Efficacy of Low Level Laser Versus Interferential in the Treatment of Chronic Pelvic Inflammatory Disease

Hala M. Hanfy*, Ali A. Thabet*, Amir M. Saleh and Mohamed M. Shahin*****
*Department for Obstetrics and Gynecology, Faculty of Physical Therapy, Cairo University.
**Department of Basic Science, Faculty of Physical Therapy, Cairo University.
*** Department of Obstetrics and Gynecology, El- Sahel Teaching Hospital.

ABSTRACT

This study was conducted to determine the efficacy of low level laser therapy (LLLT) versus interferential current in treating chronic pelvic inflammatory disease (PID), forty women were diagnosed with PID participated in this study, they were divided randomly into two groups equal in number, group (A) treated with LLLT and group (B) treated with interferential current. They were treated for three months, one session every other day, each session for 30 min.. All patients were evaluated before starting the treatment as well as after the end of treatment by present pain intensity scale and the level of C-reactive protein and pain relief scale at the end of treatment for both groups. Results showed a highly significant decrease in the severity of pain and a highly statistically significant increase of pain relief in group (A) compared to group (B), also there was a highly statistically significant decrease in the level of C-reactive protein after treatment in both groups but the reduction was more higher in group (A) than group (B). It was concluded that LLLT and interferential current are effective modalities in the treatment of pelvic inflammatory disease, but LLLT is more effective modality which can be used as an alternative conservative therapy rather than medication that have numerous side effects.

Key words: *Laser - Interferential current - Pelvic inflammatory disease – Pain - C-reactive protein.*

INTRODUCTION

Pelvic inflammatory disease (PID) is an infection of the female genital tract which represent important problem in gynecological and obstetrical care for its frequency and its severity[13].

It is a major gynecological health problem affecting more than one million women yearly. It begins with cervicitis and progress leading to serious clinical consequences including endometritis, salpingitis, pelvic peritonitis, tubal infertility, ectopic pregnancy, pelvic adhesions, pelvic abscess and chronic pelvic pain[15].

It is frequent in reproductive period of the women between 15-35 years, because of biological and sociological factors as they possess little acquired immunity, relatively advanced endocervical epithelium on the cervix and decrease in economic resources to seek out screening and early diagnosis and treatment[14].

It results from bacterial infection including Chlamydia trachomatis, neisseria and genital mycoplasmas with many predisposing factors including instrumentation of the female genital tract such as uterine curettage, insertion of intrauterine contraceptive devices and hystero-salpinography and vaginal douching, or

secondary to adjacent inflammation as appendicitis or some distant focus as pulmonary tuberculosis[16].

Approximately 60% of the cases suffered later from infertility which causes a major social and psychological problems as every women has greatest dream to have baby after marriage, so we find us facing a big problem that need successful solving.

Diagnosing acute PID include histopathological evidence of endometritis on endometrial biopsy, transvaginal sonography or other imaging technique showing thickened fluid or tubo-overian complex, elevated erythrocyte sedimentation rate (ESR) elevated C-reactive protein and laboratory documentation of cervical infection with pathogenic organisms. ESR greater than 15mm/hour and C-reactive protein greater than 5mg/dl with white blood cells > 10.000/mm in assessing severity of acute PID[14].

Recently C-reactive protein has become increasingly valued in the assessment of PID. The most common presenting finding of PID are pain (99%), pelvic tenderness (95%) and vaginal discharge (80%)[2].

Treatment such as analgesic, antibiotic and surgery are unsatisfactory because the long administration of anti-inflammatory analgesics is associated with many side effects such as maculopapular rash, a plastic anemia, tinnitus, deafness, peptic ulceration and nephrotoxicity. Similarly repeated or prolonged antibiotic therapy can result in development of persistent strains of organisms and predispose the patient to candidiasis furthermore the patient may not accept surgery[4].

Despite progress, in last few years in treating PID the problem of successful treatment has not been solved, the development and introduction of new effective therapeutic method are tasks of the most importance. Interferential current (IFC) stimulation represent one kind of therapeutic electrical stimulation current which has many advantages such as, it can overcome skin resistance, not produce skin irritation, specific area of the tissues at any depth can be treated, also, it is very safe that can be viewed in the treatment of lumbosacral pain during pregnancy[5,10].

The physiological effects of IFC include vasodilating effects that helping venous return, lymphatic drainage, also, allows the rapid elimination of toxic metabolic products, ensures better oxygen supply to the tissue, in addition it changes pH to the alkaline side and helps to disperse infiltration and adhesions[3,7].

Low level laser therapy (LLLT) has become a popular modality as a therapeutic tool. It is non invasive, anti-inflammatory and analgesic treatment. It is painless, aseptic and does not produce damage to the tissue like non steroidal anti-inflammatory or inflation with corticosteroid. It can produce bioeffect by modulating biochemical, physiological, and proliferative phenomena in various enzymes, cells and tissues. LLLT is reported to have an anti-inflammatory effect by using 830 nanometer at an energy density of 3-6 Joule/cm² for two minutes. LLLT can also act directly upon human immune system and increases both phagocytes and haemostatic activity of leucocytes in vitro and acts selectively on autoimmune mechanism to restore function to incompetent immune cells[1,6].

