

Effect of educational nursing instructions on outcomes of patients receiving percutaneous alcohol ablation therapy for hepatocellular carcinoma treatment

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ABSTRACT

Background: Percutaneous alcohol ablation has emerged as a safe and predictable technology for treating certain patients with cancer who otherwise have few treatment options. Patients need to be familiar with all phases of the RFA procedure to decrease post ablation syndrome.

Aim: Evaluate the effect of educational nursing instructions on outcomes (knowledge and post ablation syndrome) of patients receiving percutaneous alcohol ablation therapy for treatment of hepatocellular carcinoma.

Design: Pretest and Posttest research design was used to test the study hypothesis and fulfill the aim of the study.

Methods: This study was conducted at Al-Rajhy Intervention Ultrasound unit at Assuit University. A purposeful sixty patients admitted to receive percutaneous alcohol ablation therapy where the first thirty admitted patients considered as a control group and received the routine hospital care while

the second followed thirty admitted patients received the educational nursing instructions (study group).

Tools: (i) Percutaneous alcohol ablation patient interview questionnaire sheet and (ii) Post ablation syndrome questionnaire sheet both tools used pre and post application of educational nursing instructions

Results: A statistically significant differences between the study and control groups in knowledge about percutaneous alcohol ablation therapy ($p>0.05$). A significant increase in study group patient's knowledge and decrease in post ablation syndrome after educational nursing instructions application.

Conclusion: Implementation of educational nursing instructions was very useful in improving patients' knowledge about percutaneous alcohol ablation therapy which leads to minimize post ablation syndrome.

Recommendations: There is a need for educating hepatocellular carcinoma patients who receive percutaneous alcohol ablation about this procedure precaution. This instruction should be available for all patients suffering from hepatocellular carcinoma.

Key Words: Educational nursing instructions; Outcomes; Hepatocellular carcinoma; Precautions alcohol ablation therapy

INTRODUCTION

Hepatic malignancies are greatly common and frequently exhibit a therapeutic dilemma. Everywhere throughout the world hepatocellular carcinoma (HCC) is a standout amongst the most far reaching cancers, with an expected rate of no less than one million new patients for each year. Early stage HCCs, a variety of loco-regional therapies including microwave coagulation therapy, percutaneous acetic acid injection, cryoablation therapy, laser interstitial thermal ablation therapy, radiofrequency ablation (RFA), and percutaneous ethanol injection therapy (PEIT) have been widely applied [1].

Percutaneous alcohol injection considered the main successful ablative method for the treatment of little HCCs. Ethanol (alcohol) causes dehydration then necrosis. The alcohol demines tumor through drying its cells and denaturing the structure of the cellular proteins. Alcohol causes thrombosis of the small blood vessels that prompts tumor corruption [2].

Percutaneous ethanol (alcohol) injection therapy (PEIT) consider best indicated for patients with small hepatocellular carcinoma (HCC). During the procedure, alcohol inject percutaneously under imaging guidance; have been executed as negligibly intrusive treatment for hepatocellular carcinoma. PEIT usually required multiple treatment session to achieve complete necrosis tumors >3.0 cm. Researches had indicated better outcomes with percutaneous alcohol injection than with surgical resection. Patients need to be familiar with all phases of the RFA procedure to decrease post ablation syndrome [3,4].

Post ablation syndrome is a common phenomenon after percutaneous

ethanol (alcohol) injection therapy for liver tumor. Post ablation syndrome includes pain and fever. Regular pain mainly occurs at the injection site. Pain may referred to the patient's abdomen or shoulder due to spillage of alcohol around the hepatic sac but this rarely occurs. Nursing explain to the Patients signs and symptoms of post ablation syndrome before the procedure [5].

Patient education guidelines consider important for post ablation syndrome for minimizing, and helping patient to return to normal activity through 7th to 10th days. Patients ought to know that these mild symptoms frequently happened normally and continual hydration may limit post ablation syndrome [6]. The nurse who is a skilled educator to improve the level of awareness among patients. The nurse responsible mainly for patient's education about post ablation follow-up [7,8].

