

A comparative study to assess the effectiveness of Hegu point ice massage and lidocaine 2% injection on reduction of pain among patients undergoing hemodialysis during arteriovenous fistula (AVF) puncture at tertiary care hospital Bathinda, Punjab

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ABSTRACT:

Ice massage technique produces analgesia when massage is given with a solid piece of ice, either an ice cube or ice lollypop is wrapped with a small towel, leaving one surface free. Ice massage is normally performed in a slow, circular motion over a small area. An area of 10-15 cm² needs to be ice massaged for up to 10 minutes or until numbness is felt and the physiological effects starts to appear. A special acupuncture source point, has been used as an acupuncture point for treating peripheral circulatory failure in the hand. The research design adopted was quasi experimental post-test design without control group. The study was conducted in tertiary care hospital Bathinda Punjab. Convenience Sampling technique was adopted to select the desired sample. The sample size was 60. As an intervention, huge point ice massage and lidocaine 2% injection was administered for two different groups. The data was collected through Standardized Numerical Pain rating scale. The collected data were analyzed by using both descriptive and inferential statistical methods. 't' test was used to evaluate the effectiveness of huge point ice massage and lidocaine 2% injection on arteriovenous fistula (AVF) puncture related pain among patients undergoing hemodialysis. The findings of the present study revealed that the post-test mean score Arteriovenous Fistula puncture pain by using Unpaired t Test was 4.63 (46.33%) in Group A and was non-significant at p = 0.859, while in Group B the post-test mean score by using Unpaired t Test was 4.53 (45.33%) and was non-significant at p = 0.85.

Keywords: Assess, huge point, Lidocaine, AVF, puncture, pain

INTRODUCTION

Dialysis is a common method of treatment for removing toxic waste products when the kidney unable to perform its function due to impairment Vascular access is the vital life line for hemodialysis. The most common vascular access sites are arteriovenous fistula, arteriovenous graft and venous catheter. According to National Kidney Foundation Dialysis Outcome Quality Initiative [DOQI] (2005) report, AV fistula remains as the gold standard for vascular access in hemodialysis patients.² Dialysis is a temporary or permanent process that artificially replaces the excretory function of the kidney from the body and to correct serious electrolyte and fluid imbalances. Hemodialysis (HD) is most frequently used renal replacement therapy. One of the vital aspects of hemodialysis is the establishment and maintenance of adequate blood access. Without it, hemodialysis cannot be done. One of the major routes is the internal arteriovenous fistula (AVF).³ Patients undergoing hemodialysis may frequently experience pain, which is caused by approximately 320 punctures inserted in their AVF each year. Moreover, large-gauge needles are normally inserted into the AVF in order to preserve the extracorporeal rate of blood flow at 300 ml/min, which could dramatically increase pain intensity. Repeated AVF puncturing may lead to adverse outcomes such as anxiety, fear and intense pain. Furthermore, it could have negative effects on the quality of life of the patients undergoing hemodialysis. Level of pain during fistula needle insertion remains an uncontrolled concern for hemodialysis patients and is considered as one of the most important causes of treatment rejection among ESRD patients. AVF puncture-related pain is a highly prevalent complication in patients on hemodialysis.⁴ The pain caused by the insertion of needles and catheters into blood vessels becomes problematic when it is repeated and requires constant use of them. In the treatment of patients with chronic renal failure, hemodialysis as a preservative usually requires continuous use of arterial and venous needles for the patient.⁵ The pain caused by AVF cannulation is an important aspect to be evaluated in the patient by the nursing professionals. This subject should be marked in the first instance, because it is a stressful issue when patients need to accept AVF as the mean to make a vascular access. Often, the fear of needles and the pain caused by the puncture can provoke discomfort and anxiety, requiring the use of local anesthetic products in the pre-cannulation.⁶ Patients undergoing hemodialysis repetitively experience pain and anxiety related to arteriovenous fistula (AVF) punctures. Using of appropriate methods of pain relief in these patients is very important.⁷ Ricci and Kyle listed strategies for pain management to include pharmacological and nonpharmacological intervention. The nonpharmacological approaches are essential component of pain relieve that include relaxation technique, visual imagery, behavioural- cognitive strategies and biophysical interventions such as massage, pressure, and cutaneous electrical nerve stimulation through either heat or cold application.⁸