SUBJECTS, MATERIAL AND METHODS

Subjects

Forty patients were diagnosed with chronic PID and their ages ranged from 25-35 years old, were selected from out patient clinic

of Gynecological Department at El-Sahel Teaching Hospital. All patients were free from endometriosis, pelvic tumors, spinal and sacroiliac pain also, non of them used intrauterine contraceptive devices and they were not received any medication throughout the study. The patients were assigned into two equal groups, group (A) received laser for three months, three sessions/week, each session 30 min. and group (B) received interferential current for three months, three sessions/week, each session 20min.

Informed consent form were signed by each subject before starting the treatment.

Material

1- Evaluation instruments:

a) Present pain intensity scale: it is a graphic rating scale with numerical values placed along a line. It scaled from (0) position which means no pain to (4) position which means unbearable pain.

b) Pain relief scale: it is similar to present pain intensity scale ranged from (0) position which means no relief to (4) position which means complete relief.

2- Treatment instrument

a) Laser : used for group (A) which is laser LTU 904 H

- Laser type: Gallium arsenide laser diode.
- Output wave length: 635-670 nm.
- Mode of operation: pulsed.
- Maximum average power: 5 milliwatts.
- Maximum pulse repetition frequency: 5 HHZ.
- Maximum peak power: 5 watts.
- Maximum pulse duration: 200 nanosecond

b) Interferential current: used for group (B) which is Sonopuls-992)

- Frequency: three frequency modulation programs (1/1 sec, 6/6 sec and 1/30 sec).
- Amplitude: ranges from 0-100 mA.

Evaluation procedure

a) Assessment of pain intensity for each patient was performed before starting the treatment and after the end of treatment.

b) Assessment of pain relief was done after the end of the treatment.

c) Estimation of C-reactive protein (CRP) was done for both groups before starting the treatment and at the end of treatment a sample of 5 cm^3 venous blood was drainage from the anti-cubital vein by disposable syringe.

Treatment procedures

a) Laser treatment for group (A) was applied while the patient lied in a comfortable supine lying position. It was applied on the most painful points in the suprapubic region, where the head of laser device was held perpendicular and with direct contact to each treatment point. The device was switched on and radiation was emitted. It is applied for 90 sec. for each painful point, then the patient lied in prone lying position, where laser applied on the para-vertebral region from L_4-S_3, this area treated by three shoots for each side, each shoot for 90 sec.

b) Interferential current for group (B). The treatment started with 5 min. constant frequency of 100 Hz for pain relief, then 15 min. rhythmic frequency of 1-100 Hz that help to disperse adhesion. The patient was lied in relaxed comfortable crock lying position and the treatment applied using four plate electrodes, two of them were put under the lumbar region on each side with a distance from spinous process by five cm. and the other two electrodes were applied over the suprapubic region parallel to iliac crest and the four electrodes were tied with Velcro strap to

ensure that the electrodes were at their position all through the treatment session.

Statistical Analysis

Descriptive statistics was presented as mean, standard deviation (SD) and percentage for qualitative variable analytical test included student t-test for comparing of means between before and after treatment. Significant level of 0.05 was used throughout all statistical tests within this study, P value < 0.05 indicated significant results. The smaller the P value obtained the more significant was the result.

RESULTS

As shown in the table (1) fig. (1), the mean value of C-reactive protein was statistically highly significant (P< 0.001) decrease between before starting the treatment and after the end of treatment in both groups (A&B).

In group (A), before application of laser treatment, C-reactive protein was 13.80 ± 4.40, after treatment it was 5.20 ± 1.91. with a mean difference 8.60. While in group (B), before application of interferential treatment, C-reactive protein was 15.85 ± 4.37 and after treatment it was 7.80 ± 2.38 with a mean difference 8.05.

As shown in fig. (2) in group (A), the percentage of improvement of C-reactive protein was 62.32%, while in group (B) it was 50.80%.

Table (1): Shows the mean value of C-reactive protein in the both groups before and after treatment.

		Pre-ttt	Post-ttt	MD	Imp%	t value	P value	Significance
Group (A)	Mean	13.80	5.20	8.60	62.32	10.42	0.001	Highly significant
	SD	4.40	1.91					
Group (B)	Mean	15.85	7.80	8.05	50.80	13.71	0.001	Highly Significant
	SD	4.37	2.38					

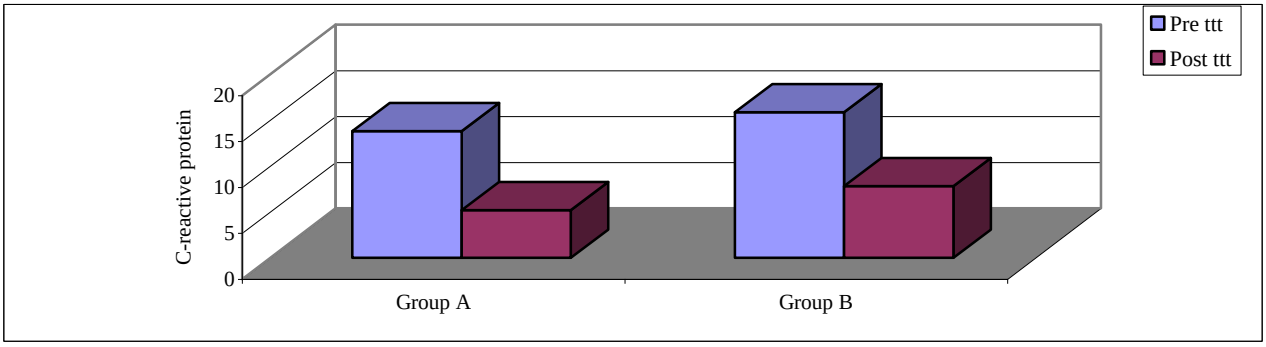

Fig. (1): The mean value of C-reactive protein in the both group before and after treatment.

