

Short Communication

Effect of local cold on intensity of pain due to Penicillin Benzathin intramuscular injection

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Intramuscular injection is an invasive and painful method of medication. Previous studies have indicated that local cold has the ability to decrease pain via decreasing transmission and perception. The effects of local cold on severity of pain during penicillin benzathin intramuscular (IM) injection are not known. The aim of this study was to determine the effect of local cold on severity of pain during penicillin benzathin (1/200/000 u) IM injection. 60 patients were taken and divided into case and control group using a randomized location sampling. In case group, local cold (ice) was used 30 s before IM injection while in control group, routine IM injections were given. Data was collected using questionnaire and visual analog scale (VAS). Data were analyzed with T- test. Results showed that local cold significantly decreased the severity of pain due to penicillin benzathin IM injection in case group as compared with control group ($p=0/000$). This signifies that local cold application could play an important role in decreasing pain during penicillin Benzathin IM injection.

Key words: Pain, intramuscular (IM) injection, local cold.

INTRODUCTION

Pain is one of the most common causes of human suffering. Pain serves as a mechanism to warn us about the potential for physical harm (Joyce and Jane, 2009). Pain is typically undertreated (American society of pain management Nurses, 2002). New medications and the recognition of complementary pain management strategies have contributed to the improved ability to manage pain and to provide satisfactory pain reduction or relief (McCaffery, 1999).

Pain is a multidimensional phenomenon, so, it is difficult to define. It is a personal and subjective experience, and no two people experience pain in exactly the same manner. Pain has been defined in many ways. The International Association for study of Pain (IASP) defines pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage" (Joyce and Jane, 2009).

McCaffery (1999) defined pain defined pain as

"whatever the experiencing person says it is, and existing whenever the person says it does". Pain is one of the most common reasons for seeking help from health care providers (Nellie, 2004). Intramuscular injections are one of the commonest cause of iatrogenic pain (Lander, 1992). Injections are among the most frequently used medical procedures, with an estimated 12 billion administered through out the world on an annual basis.

48% of patients mentioned needle injection as disturbing and 62% of patients fear injections (Cindy, 1996). In India, a survey found that 96% of all injections given by private doctors were of antibiotics, vitamins and analgesics (Lala and Lala, 2003). Pain and inflammation at the injection site is common for the parentally administered penicillin types (Berg et al., 2006).

Reducing patients' pain is important; for pain can damage nurse – patient relationship, whereas knowledge of alternative techniques can improve patient satisfaction (Rogers and Ostrow, 2004). Hasanpour et al. (2006) found that cold therapy method is effective in decreasing pain due to 6.3.3 penicillin IM injection. Movahedi (1999) showed that using ice bag is effective in decreasing pain due to venipuncture in children. There are other studies that show that local cold therapy can not reduce pain due

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to IM injection in children (Cindy, 1996).

Local cold therapy is one of the non-pharmacologic methods used and acts through local skin dispensations according to gate – control theory (Gedaly, 1991; Ross and Soltes, 1995). However, more studies are required to determine and approve the effect of local cold therapy on intensity of pain due to penicillin IM benzathin injection. Annually, a large number of Iranian patients need penicillin IM benzathin injection for prevention and treatment of infectious disease. This being a stressful procedure, an appropriate method has to be found to decrease pain.

This paper aims to compare pain intensity due to penicillin IM benzathin injection, using cold therapy and routine procedures. Procedural pain is generally a poorly researched area, despite the importance of good pain management in this field, there are repeated procedures that have poor pain management methods which result in patients' experiencing more anxiety and pain. Therefore, this research work has a contribution to make in helping health care professional manage and reduce procedural pain.

MATERIALS AND METHODS

60 patients (30 men and 30 women) between 15 and 50 years of age receiving IM injection of penicillin benzathin in the outpatient clinic were divided into case (local cold therapy) and control groups using a randomized allocation system.

The sampling criteria included: 15 to 50 years old who were prescribed IM injection of penicillin benzathin by a physician; being knowledgeable and educated; receive penicillin benzathin as the only injected medication; healthy site of injection and not received penicillin during the last 6 months; having no communication difficulties; no other severe pain, diabetes mellitus; no sensory-motor disorders or unconsciousness. Exclusion criteria includes any pain before injection, too fat or thin, non cooperative, or a blocked needle leading to delay in injection and needing another injection.

Procedure

Patients were greeted, informed of the study, consent taken and then given injections in a private room along with filling of the demographic information. The injection techniques in all two groups were consistent.

Intervention

In the local cold therapy group, the subjects were informed that a 2 cm x3 cm x3 cm piece of ice would be placed on the injection site on the dorsogluteal muscle for 30 s prior to IM injection. In the control group, a standard injection was given.

Subjects were evaluated for the pain intensity during injection through the visual analog scale (VAS) by a blinded evaluator. In this study, it was impossible to accomplish a true double – blinded study with cold therapy or routine injecting as it was obvious to the patients which intervention they were receiving. The visual analog scale can be used to measure both physical pain intensity and psychological distress, this tool is easy to use and provides the client and nurse with a simple mean to quantify pain.

Instruments

The data were collected through questionnaire. The questionnaire included two sections. The first section included demographic characteristics. The second section included visual analogy scale (VAS). The findings were statistically analyzed by SPSS and a $<0/05$ was considered as significant. Using T- test, age and sex distribution was similar in the two groups.

RESULTS

The average age of subjects in two groups was 34.5 year old. One half the subjects was men (50%) and 50% of subjects was women with no significant difference between the two groups regarding age and sex.

The average intensity of pain for penicillin benzathin injection in the local cold group was 4/47 +1/42 and in control group was 7/39 + 1/55. Results showed that local cold significantly decreased the intensity of pain due to penicillin benzathin IM injection ($P= 0/000$). No complications were observed for subjects in both groups.

DISCUSSION

The results show that the local cold therapy is effective in decreasing intensity of pain due to penicillin benzathin IM injection. Previous studies on pain perception due to 6. 3. 3 penicillin IM injection and cold therapy found it effective in decreasing pain due to venipuncture in children (Hasanpour et al., 2006; Movahedi, 1999).

Gedaly (1991), and Luffy and Gruv (1998) also showed that local cold therapy could reduce pain due to injection. However, Cindy (1996) showed that "ice was not to be significant in reducing injection pain in children". To provide analgesia, ice only needed to be applied for 30 s, whereas previous studies recommended 2 to 15 min cold therapy (Gedaly, 1991; Luffy and Grove, 2003). Although, the main mechanism of cold therapy according to gate-control theory is emphasized again, we did not study whether these findings could be due to placebo effect or otherwise; there can be no placebo for cold therapy.

Pain relieving methods can be studied for other routes. Since cold therapy causes local vasoconstriction, which can delay drug absorption, this should be avoided in cases requiring quick drug absorption. Other non-pharmacologic methods such as relaxation, distraction, cutaneous stimulation, massage, heat and cold application, trans-cutaneous electrical nerve stimulation, acupuncture and acupressure methods on pain relief due to penicillin IM injection in patients need to be studied.

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