Significance of the study

Percutaneous alcohol injection considers the most generally utilized strategy for treating hepatocellular carcinoma (HCC). Numbers of admitted patients at Al-Rajhy Intervention ultrasound unit at Assuit University was 350 cases required percutaneous alcohol ablation therapy for treatment of hepatocellular carcinoma (HCC) according to hospital statistical record (2016). It is important to patients to gain more knowledge about percutaneous Alcohol Ablation Therapy that may minimize incidence of post ablation syndrome, which consider the main nursing goal for those patients.

Aim of the study

To assess the effect of educational nursing instructions on outcomes of

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patients receiving percutaneous alcohol ablation therapy for treatment of hepatocellular carcinoma (HCC).

Hypotheses

- Mean knowledge score of the study group will be higher than those patients of the control group after intervention of the educational nursing instructions.
- The incident rates of post ablation syndrome among the study group «will be diminished after intervention of the educational nursing instructions rather than the control group».
- The knowledge and incident rates of post ablation syndrome were significantly difference between experimental and control groups after intervention of the educational nursing instructions.

SUBJECTS AND METHODS

Research design

Pretest-Posttest t research design with one group pre-test post-test approach was used to evaluate the effectiveness of the educational nursing instructions for the present study. The sample was tested twice before and after introducing the independent variable (The educational nursing instructions).

Setting

The study was conducted at Al-Rajhy Intervention ultrasound unit at Assuit University.

Patients

A purposeful sixty patients admitted to Al-Rajhy Intervention ultrasound unit at Assuit University and undergoing percutaneous alcohol ablation therapy for treatment of hepatocellular carcinoma (HCC). The sample was calculated by power and sample size calculation program to estimate the sample size based on using 5% possible error. These patients admitted to the unit according to criteria in Hospital application form.

The first thirty admitted patients to receive percutaneous alcohol ablation therapy considered as a control group who received the routine hospital care. The second followed thirty admitted patients received the educational nursing instructions. This for avoiding sources of any bias while composing the sample and attaining the study group and control group.

The inclusion criteria of patients included

Hepatocellular carcinoma patients, the tumor size is $3 \geq$ HCC tumors, Well-defined margins, Less than three cm in diameter, Surrounded by fibrous encapsulation, Not near the surface of the liver and adult patients (18-65 years).

Then, the studied sample divided randomly into two equal groups (study and control). Study group who received the educational nursing instructions, and control group have the routine hospital care.

Study tools

Two tools were used in this study (this tool developed by the researchers) after reviewing literatures:

Tool (I): Percutaneous alcohol ablation patient interview questionnaire sheet: This sheet was divided into two parts:

- (A) Demographic data: Which include age, sex, level of education, marital status, residence, diagnosis, history of previous percutaneous alcohol ablation therapy.
- (B) Patient's knowledge assessment: Aim of this part: assessment of patient's knowledge regarding alcohol ablation therapy. It was applied by the researchers for both groups.

Scoring system for patient's knowledge:

- 2=Correct answer
- 1=Incomplete correct answer
- Zero=Wrong answer

Tool (II) Post ablation syndrome questionnaire sheet: Aim of this sheet was to assess the patient's complications pre-post application the educational

nursing instructions. It was used to assess daily post ablation syndrome for patient after discharge. The patients were followed for 3 weeks (the period of post ablation adverse effects that is occurs).

This sheet applied in both groups (study and control).

These complications were: bruising and/or infection, pain or discomfort at the puncture site, fever, chills, nausea and vomiting.

Scoring system for patient's post ablation syndrome

Score 1=Presence of sign.

Score 2=Absence of complication's sign.

Construction of educational nursing instructions

It was designed by the researchers based on patient's needs evaluation, literature review, researcher experience and opinions of the medical and nursing expertise. The researchers adapted concluded with a few modifications then translated into Arabic by the assistance of English teachers. It included the following items:

Definition of PEI, types, indications, contraindications, complications, and nursing instruction for PEI pre, during and post Alcohol injection.