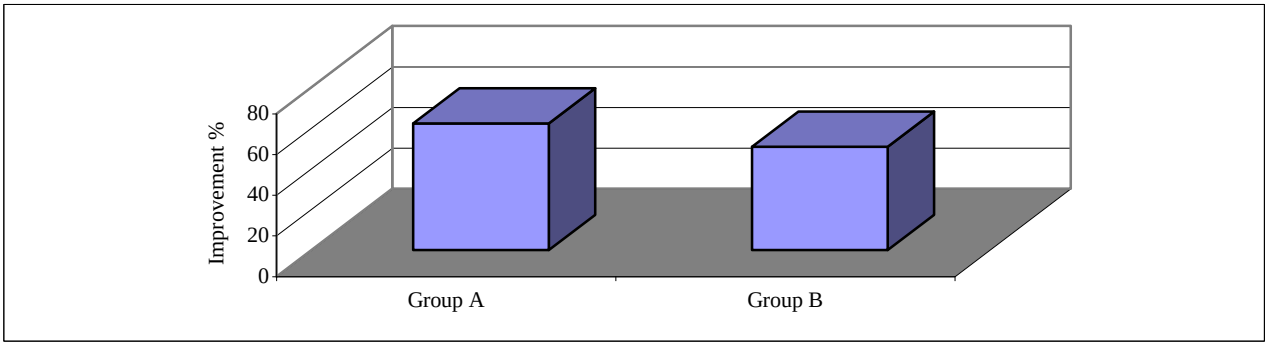

Fig. (2): The improvement % of C-reactive protein post values relative to pre values within both groups (A&B).

Comparison between mean values of the C-reactive protein between both groups (A and B) before treatment the mean was 13.80 ±4.40 in group (A) and it was 15.85 ± 4.37 in group (B). While after treatment the mean was 5.20 ± 1.91 in group (A) and 7.80 ± 2.38 in group (B). There was highly significant (P< 0.001) decrease of C-reactive protein in both groups, the mean difference between the two groups was non significant (P>0.05) before treatment while it was significant (P< 0.001) after treatment.

Table (2): The comparison between pre & post mean values of the C-reactive protein between both groups (A and B).

		Group (A)	Group (B)	MD	Imp%	t value	P value	Significance
Pre-ttt	Mean	13.80	15.85	2.05	0.00	1.60	0.126	Non Significant
	SD	4.40	4.37					
Post-ttt	Mean	5.20	7.80	2.60	50.00	4.30	0.001	Highly Significant
	SD	1.91	2.38					

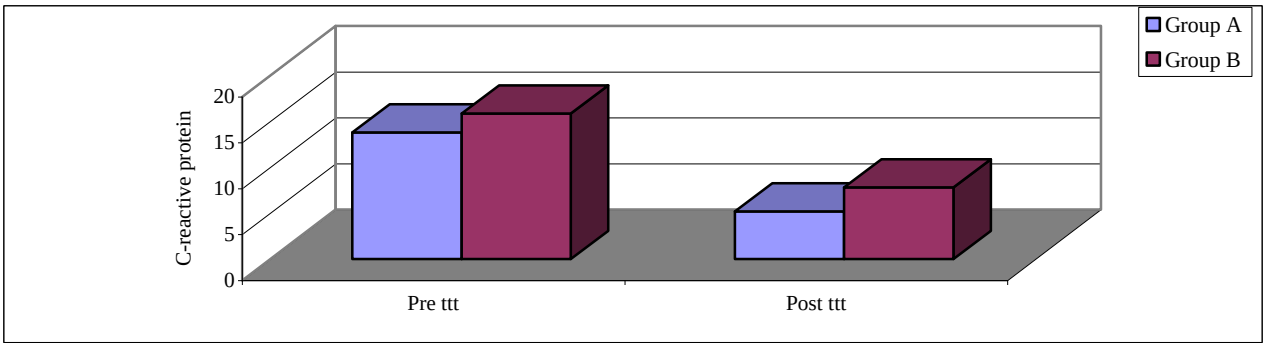

Fig. (3): The comparison between pre & post mean values of C-reactive protein between both groups (A and B).

As shown in the table (3) fig. (4), the severity of pain was statistically significant decreased between before starting the treatment and after the end of laser treatment in group (A).

Before treatment, the pain was felt as moderate in 9 cases (45%), severe in 7 cases

(35%) and unbearable in 4 cases (20%), while after treatment there was no pain in 14 cases (70%), mild pain in 5 cases (20%) and moderate pain in 1 case (5%).

Table (3): Shown the present pain intensity score before and after treatment in group (A).

