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Research Article

Local anesthetics and alcohol in splanchnic plexus block for pain control in patients with intra-abdominal malignancy.

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Abstract
Background: Pancreatic and other upper abdominal organ malignancies can produce intense visceral pain syndromes that are frequently treated with splanchnic nerve neurolysis (SNN) or celiac plexus neurolysis (CPN). Most frequent indication for celiac plexus block is pain secondary to an upper abdominal malignancy, although it is very effective for pain generated by retroperitoneal tumors or metastases. The study aimed to evaluate effect of use a local anesthetic and ethanol for chemical neurolysis to control pain in patients with intra-abdominal malignancy. **Methods:** prospective randomized single blinded study. It involved Group (A): is formed of 20 patients had splanchnic plexus block with lidocaine 1% and ethanol 75%. Group (B): is formed of 20 patients used the traditional treatment with analgesics by considering the previous and subsequent consumption of narcotics as a control group. The outcome was measured by the visual analogue scale (VAS) values, quality of life (QOL) opioid consumptions which were evaluated prior to the procedure and at 1 to 2 weeks intervals after the procedure. Any change in pain character and associated constitutional symptoms. **Results:** there was statistically significant difference between the pre and post procedure data as visual analogue scale score (VAS) among both groups. **Conclusion:** local anesthetics and alcohol in splanchnic plexus block was effective than traditional treatment with analgesics in patients with intra-abdominal malignancy.

Keywords: Malignancy, pain. splanchnic plexus block.

Introduction
Pain is one of the most prevalent symptoms in patients with advanced cancer. Prolonged pain can significantly affect patients, not only in terms of physical suffering but also mental anguish, which can produce depression in up to 20% of patients with cancer [(1).]

Pancreatic and other upper abdominal organ malignancies can produce intense visceral pain syndromes that are frequently treated with splanchnic nerve neurolysis (SNN) or celiac plexus neurolysis (CPN) [(2).]

The celiac plexus transmits pain signals originating from all abdominal viscera and most pelvic viscera, including the pancreas, liver, gallbladder, stomach, renal pelvis, ureter, and intestine proximal to the transverse colon. Most frequent indication for celiac plexus block is pain secondary to an upper abdominal malignancy, although it is very effective for pain generated by retroperitoneal tumors or metastases. [(3)]

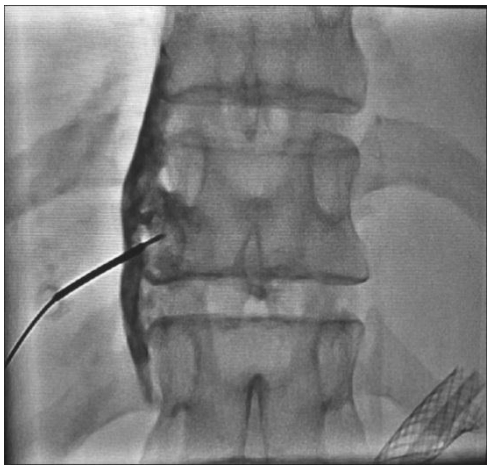
Methods
Technique of the study:
On arrival at the operating room, electro-cardiogram, pulse oximetry, and non-invasive arterial blood pressure were applied. Vital signs were obtained. Then an intravenous 18G cannula was inserted and preloading with ringer solution (10-15 ml/kg) was started.

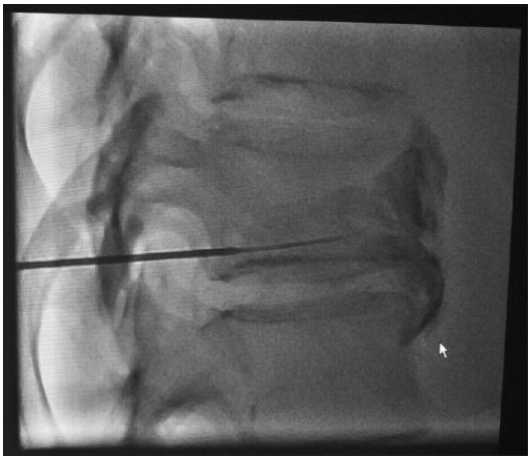
Equipment and Drugs used in the study:
1- Spinal needle 22-gauge size.
2- 10-mL syringes for injection.
3- Sterile gloves, marking pen, and surface electrode.
4- Sterile towels and "4x4" gauze packs.
6- Ethanol approximately 75%
7-lidocaine (10mg/ml)
9- Contrast dye (ion free)
The patients divided randomly into two groups

Group A: Is formed of 20 patients had splanchnic plexus block

Patient position: prone position fluoroscopic guided identification of thoracic vertebrae (T11)

Twenty-two Gauge spinal needle introduced at 11th intercostal space 6 cm from midline and advanced to touch the anterolateral aspect of T11
Again, with AP and lateral views the placement of the needles was confirmed using contrast dye under fluoroscopy.