Ice massage technique produces analgesia when massage is given with a solid piece of ice, either an ice cube or ice lollypop is wrapped with a small towel, leaving one surface free. Ice massage is normally performed in a slow, circular motion over a small area. An area of 10-15 cm² needs to be ice massaged for up to 10 minutes or until numbness is felt and the physiological effects starts to appear.⁹

Acupressure is a holistic approach dating back to 5000 years ago.¹² The Hegu point or LI-IV or 4 is an important point in the large intestine meridian, located on the dorsum of the hand, between the first and second metacarpal bones.

A special acupuncture source point, has been used The structured practice checklist consists of 60 practice items based on the content on Advance cardiovascular life support. as an acupuncture point for treating peripheral circulatory failure in the hand. Li4 is located in the area covered by the superficial branch of the radial nerve (SBRN), and close to the radial artery or first dorsal metacarpal artery, which is a branch of the radial artery.¹⁰

An example of a non-pharmacological method is acupressure, which is a traditional Chinese medicine where acupuncture points are stimulated by hands, fingers, thumbs, or small beads. This method acts according to the gate control theory where burning, massaging, and scratching can stimulate the large fibres responsible for transmitting nerve impulses to the spinal cord. A sustained stimulation can keep the gates of pain transmission closed, which may result in decreased pain. On the other hand, the stimulation of acupressure points using heat, needles, or pressure causes the release of endorphins.¹¹

AIM

The main aim of present study is to compare the effectiveness of the two methods in relieving Arteriovenous fistula puncture-related pain in hemodialysis patients.

MAJOR FINDINGS:

Among the 30 Group A, Age wise distribution showed 11 (37%) of the subjects were in the age group of 18-36 years, 9 (30%) of the subjects were in the age group of 37-55 years, 10 (33%) of the subjects were in the age group of 56-74 years and 0 (0%) of the subject were in the age group of 75-93 years.

Among the 30 Group B, Age wise distribution showed 12 (40%) of the subjects were in the age group of 18-36 years, 15 (50%) of the subjects were in the age group of 37-55 years, 3 (10%) of the subjects were in the age group of 56-74 years and 0 (0%) of the subject were in the age group of 75-93 years.

With regard to gender, among Group A, majority 22 (73%) were males and 8 (27%) were females. Whereas in the Group B, majority 18(60%) are males and 12(40%) are females.

According to their education, in Group A, No formal education 12(40%), primary education 11(37%), having Higher secondary education 3 (10%), graduate 4(13%) and post graduate 0 (0%). In Group B, No formal education 10(33%), primary education 8(27%), having Higher secondary education 0 (0%), graduate 0(0%) and post graduate 0 (0%).

Regarding marital status in Group A, 24(80%) are married, 5(17%) are single, 1(3%) are divorced and 0(0%) are widow. In Group B, 24(80%) are married, 6(20%) are single, 0(0%) are divorced and 0(0%) are widow.

Regarding residence in Group A, 14(47%) are from rural area, 16(53%) are from urban, were as in Group B, 25(83%) are from rural area and 11(17%) are from urban area.

Regarding Occupational status, in Group A, 16(53%) were self-employed, 5(17%) home maker, 3(10%) government job, 6(20%) private job, and unemployed 0(0%).

In Group B, 11(37%) were self-employed, 12(40%) home maker, 0(0%) government job, 4(13%) private job, and unemployed 3(10%).

Regarding type of family, in Group A, 17 (57%) were living in nuclear family, 13 (43%) were living in joint family and 0(0%) were living in extended family. In Group B, 22 (73%) were living in nuclear family, 7 (23%) were living in joint family and 1(3%) were living in extended family.

Regarding family monthly income, in Group A, 17(57%) were having monthly income upto 10000. 11(37%) were having family monthly income 10001-20000, 1(3%) were having monthly income upto 20001-30000, 1(3%) were having monthly income above 30000.