	No. of patient according to their PPi Score Before ttt		PPi After ttt					
			No pain		Mild pain		Moderate pain	
	No.	%	No.	%	No.	%	No.	%
Moderate pain	9	45.00	9	100.00	0	0.00	0	0.00
Severe pain	7	35.00	4	57.15	3	42.85	0	0.00
Unbearable pain	4	20.00	1	25.00	2	50.00	1	25.00
Total	20	100.00	14	70.00	5	25.00	1	5.00

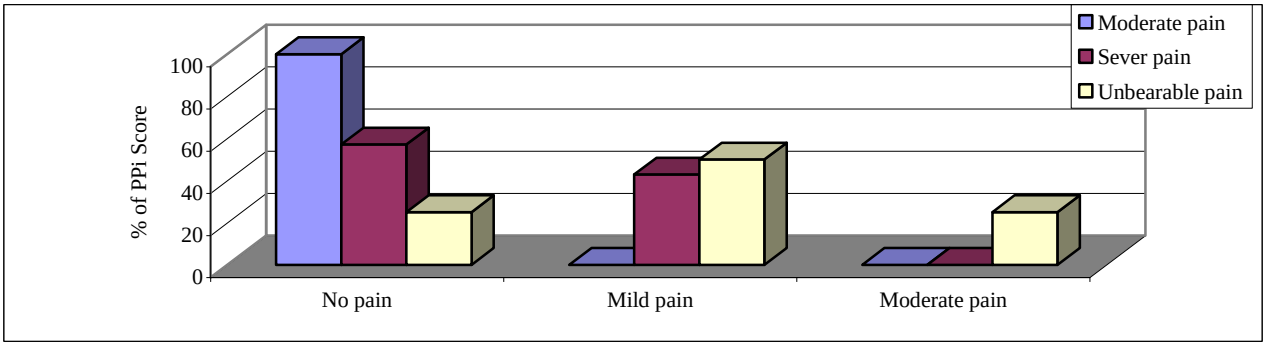

Fig. (4): The comparison between the percentage of the present pain intensity score before and after treatment in group (A).

As shown in the table (4) fig. (5), the severity of pain was statistically significant decreased between before starting the treatment and after the end of interferential treatment in group (B).

Before treatment, the pain was felt as moderate in 10 cases (50%), severe in 8 cases (40%) and unbearable in 2 cases (10%), while after treatment there was no pain in 8 cases (40%), mild pain in11 cases (55%) and moderate pain in 1 case (5%).

Table (4): Shown the present pain intensity score before and after treatment in group (B).

	No. of patient according to their PPI Score Before ttt		PPI after ttt					
			No pain		Mild pain		Moderate pain	
	No.	%	No.	%	No.	%	No.	%
Moderate pain	10	50.00	8	80.00	2	20.00	0	0.00
Severe pain	8	40.00	0	0.00	8	100.00	0	0.00
Unbearable pain	2	10.00	0	0.00	1	50.00	1	50.00
Total	20	100.00	8	40.00	11	55.00	1	5.00

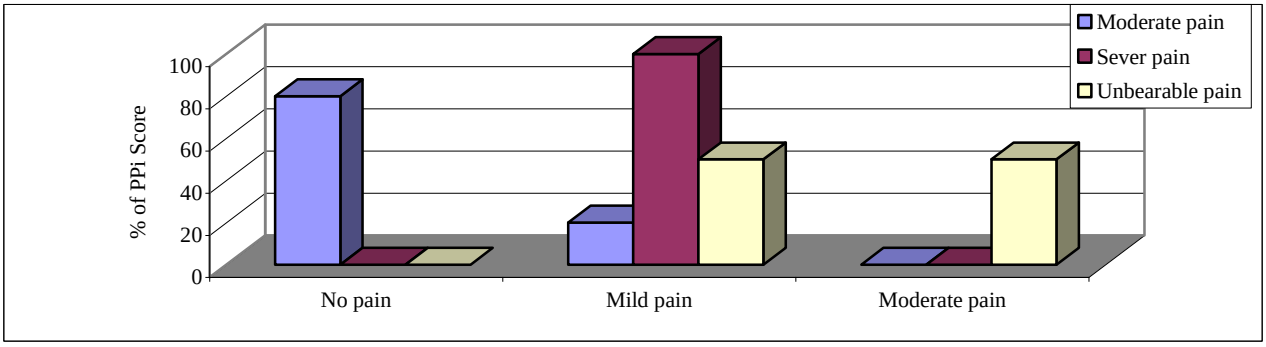

Fig.(5): The percentage of the present pain intensity score before and after treatment in group (B).

As shown in the table (5) fig. (6), the mean value of the present pain intensity score was statistically highly significant (P< 0.0001) decrease between before starting the treatment and after the end of treatment in both groups (A&B).

In group (A), before application of laser treatment the present pain intensity score was 3.75 ± 0.79 after treatment it was 1.35 ± 0.59. with a mean difference 2.40. While, in group (B) before application of interferential treatment the present pain intensity score was 3.65 ± 0.75 and after treatment it was 1.65 ± 0.59 with mean difference 2.00.

As shown in fig. (7), the percentage of improvement of pain intensity after treatment was 64% in group (A), while in group (B) it was 54.80%.

Table (5): The comparison between pre & post mean values of the present pain intensity score in both groups (A and B).