PROCEDURE

The study was conducted through the following steps:

Administrative approval

- Permission to conduct the study was obtained from the hospital responsible authorities after explanation of the study aim.
- An approval was obtained from the faculty of nursing- Assiut University ethical committee.
- Tool (I) the researchers developed it in Arabic based on reviewing the relevant literature.
- Content validity of the used tools was done by a jury of (5) specialists in the field of medical- surgical nursing and hepatology field.
- The reliability was tested for tool (I) (knowledge interview questionnaire sheet) by using Cronbach's alpha coefficient.

A pilot study

A pilot study was conducted to test the feasibility, clarity and applicability of the tools on 10% of sample about (6 patients) then added to the total sample.

Ethical considerations

- Permission to carry out this study was obtained from the ethical committee of Al-Rajhy hospital and ethical committee in the Faculty of Nursing at Assiut University endorsed the research proposal. The aims and objectives of the study were explained to each patient and only those who gave their consent participated in the study.
- Confidentiality and anonymity were guaranteed.
- Patients had the freedom to participate and or withdraw from the study whenever they want.
- During collection of data, patient's privacy was considered.
- The sample was collected each Wednesday/ week (the only day that the percutaneous alcohol ablation for liver carcinoma patients done).
- The first thirty admitted patients to receive percutaneous alcohol ablation therapy considered as a control group who received the routine hospital care.
- The second followed thirty admitted patients received the educational nursing instructions. This for avoiding sources of any bias while composing the sample and attaining the study group and control group.
- The control group received the same educational nursing instructions booklet at the end of the study.
- Patients' knowledge and post ablation syndrome assessed twice as follows:
- The first thirty admitted patients to receive percutaneous alcohol

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ablation therapy considered as a control group who received the routine hospital care.

- The researchers collected base line data, (knowledge and incidence of post ablation syndrome) collected from control groups.
- The second followed thirty admitted patients consider a study group who received the educational nursing instructions before entering in the unite of alcohol ablation therapy the researchers collected base line data then explain the position and the instructions to follow during the injection and after finishing the session of injection. This took about 10 minutes. The tools were filled by the researchers through interviewing patients.
- After implementation of the nursing instruction, the researchers ask the patient about their understanding the received knowledge.
- The researchers evaluated of the effect of nursing instructions on patients' knowledge and incidence of post ablation syndrome for both groups daily post ablation syndrome for patient after discharge.
- The patients were followed for 3 weeks (the period of post ablation adverse effects that is occurs) by telephone them and asking about the post ablation syndrome.

Statistical analysis

The Statistical Package for Social Science (SPSS) version 12 and excel office were used for data analysis. Data were presented using numbers, percentage, chi-test and independent t test. Level of significant was thresholds at $p < 0.05$.

RESULTS

As shown in Table 1, no significant differences was found between both groups (study and control), majority of them were male (66.7% and 60% respectively), more than 50 years old (78.3% and 66.7% respectively), with the mean age of both groups was (58.46 ± 5.72) and half of patients were working (50%).

As shown in Table 2, a highly statistical significant difference was found in both study and control groups after application of educational nursing instructions regarding knowledge level about percutaneous alcohol injection and percutaneous alcohol injection procedure.

As shown in Figure 1, a highly statistical significant difference ($p < 0.001$) regarding mean knowledge scores in the study group per and post educational nursing instructions applications about percutaneous alcohol injection and percutaneous alcohol injection procedure also showed that there was an increase in knowledge mean score after the application of educational nursing instructions.