In Group B, 24(80%) were having monthly income upto 10000. 6(20%) were having family monthly income 10001-20000, 0(0%) were having monthly income upto 20001-30000, 0(0%) were having monthly income above 30000.

Regarding reasons for undergoing hemodialysis in Group A, 21(70%) were suffering from chronic kidney disease, 6(20%) were suffering from acute kidney disease, 3(10%) were suffering other disease, In Group B, 27(90%) were suffering from chronic kidney disease, 3(10%) were suffering from acute kidney disease, 0(0%) were suffering other disease.

Regarding number of hemodialysis in a week, in Group A, 26(87%) undergone dialysis twice per week, 2(7%) undergone dialysis 3-4 times per week, 2(7%) undergone dialysis more than 4 times per week. In Group B, 28(93%) undergone dialysis twice per week, 2(7%) undergone dialysis 3-4 times per week, 0(0%) undergone dialysis more than 4 times per week.

Regarding previous history of renal surgery, in Group A, 30(100%) no one is having any previous history of renal surgery. In Group B, 30(100%) no one is having any previous history of renal surgery.

Regarding duration of renal disease, in Group A, 11(37%)

were suffering from less than 1 year, 14(47%) were suffering from 1-2 years, 5(17%) were suffering from 3 years and above. In Group B, 7(23%) were suffering from less than 1 year, 21(70%) were suffering from 1-2 years, 2(7%) were suffering from 3 years and above.

Regarding when was the fistula made, in Group A, 14(47%) fistula is made before 6 months, 12(40%) fistula is made in less than 1 year, 2(7%) fistula is made in less than 2-year, 2(7%) fistula was made before years. In Group B, 8(27%) fistula is made before 6 months, 18(60%) fistula is made in less than 1 year, 4(13%) fistula is made in less than 2-year, 0(0%) fistula was made before years.

FIGURES

Diagram Showing the Comparison of Score Statistics of Scores among Both Groups (Figure 1).

Diagram showing the individual scores of patients of both group (Figure 2).