		Pre-ttt	Post-ttt	MD	Imp%	t value	P value	Significance
Group (A)	Mean	3.75	1.35	2.40	64.00	17.94	0.0001	Highly significant
	SD	0.79	0.59					
Group (B)	Mean	3.65	1.65	2.00	54.80	19.50	0.0001	Highly Significant
	SD	0.75	0.59					

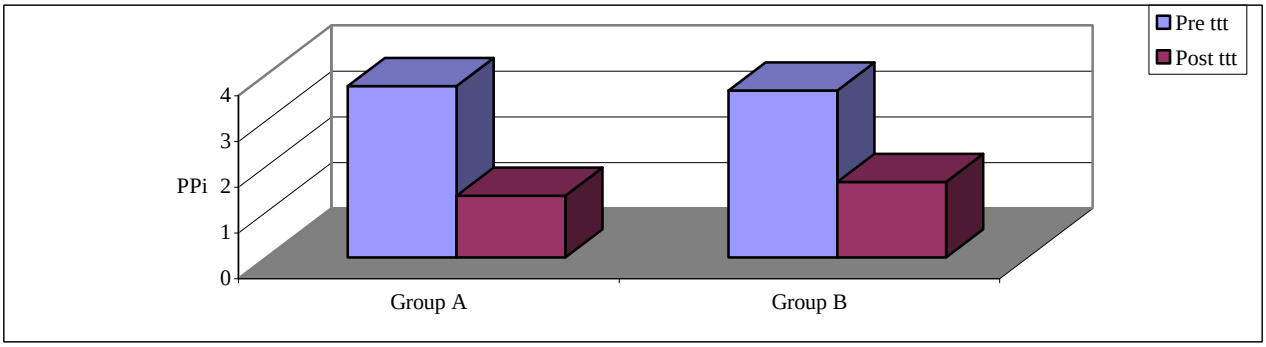

Fig.(6): The comparison between pre & post mean values of the present pain intensity score in both groups (A and B).

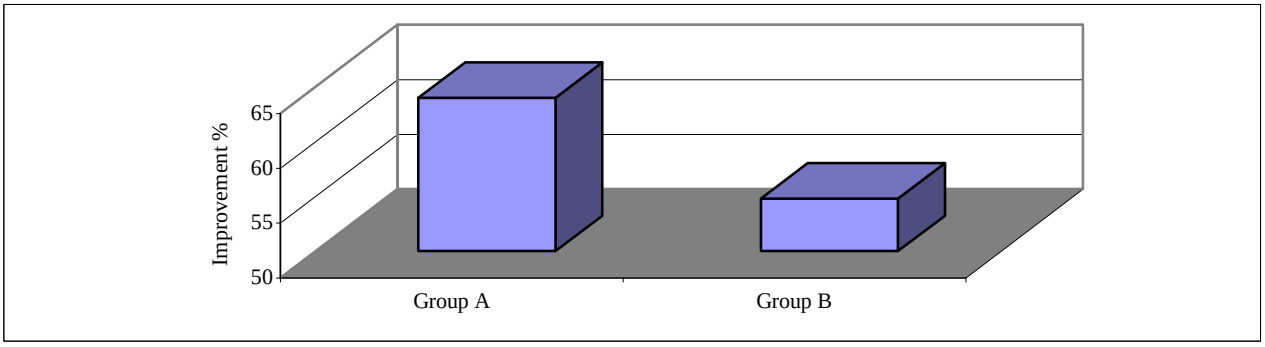

Fig.(7): The improvement % in present pain intensity post values relative to pre values within both groups (A&B).

As shown in the table (6) fig. (8), the comparison between pre & post mean values of the present pain intensity score in both groups (A and B) illustrate the following:- before treatment the mean was 3.75 ±0.79 in group (A) and it was 3.65 ± 0.75 in group (B). While after treatment the mean was 1.35 ± 0.59 in group (A) and 1.65 ± 0.59 in group (B). There was highly significant (P< 0.0001) decrease of pain in both groups but as shown, the mean difference between the two groups was non significant (P>0.05) before treatment while it was significant (P< 0.0001) after treatment.

Table (6): The comparison between pre & post mean values of the present pain intensity score between both groups (A and B).

		Group (A)	Group (B)	MD	Imp%	t value	P value	Significance
Pre-ttt	Mean	3.75	3.65	0.100	0.00	0.525	0.001	Non Significant
	SD	0.79	0.75					
Post-ttt	Mean	1.35	1.65	0.300	22.22	2.35	0.001	Significant
	SD	0.59	0.59					

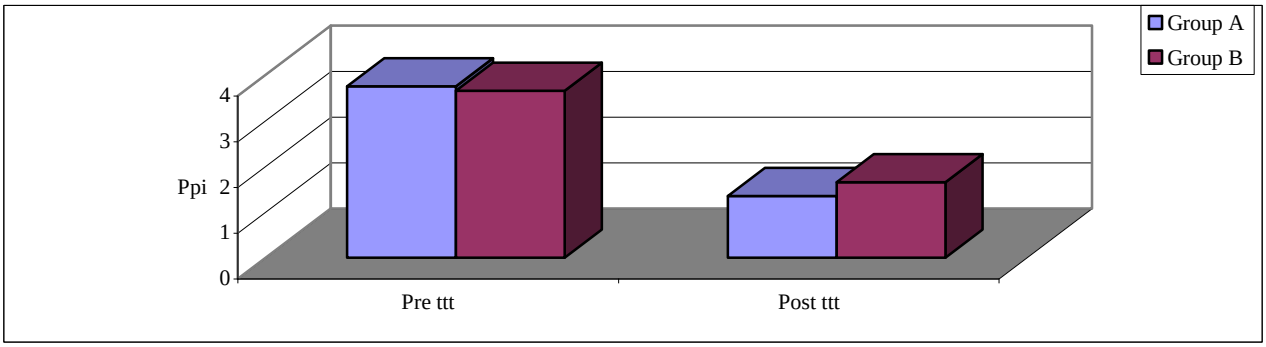

Fig. (8): The comparison between pre & post mean values of the present pain intensity score between both groups (A and B).