As shown in Figure 2, a highly significant difference ($p < 0.05$) in the study and control after groups after application of educational nursing instructions regarding incidence of post ablation syndrome. Main post ablation syndrome

Table 1
Demographic characteristics and diagnosis of study and control groups N=(60)

Demographic Characteristics	Study group N=(30)		Control group N=(30)		p. value
	N=(30)	%	N=(30)	%	
Age group					0.29_{Ns}
40 and 50 years old	13	21.7	10	33.3	
50 years old and above	17	78.3	20	66.7	
Mean age Gender				58.46 ± 5.72	0.39_{Ns}
Male	20	66.7	18	60	
Female	10	33.3	12	40	
Occupation					0.39_{Ns}
Working	15	50	13	43.3	
Not working	15	50	17	56.7	

Independent T test was utilized Ns-Non statistical significance difference P. value < 0.05

Table 2
Comparison between the study and control group patients after application of the educational nursing instructions application regarding knowledge about percutaneous alcohol injection and percutaneous alcohol injection procedure (N.=60).

Questions		Control group N.= (30)	%	Study group N.= (30)	%	P. value
1. Knowledge about percutaneous alcohol Injection						
a. Definition of percutaneous alcohol injection?						
Right		9	30	25	83.3	0.001*
Wrong		18	60	5	16.7	
not sure		3	10	0	0	
b. How is percutaneous alcohol injection done?						
Right		6	20	26	86.7	0.001*
Wrong		23	76.7	4	13.3	
not sure		1	3.3	0	0	
c. How does percutaneous alcohol injection work?						
Right		3	10	26	86.7	0.001*
Wrong		26	86.7	4	13.3	
not sure		1	3.3	0	0	
d. Which patients are treated?						
TRUE		4	13.3	23	76.7	0.001*
e. Side effects of percutaneous alcohol injection?						
Right		4	13.3	23	76.7	0.001*
Wrong		20	66.7	7	23.3	
not sure		6	20	0	0	
2. Knowledge about percutaneous alcohol injection procedure:						
a. Pre procedure preparation						
Right		5	16.7	25	83.3	0.001*
Wrong		25	83.3	5	16.7	
not sure		0	0	0	0	
b. During procedure precautions						
Right		3	10	25	83.3	0.001*
Wrong		25	83.3	5	16.7	
not sure		2	6.7	0	0	
c. Post procedure precautions						
Right		2	6.7	27	90	0.001*
Wrong		23	76.7	3	10	
not sure		5	16.7	0	0	

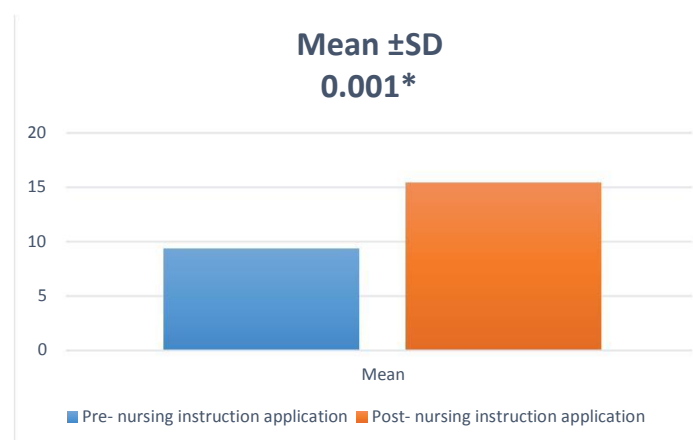
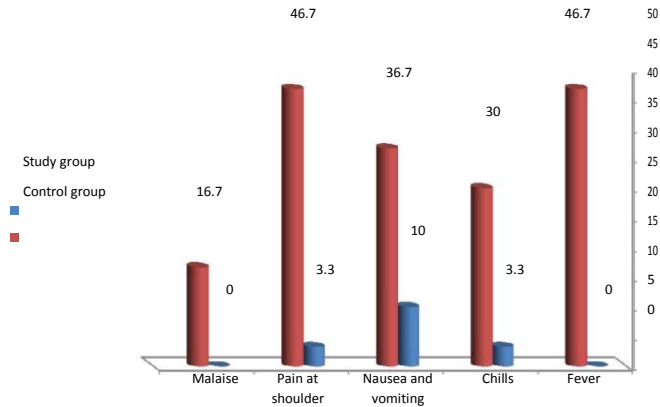


Figure 1) Mean distribution scores of knowledge in study group per -post application of the educational nursing instructions N= (30)

among study group was nausea and vomiting but among control group were pain at shoulder and fever.