Splanchnic nerve blockade will be performed by using Six ml of ethanol approx. 75% solution (4.5 ml ethanol 96% + 1.5 ml of lidocaine 10 mg/ml) administered either unilaterally or bilaterally according to site of pain (a total of 12 ml).

Group B: Is formed of 20 patients used the traditional treatment with analgesics by considering the previous and subsequent consumption of narcotics as a control group.

Parameters assessed:

1. Hemodynamic parameters: HR, MAP and SpO2 were recorded before and immediately after the blockade and follow up on time intervals over 2 weeks after the blockade.

2. Analgesic requirements: first time to require additional analgesics and type and dose used.

3. Incidence of complications: in the form of hemodynamic instability, constitutional symptoms as (nausea, vomiting and diarrhea)

4. Visual Analogue Scale: The Visual Analogue Scale (VAS) consists of a straight line with the endpoints defining extreme limits such as ‘no pain at all’ and ‘pain as bad as it could be’. The patient was asked to mark his pain level on the line between the two endpoints. The distance between ‘no pain at all’ and the mark then defined the subject’s pain.

We assess pain for patients' group as a baseline by (VAS) visual analogue scale which is a valid and reliable measure of chronic pain intensity, as well as acute pain measurement using a ruler [4]. score from 0-4 cm mild pain. 5- 7cm moderated and 8-10 severe pain

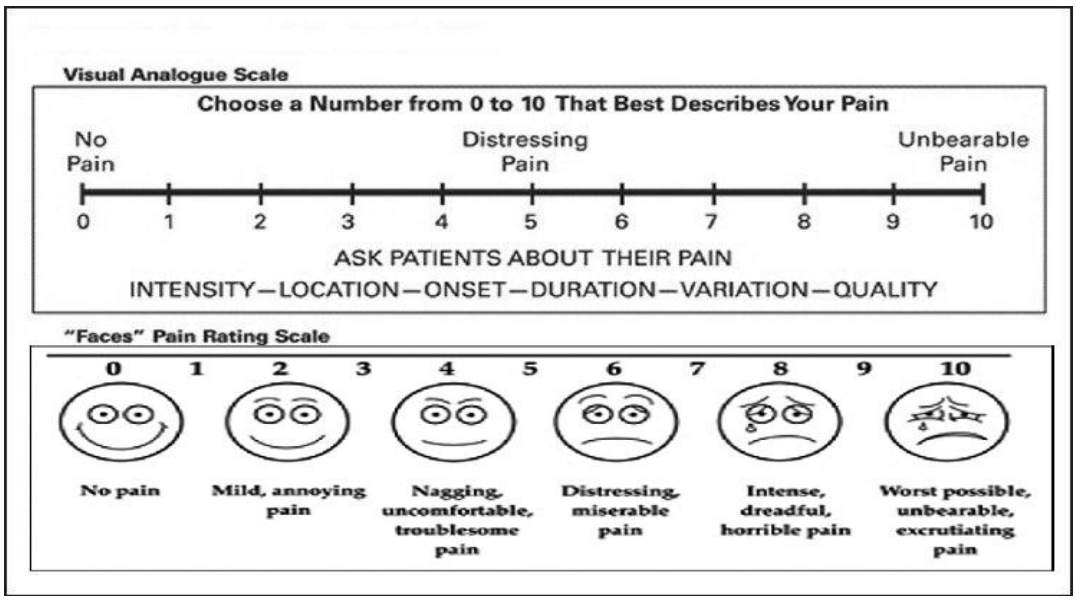


Figure (1): (showing visual analogue scale score)

Results

Table (1): Sociodemographic data among the two studied groups.

Variable		Group A n= 20	Group B n= 20	P value
Age/year	Mean ± SD	53.9 ± 12.3	50.1 ± 11.7	**0.395**
Gender	Female, n (%)	6(30)	7 (40)	**0.694**
	Male, n (%)	14 (70)	13 (60)	

*Student t test; Chi square test; *p is significant at <0.05*

There was no statistically significant difference between both groups regarding age, gender.