As shown in the table (7) fig. (9), which illustrate the degree of pain relief after

treatment in group (A), there was good relief in 1 case (5%), excellent relief in 8 cases (40%) and complete relief in 11 cases (55%).

Table (7): Shows the degree of pain relief (PR) in group (A).

PR Score	No. of cases after ttt	Percentage %
Good PR	1	5
Excellent PR	8	40
Complete PR	11	55

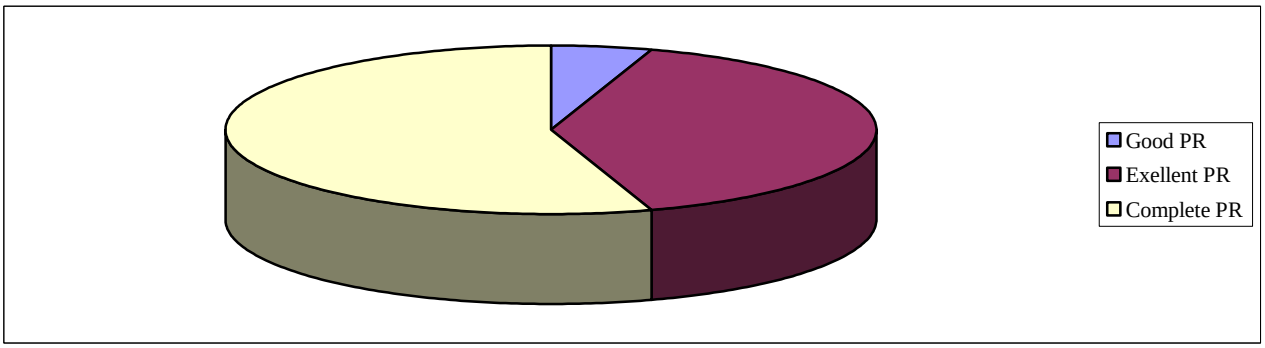

Fig. (9): Shows the degree of pain relief (PR) in group (A).

As shown in the table (8) fig. (10), which illustrate the degree of pain relief after treatment in group (B) there was good relief in 11 cases (55%), excellent relief in 7 cases (35%) and complete relief in 2 cases (10%).

Table (8): Shows the degree of pain relief (PR) in group (B).

PR Score	No. of cases after ttt	Percentage %
Good PR	11	55
Excellent PR	7	35
Complete PR	2	10

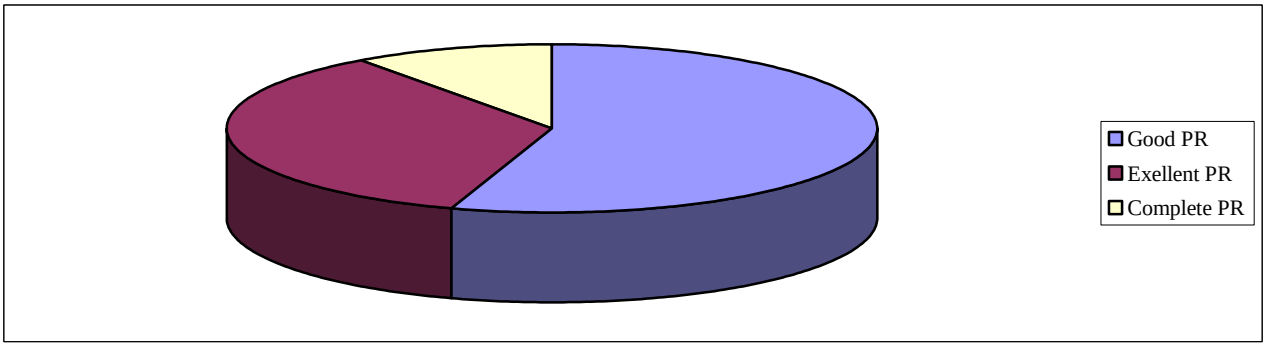

Fig. (10): Shows the degree of pain relief (PR) in group (B).

As shown in the table (9) fig. (11), which illustrate the comparison between post mean value of pain relief after treatment in both group. In group (A) the mean was 3.5 ± 0.06 and in group (B) the mean was 2.55 ± 0.61, there was a highly significant (P< 0.001) difference between the two groups.

Table (9): The comparison between post mean values of the pain relieve score between both groups (A and B).