Chi square test was utilized ($p=0.001^{**}$)

Figure 2) Comparison between the study and control group patients regarding incidence of post ablation syndrome after application of the educational nursing instructions (N=60)

DISCUSSION

Percutaneous ethanol (alcohol) ablation is a minimally invasive procedure for the liver tumors management that with minimal post ablation syndrome. Number of patients receiving percutaneous ethanol ablation of hepatic tumors became quietly sick a few days after the procedure. These patients suffered from flulike manifestations as fever, malaise, chills, pain, and nausea [8,9].

In this study; the demographic characteristics of the study and control groups revealed that, that majority of them were male, more than fifty years and half of them were working. There were no statistically significant differences between both groups. This was important to ensure comparability of the two groups, and indicate successful randomization of the two groups.

The present study found that; before instructions application, the study and control groups had inadequate knowledge regarding percutaneous alcohol ablation therapy. As regarding patients' knowledge before and after instructions application, there was a great significant difference. This may be due to lack of knowledge about percutaneous alcohol ablation therapy and no Arabic instructions booklet in the unit available for patients. The previous finding comes in agreement with [10] who expressed that, patient education and appropriate instructions about percutaneous ethanol (alcohol) ablation technique and recovery period considers very important according to patients' needs and level of understanding.

In this line [11] stated that patients would gain knowledge about percutaneous ethanol procedure; this information should be given to the patient, especially, if the patient receive this treatment for the first time. Also it was necessary for staffs who were involved in patients care should support them to have the appropriate knowledge and understanding to facilitate this process [12,13]. Recommended that patients should understand the aim and expected outcomes of the procedure they received.

As regarding incidence of post application syndrome; there were a great improvement regarding incidence of nausea and vomiting, in studied sample (post ablation syndrome) after application of the educational nursing instructions. A highly significant difference ($p<0.05$) in the study and control after application of educational nursing instructions regarding incidence of post ablation syndrome Main post ablation syndrome among study group was nausea and vomiting but among control group were pain at shoulder and fever. This result may be due to the affirmative feedback of nursing instructions on patients' awareness about the procedure this assist them to know the appropriate way to transact with their side effects at home.

In this context [14] mentioned that the post-ablation syndrome commonly after percutaneous ethanol (Alcohol) ablation. Post percutaneous ethanol (Alcohol) ablation syndrome; including nausea, vomiting, fever, and/or malaise occurring in nearly 1\3 of this patients. Regarding to [15] nurses ought to teach the patients how to monitor temperature, intake and output, and report any changes to the physician. Pain, low-grade fever, shoulder pain, nausea, vomiting, arthralgia, headache, tiredness and a general feeling of malaise that consider minor complications as in mild tumor lyses syndrome which normally occur next five to seven days. In this respect [8,9] specified that; the important of incorporating nursing instructions enhanced client's condition by decreasing level of pain after procedure.

Finally, the results of our study explore that the nursing instructions significantly decreased ablation syndrome among the study group that through raising patients' knowledge about percutaneous alcohol ablation therapy rather than control group that achieved the study hypotheses.

CONCLUSION

In the view of this study, the knowledge of the study group with hepatocellular carcinoma who received the teaching nursing instructions about alcohol ablation therapy was better than control group which led to decreasing the post ablation syndrome.

RECOMMENDATIONS

- Percutaneous alcohol ablation instructions ought to be accessible in straight forward Arabic and supported with colored pictures booklet or brochure for every hepatocellular carcinoma patient.
- Further researches about percutaneous alcohol ablation should be applied on large probability sample for evidence of results and generalization.
- Further training programs about percutaneous alcohol ablation for patients should be held.

DECLARATION OF INTEREST

The authors do not mention any conflict of interest. Only the authors are responsible for the content of the paper.

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