Table (2): Pain assessment and quality of life prior to the procedure among the two studied groups

Variable		Group A n= 20	Group B n= 20	P value
Opioid consumption	**Yes, n (%)**	17 (85)	18(90)	>0.871*
	No, n (%)	3 (15)	2(10)	
VAS	**Mean ± SD**	6.9± 1.1	7.1± 2.1	0.492
QOL	**Mean ± SD**	39.0± 12.0	40.8±9.4	0.470

*Fisher Exact test; Student t test; Mann Whitney U test; *p is significant at <0.05*

Global Quality of Life Scale

There was statistically no significant difference between the two studied groups regarding opioid consumption, VAS score and quality of life score.

Table (3): Pain assessment and quality of life after the procedure among the two studied groups.

Variable		Group A n= 20	Group B n= 20	P value
Opioid consumption	Yes, n (%)	6(30)	18 (90)	0.001*
	No, n (%)	14 (70)	2 (10)	
VAS	Mean ± SD	3.1± 1.1	7.0± 2.3	<0.001*
QOL	Mean ± SD	76.0± 12.2	43.5± 10.8	<0.001*

*Chi square test; Student t test; Mann Whitney U test; *p is significant at <0.05*

There was statistically significant difference between the two studied groups regarding opioid consumption, VAS score, quality of life score**.**

Table (4): Comparison between pre and post procedure data among Group A.

Variable		Group A (Pre)	Group A (Post)	P value
Opioid consumptions	Yes, n (%)	17 (85)	6 (30)	0.002*
	No, n (%)	3 (15)	14 (70)	
VAS	Mean ± SD	7.6± 1.2	3.4± 1.3	<0.001*
QOL	Mean ± SD	39.0± 11.0	68.0± 14.2	<0.001*

*McNemar's test; Paired t test; *p is significant at <0.05*

There was statistically significant difference between the pre and post procedure data as opioid consumption, VAS, NPS and QOL among Group A.

Discussion

This single blinded, prospective randomized study aimed to evaluate effect of alcohol and local anesthetics for chemical neurolysis to control pain in patients with intra-abdominal malignancy.

In our results there was statistically significant difference between the two studied groups regarding opioid consumption as there were only 30% used opioids among Group A with celiac plexus block while there were 100% used opioids among Group B traditional treatment with analgesics.

Seymore et al., (2019) like our study demonstrated that the largest reduction in opioid use occurred. The addition ethanol 96% with lidocaine almost immediately made a big difference in the patient's and his family's perception of the adequacy of his pain and symptom control. Intravenous methadone had been infused for about 4 days at this point and may have begun to be effective. His brief exposure to ketamine may have contributed to NMDA receptor antagonism as well [(5).]

In our study there was statistically significant difference between the two studied groups regarding VAS score as the mean score was 3.1± 1.1 among Group A while it was 7.0± 2.3 among Group B.

Dhanalakshmi et al., (2016) had a retrospective study chart review of 93 patients who underwent SNN for cancer-related abdominal pain to describe patient characteristics, examine comparative efficacy, duration of benefit, and incidence of complications with alcohol vs. those of phenol. Consistent with previous studies, SNN reduced reported pain scores while not significantly reducing opioid consumption.[(6).]

There was statistically significant difference between the two studied groups regarding quality-of-life score as the mean was 76.0± 12.2 among Group A while it was 43.5± 10.8 among Group B. In a study by Liu et al., (2020) aimed to investigate the effect of dezocine injection combined with dexmedetomidine on pain and quality of life in patients with advanced hepatocellular carcinoma. The scores of physical function, mental function, and life function significantly ($p<0.05$) increased after intervention in both the groups. They demon-

strated that dezocine injection combined with dexmedetomidine could significantly relieve postoperative pain in patients with advanced hepatocellular carcinoma, shorten the recovery time and improve the quality of life. [7]

Dhanalakshmi et al., (2016) demonstrated that 44.57% of patients had ≥ 30% pain reduction while 43.54% did not have pain reduction.

Interestingly, the procedure produced significant improvements in anxiety, depression, difficulty thinking clearly, and feeling of well-being. In addition, no difference in complications was seen between the agents either. SNN was an effective and relatively safe procedure for the treatment of pain associated with pancreatic and other upper abdominal organ malignancies in our sample of patients [6].

Diane et al., (2016) showed that 60 patients with pain from pancreatic or gastro-intestinal primary cancers or metastatic disease to the abdominal region. Results demonstrate excellent inter-rater agreement (intra-class correlation [ICC] coefficient at pre-SNN = 0.97 and ICC at within one-month post-SNN = 0.98) for the grid method of scoring the pain drawing and demonstrate psychometric generalizability among patients with cancer related pain [8].

Conclusions

We conclude that uses of local anesthetics and alcohol in splanchnic plexus block was effective than traditional treatment with analgesics in patients with intra-abdominal malignancy.

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