	Mean	S.D	M.D	Imp%	t value	P value	Significance
Group A	3.5	0.069	0.95	37.26	5.60	0.001	Highly Significant
Group B	2.55	0.61					

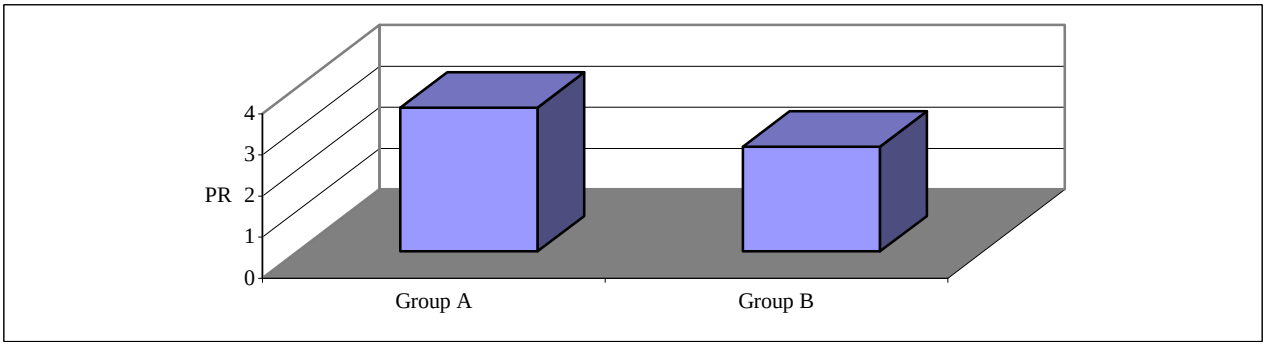

Fig. (11): The comparison between post mean values of the pain relieve score between both groups (A and B).

DISCUSSION

PID is an infection of the female genital tract which represent a major gynecological health problem affecting more than one million women yearly, approximately 60% of the cases suffered later from infertility which causes a major social and psychological problems[14].

IFC has deep penetration that produces vasodilating effects that helping venous return, lymphatic drainage, allows the rapid elimination of toxic metabolic products, helps to disperse infiltration and adhesions and analgesic effect through affecting sensory nerve endings[12].

Laser has many effects such as anti-inflammation, immunosupression, vasodilation, stimulation of blood circulation and reducing edema, which are collectively called biostimulation effect. Biostimulative effect of LLLT is widely used in the various medical fields because of its convenience to use, easy to approach, stability and non invasiveness[17].

There was a highly significant decrease in PID pain measured by PPi scale between before and after the end of LLLT and interferential current treatment and complete PR in most cases after the end of treatment, but there was a statistically significant decrease in PPi scale in LLLT group than that in interferential current group while there is a highly statistically significant improvement in PR in LLLT group than in interferential current group.

These results agreed with Johnson, (1999)[5] who stated that IFC used for the management of acute and chronic pain and

have potential benefits over other electro-analgesic techniques.

Also agreed with, Ward and Robertson, (1998)[19] who stated that for comfortable sensory stimulation for pain control, a high frequency of alternating current is preferable that come in consistent with the results of Johason and Wilson, (1997)[4] who stated that different swing patterns of IFC may have different analgesic effects.

These results supported by Ruch and Shore, (1994)[11] who stated that the combination of physical modalities such as cold, active and passive exercises with IFC had a significant benefits in the treatment of different musculoskeletal conditions such as acute arthritis, neck pain, back pain, frozen shoulder and tendonitis.

Also, this result agree with Savage, (1992)[12] who described the use of IFC in the treatment of pain of recent injuries, herpes zoster, rheumatic conditions, shoulder pain and back and disc lesion.

These results agreed also with Wadswarth and Chanmugan, (1989)[18] who stated that the treatment with interferential therapy can affect both the cause and referred pain pathway directory.

Also, the results agreed with Noble et al. (2000)[10] who stated that there was some evidence of a putative vasodilator effect caused by IFC therapy when applied at a modulated frequency. Additionally Durovic and Durovic, (1997)[3] stated that IFC had immediate effects in reducing the infection of the extremities.

These results agreed also with Nesterov et al. (1996)[8] who reported that IFC had beneficial effects in treating chronic pyelonephrits patient with latent inflammation. And agreed with Nikolova et al. (1984)[9] who stated that IFC produced positive beneficial effects in chronic hepatitis as it retain the collagenisation of the reticulum due to intensive oxidation, improved trophism and normalization of mucopolysaccharide and collagen metabolism.

On other hand, These results disagreed with Nesterov et al. (1996)[8] who stated no statistically significant decrease in chronic, recurrent jaw pain occurred between subjects treated with IFC and subjects treated wit a similar placebo procedure over three treatment sessions also they found no statistically significant increase in vertical jaw opening between the two group of subjects, over three treatment sessions.

These results agreed with Bjordal et al. (2006)[2] who concluded that LLLT has an important biological effects similar to that of NSAIDs and steroids. So it can reduce pain through increasing level of serotonin production and β-endorphine. Also LLLT can increase and normalize the speed of nerve transmission by acting on the A-alpha nerve fiber rather than on the small diameter C-fiber reestablish balance via gate control system.

These results supported by Mayberry and Moshkovska, (2005)[7] who stated that the application of LLLT on the lesion make area of partially polarized light, the absorption of polarized light in cytochrome molecules stimulates the creation of single oxygen which lead to increase of ATP and activation of cytochrome C-oxidase and enzymes which trigger an immunological chain reaction, increase in number of mast cells and activation of macrophages.

Also, the results are supported by Basford et al. (2000)[1] who stated that LLLT is an effective way to treat a variety of soft tissue injuries and painful conditions.

The results agreed also with Lubart et al. (2000)[6] who stated that LLLT has biostimulating effect depending on the stimulation of mitochondria, transformation of

laser energy into chemical energy and restoring normal properties of muscle tissue via ATP formation and enzymes activity.

REFERENCES

1- Basford, J., Sheffield, C. and Cieslak, K.: "Laser therapy : a randomized, controlled trial of the effects of low intensity laser irradiationfor lateral epicondylitis", Arch. Phys. Med. Rehabil., 81: 1504-1510, 2000.