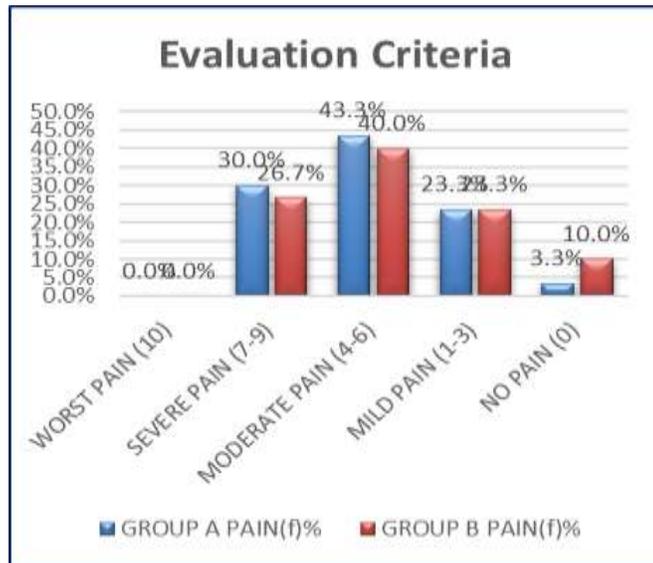


Figure 1

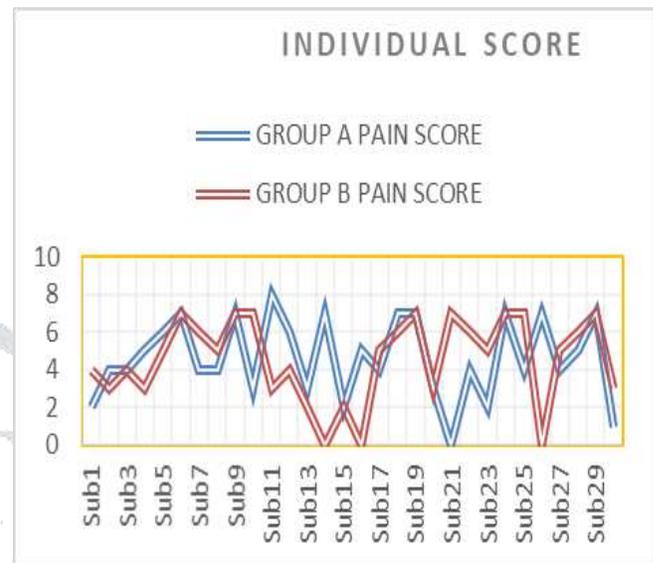


Figure 2

CONCLUSION

The focus of this study was to assess the effectiveness of hegu point ice massage and lidocaine 2% injection on reduction of pain among patients undergoing hemodialysis during arteriovenous fistula (AVF) puncture at tertiary care hospital Bathinda, Punjab.” In this study quasi experimental research design (only post-test without control group design) was used. 60 samples were drawn using convenience sampling technique. The data was collected by using numeric rating scale to check the level of pain and further analyzed and interpreted by applying statistical methods. The findings show that there was no much more difference in the pain level after the test. The mean score of arteriovenous fistula puncture pain level of Group A after administering huge point ice massage was ± 4.36 , standard deviation is ± 2.092 , and the P value is $0.859, >0.001$ which is non-significant.

The mean score arteriovenous fistula puncture pain level of Group B was ± 4.53 with a standard deviation is ± 2.240 . The p value is 0.859 and it is >0.001 which is non-significant.

From these two comparisons of mean level between the Group A Group B showing that there is no much more difference in the pain level after the test. In present study during the comparison of two intervention the level of pain was found slightly different and the value of P is >0.001 which is non-significant.

DISCUSSION:

• In the present study, the two comparisons of mean level between the Group A Group B showing that there is no much more difference in the pain level after the test. In present study during the comparison of two intervention the level of pain was found slightly different and the value of P is >0.001 which is non-significant

MATERIAL AND METHODS:

A Quasi experimental design (two group post-tests only design without control group) design was adopted for the study.

VARIABLES UNDER STUDY :

Independent variable: Hegu point ice massage and lidocaine 2% injection.

Dependent variable: Level of pain due to AVF puncture.

SETTING : The present study was conducted at Tertiary Care Hospital Bathinda Punjab,

SAMPLING: Convenience sampling technique.

SAMPLE SIZE: 60 (30 Group A) (30 Group B) Patients.

DESCRIPTION OF TOOLS:

A Knowledge questionnaire, and Consists of Numerical Pain Assessment Scale in range of 1-10, were used for collecting data.

SECTION I– consists of 11 items related to the background data.

SECTION II- consists of Numerical Pain Assessment Scale in range of 1-10, in which 0 indicates no pain, 1-3 indicates mild pain, 4-6 indicates moderate pain, 7-10 indicates severe pain.

IMPLICATIONS**NURSING EDUCATION**

As nursing educator, we must strengthen the evidence-based nursing practices among the undergraduate and postgraduate nursing students.

Provide adequate clinical exposure to students, where ice massage is used in reducing of AV fistula puncture related pain.

Educate the patients and students about various complementary and alternative therapies for reduction of pain.

NURSING EDUCATION

- Nursing researcher should encourage clinical nurses to apply the research findings in their daily nursing care activities and can bring out new innovative procedures to reduce the arteriovenous fistula puncture pain.
- Encourage the non- pharmacological interventions. Nurse researcher can promote many studies on this topic.
- Encourage peer use of huge point ice massage intervention as a form of diversion among the clients undergoing hemodialysis.

NURSING ADMINISTRATION

- Nursing administrator plays a pivotal role in the supervision and management of nursing profession.
- The Nurse administrator should formulate policies, protocols, guidelines and system of care for the patients in collaboration with multidisciplinary team
- Provide opportunity for nurses to attend training programme on complementary and alternative therapies while handling the patients undergoing hemodialysis through AVF.

RECOMDATION

- Similar study can be undertaken with a large sample to generalize the findings.
- The study can be conducted on patients with pain due to other types of cannulations.
- A study can be conducted to assess the attitude and practice among nurses posted in hemodialysis unit.
- A Comparative study can be conducted between the cryotherapy with other therapies.
- Similar studies can be undertaken for assessing the arteriovenous fistula puncture related pain among patients in different settings.

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