years and older [12]. In another study it was found that the risk of pancreatic cancer goes up with age. Anand *et al.,* (2010) mentioned that those aged 60-80 years are most affected [13]. Thy also added that the pancreatic adenocarcinoma is uncommon but not rare in those younger than 55 years. It is uncommon in those younger than 40 years which is consistent with our study. The distribution of study population according to sex by groups is noted in this study. Both in group A and B male is predominant than female which were 12(80%) cases and 3(20%) cases respectively. the difference is not statistically significant (p=0.999). This result is consistent with Anand *et al.,* (2010) and mentioned that pancreatic cancer is more common in men than in women [13]. They also added that the male-to-female ratio has been decreasing recently, suggesting that more women are developing the malignancy. Wang *et al.,* (2003) also found a similar result and demonstrated that the rate was higher in men than in women [12]. The distribution of patients according to occupation by groups is observed. Among 15 cases in group A mostly were service holder which was 8(53.3%) cases followed by housewife and businessman which were 3 (20%) cases and 2(13.3%) cases respectively. In the student and in others one (6.7%) case was present in both. Among 15 cases in group B maximum were businessman which was 6(40%) cases followed by service holder and housewife which were 5(33.3%) and 3(20%) cases respectively. The difference between this two groups are not statistically significant (p=0.449). The distribution of study population according to educational status by groups is observed. Out of 15 case in group A majority were graduate and above educational qualification which was 9(60%) cases followed by secondary, higher secondary and primary which were 3(20%) cases, 2(13.3%) cases and 1(6.7%) case respectively. In out of 15 case in group B mostly were graduate and above educational qualification which was 6(40%) cases followed by higher secondary, secondary and primary which were 4(26.7%) cases, 3 (20.0%) cases and 2(13.3%) case respectively. the difference is not statistically significant (p=0.659). Ojajärvi (2006) was found a similar result [14]. They also added that excess risks of pancreatic cancer associated with occupational exposures to ionizing radiation, no chlorinated solvents, and pesticides which are inconsistent with this study. The reason of this is that this study is done on a small sample size. When the study will be done on a large scale population then the true picture will come out. The comparison of pain in VAS between two groups is observed. In group A, the mean (SD) pain in VAS before treatment is 8.80 ± 0.86 and in group B it is 8.07 ± 1.44. The difference between this two group is not statistically significant (p= 0.101). At 1st day of treatment the mean pain in VAS of group 80 A and group B are 2.30 ± 0.98 and 5.53 ± 0.99 respectively. This difference is statistically significant (p-0.001). At 2nd day of treatment the mean pain in VAS of group A and group B are 2.27 +0.70 and 5.60 ± 1.24 respectively. This difference is statistically significant (p=0.001). At 7th day of treatment the mean pain in VAS of group A and group B are 2.13 ± 1.13 and 6.07± 1.16 respectively. This difference is statistically significant (p=0.001). At 15th day of treatment the mean pain in VAS of group A and group B are 2.27 ± 1.39 and 6.40 ± 0.74 respectively. This difference is statistically significant (p=0.001). Similar result was found by Moore and Adler (2009) and

mentioned that VAS scores in the CPN group were statistically lower for the first 4 weeks after the procedure than in the NSAID-morphine group [15]. Opioid use was significantly lower in the CPN group at 4 to 7 weeks. At 10 weeks, opioid use was lower, but not significantly, in the CPN group. CPN was associated with lower VAS scores for pain at 2, 4, and 8 weeks. Yan and Myers (2007) were found a similar result and demonstrated that in patients with unrespectable pancreatic cancer, NCPB is associated with improved pain control, and reduced narcotic usage compared with standard treatment [16]. Vranken and van der Vegt (2006) also reported a result which is consistent with the study and they mentioned that the neurolytic coeliac plexus block has become a well-developed method of pain relief in patients with pain resulting from malignancies of the pancreas [17]. The distribution of the study population according to anorexia by groups. Before starting the treatment mild (+) anorexia is found in 4 (26.7%) cases in group B. Moderately (++) anorexia is found in 4 (26.7%) cases and 5 (33.3%) cases in group A and group B respectively. Severe anorexia (+) is seen in 11 (73.3%) cases and 6 (40.0%) cases in group A and group B respectively. B The difference between this two groups is not statistically significant (p=0.061). The treatment is highly accepted by the patients in 11 (73.3%) case in group A and none in group B, moderately accepted in 4 (26.7%) cases and 1 (6.7%) cases in group A and group B respectively. Mildly accepted is in 4 (26.7%) case sin group B. Not accepted is in 10 (66.7%) cases in group B. The difference is statistically significant (p=0.001). The treatment is highly accepted by the relative of the patients in 12 (80.0%) case in group A and none in group B, moderately accepted in 2 (13.3%) cases and 2 (13.3%) cases in group A and group B respectively. Mildly accepted is in 9 (60.0 %) case in group B. Not accepted is in 1 (6.7%) case and 4 (26.7%) cases in group B. The difference is statistically significant (p=0.001). Similar result was observed in different studies. It is true that the prevalence of depressive disorders of all types were found to be higher in cancer patients with severe pain, raising an inference of causations. This link between pain and depression, along with anxiety, underscores the problem of under treatment for pain as the most common opioid abuse issue in the care of the dying [18]. Pain is the aspect of cancer that is most worrisome to both patients and their families. Half of respondents to public surveys about pain believed physicians cannot make a difference and this fear translated to 20% claiming they would avoid seeking cancer treatment [19]. The paradox of cancer pain is leading to the most feared symptom, the most connected and interwoven to other cancer symptoms like insomnia, fatigue, nausea, constipation and yet the most treatable of cancer complaints and the oral analgesics provide relief to 90% of patients with cancer [9]. For these reason the acceptability of this procedure is high in this study.

CONCLUSION

In conclusion, the findings of this study permit to conclude that in patients with unrespectable pancreatic cancer, neurolytic celiac plexus blockade (NCPB) is associated with improved pain control, and reduced narcotic usage and constipation compared with standard treatment with clinical significance.

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