2- Bojordal, M., Martins, B. and Iversen, V.: "A randomized, placebo controlled trial of low level laser therapy for activated achillis tendonitis with microdialysis measurement of peritendinous prostaglandin E_2 concentrations", bmj., 40: 78-80, 2006.

3- Durovic, A. and Durovic, M.: "Physical therapy in rehabilitation of patients with aerobic infections of the extremities", Vojnosant-Pregl., 54(6): 541-548, 1997.

4- Johason, I. and Wilson, H. "The analgesic effects of different swing patterns of interferential current on cold- induced pain", Physiotherapy, 83(9): 461-467, 1997.

5- Johnson, I. : "The mystique of interferential currents when used to manage pain", Physiotherapy, 85(6): 294-297, 1999.

6- Lubart, R., Friedman, H. and Lavie, P.: "Photobiostimulation as a function of different wavelength. Bone regeneration", J. of Laser Therapy, 12: 1-12, 2000.

7- Mayberry, J. and Moshkovska, T.: "It is time to test low level laser therapy in Great Britain", Postgraduate Medical Journal, 81: 436-441, 2005.

8- Nesterov, N., Kiiatkin, V., Li, A. and Dervnina, N.: "The use ofd interference current and iodobromine bath in therapy of patients with chronic nonobstructive pyelonephritis", Vopr Kurortol., 5: 19-22, 1996.

9- Nikolova, L., Popov, A. and Apostolov, I.: "D-glactosamine-induced hepatitis: morphological and enzyme biochemical changes produced by interferential currents and low frequency magnetic field ", Physiotherapy, 70(8): 301-305, 1984.

10- Noble, J., Henderson, G., Cramp, A., Walsh and Lowe, A.: "The effect of interferential therapy upon cutaneous blood flow in humans", Clinical Physiology, 20(1): 2-7, 2000.

11- Ruch, J. and Shore, A.: "Physician perceptions of the value of physical modalities in the treatment of musculoskeletal disease", Br. J. of Rheumatology, 3: 566-568, 1994.

12- Savage, B.: Interferential current, 1st ed., Wolfe, London, pp. 30-37, 1992.

13- Simms, I., Vickers, M. and Stephenson, J.: "National assessment of PID diagnosis, treatment and management in general practice: England and Wals", Int. J. STD. AIDS, 14(7): 440-444, 2004.

14- Smith, K. and Ness, R.: "Hospitalization for pelvic inflammatory disease", Sexually Transmitted Diseases 34(2): 108-112, 2007.

15- Steven, H. and Crossman, M.: "The challenge of pelvic inflammatory disease", Am. Family Physician, 73(95): 397-402, 2006.

16- Sweet, R.: "Pelvic inflammatory disease treatment", Obstet. Gynecol. Today 4(4): 8-10, 2002.

17- Vlachos, P. and Kontoes, P.: "Development of terminal hair following skin lesion treatments with an intense pulsed light source", Aesh. Plast. Surg., 26: 303-307, 2002.

18- Wadswarth, H. and Chanmugan, A.: Electrophysical agents in physaiotherapy, Marrickville, Australia, 279-292, 1989.

19- Ward, M. and Robertson, J.: "Sensory, motor and pain thresholds for stimulation with medium frequency alternating current", Arch. Phys. Med. Rehabil., 9(3): 273-278, 1998.

الملخص العربي

كفاءة الليزر منخفض الشدة مقابل التيار الكهربائي المتداخل في علاج حالات التهابات الحوض المزمنة

أجريت هذه الدراسة لتحديد كفاءة الليزر منخفض الشدة مقابل التيار الكهربائي المتداخل في علاج حالات التهابات الحوض المزمنة. وقد شاركت أربعون سيدة في هذه الدراسة ، وقد تم تقسيمهن إلى مجموعتين (أ ' ب) . المجموعة (أ) تم علاجهن بالليزر منخفض الشدة ، والمجموعة (ب) تم علاجهن بالتيار الكهربائي المتداخل . وتم علاجهن لمدة ثلاث شهور بواقع ثلاث جلسات أسبوعياً . وقد استخدمت القياسات التالية : مقياس شدة الألم ونسبة البروتين النشط سي قبل وبعد الانتهاء من العلاج ومقياس انخفاض الألم بعد الانتهاء من العلاج . وقد أوضحت النتائج أن هناك انخفاض ذو دلالة إحصائية عالية في شدة الألم في المجموعة (أ) بالمقارنة بالمجموعة (ب) وكذلك وجود زيادة ذات دلالة إحصائية عالية في تخفيف درجة الألم بعد الانتهاء من العلاج في المجموعتين والزيادة كانت أكثر في المجموعة (أ) عن المجموعة (ب) . وأيضاً كان هناك نقص ذو دلالة إحصائية عالية في نسبة البروتين النشط سي في المجموعتين ولكن الانخفاض كان أكثر في المجموعة (أ) بالمقارنة بالمجموعة (ب) .
وهكذا يمكن أن نستخلص أن الليزر منخفض الشدة كان أكثر تأثيراً وفاعلية بالمقارنة بالتيار الكهربائي المتداخل .
الكلمات الدالة : التهابات الحوض المزمنة – الألم – الليزر منخفض الشدة – التيار الكهربائي المتداخل – البروتين النشط سي .