

## Low Level Laser Therapy Versus Placebo Laser in Treatment of Primary Dysmenorrhoea

Salwa M. EL Badry\*, Azza A. Abd EL Hady \*\*, and Sobhi K. Abo Louz \*\*\*

\* Department of Gynaecology and Obstetrics, Faculty of Physical Therapy, Cairo University.

\*\* Faculty of Physical Therapy, 6 October University .

\*\*\* Department of Gynaecology and Obstetrics, Faculty of Medicine, Ain Shams University.

### ABSTRACT

*The purpose of this study was to determine the effect of low level laser therapy (LLLT) in alleviating primary dysmenorrhoea. A random sample of 50 volunteer virgin females, experienced regular menstrual cycles with primary dysmenorrhoea, were participated in this study. Their age ranged from 15 to 25 years, and were divided into two groups : group A (Study) : 30 Subjects were treated by LLLT and group B (Control): 20 subjects were treated by placebo LLLT. Treatment and follow up were repeated for three consecutive menstrual cycles, for both groups (A&B). Evaluation was done for both groups, before and after treatment, to evaluate the dysmenorrhoeic pain intensity and the degree of pain relief through: present pain intensity (PPI) and pain relief (PR) scales. Results showed a highly significant decrease in the severity of dysmenorrhoeic pain after the application of LLLT and a highly significant increase in the degree of pain relief in group (A) compared to group (B). Also in group (A) there was a highly significant prolongation in the time of recurrence of dysmenorrhoeic pain after the first & second sessions, and there was no return of dysmenorrhoeic pain after the third session in all the three consecutive menstrual cycles. It was concluded that LLLT had an excellent effect on relieving primary dysmenorrhoeic pain and stand as an effective method of treatment in comparison to traditional pain relief modalities.*

### INTRODUCTION

The term "dysmenorrhoea" refers to the severe form of menstrual Syndrome. While most women suffer only mild to moderate menstrual symptoms, there is still a significant portion of the female population which exhibits severe pain with associate symptoms during the menstrual period. Resulting in varying levels of impairment of personal and social functions, the significant and most important of which are absenteeism from work and inability to

perform daily routine<sup>19</sup>. Pain is a very individual matter and frequently becomes the focal point of all the patient's attention and behaviour<sup>4</sup>. It may be an expression of fear, a cry for help, a demand for attention or an attempt to exert control over others<sup>8</sup>.

In primary dysmenorrhoea, pain sensation arises in the uterus and is related to muscle contraction. This experienced a few hours before and after the onset of menstruation<sup>18</sup>. The pain is generally colicky, with cramps every 2-3 min. It is localized either over the whole width of the lower

abdomen or in the hypogastrium and it may radiate towards the sacrogluteal zone<sup>9,10</sup>. During the first few hours of menstruation, there is only slight blood loss, where as the pain is severe, with increasing blood loss the pain tends to diminish<sup>29</sup>. The dysmenorrhoeic pain is most common in young unmarried girls and improves as they are married and disappears with the delivery of the first baby<sup>31</sup>. During and just before menstruation most women are less efficient physically and more unstable emotionally. These factors alone lower the pain threshold and lead to exaggeration of minor discomfort<sup>18</sup>.

Causes of primary dysmenorrhoea have not been defined specifically, but many possible causes have been presented. Cervical obstruction or stenosis resulting in an inability of the uterus to extrude a large endometrial fragment or large blood clot. Such mechanical obstruction might stimulate vigorous uterine contraction causing pain<sup>11</sup>. In primary dysmenorrhoea there is one or more abnormality in the uterine activity<sup>2,14</sup>. Many studies have indicated an increase in the intra-uterine prostaglandin production (PGF<sub>2a</sub> & PGE<sub>2</sub>), increase vasopressin levels during the menstrual phase and a decrease in ovarian steroid hormones as causes of primary dysmenorrhoea<sup>22,23,37</sup>.

These changes result in an elevated intra-uterine pressure, which subsequently results in a decreased uterine blood flow, myometrial ischemia and pain<sup>9,16</sup>. Psycho-logical factors may be possible as in any case of pain<sup>9</sup>. It is probably the result of fear, ignorance and lack of proper preparation of the adolescent girl for the menarche. This fear usually leads to a lowering of the pain threshold; a minor pain which can be tolerated by normal subjects becomes exaggerated in dysmenorrhoeic girls<sup>3</sup>. Also, primary dysmenorrhoea is more common

in women with sedentary life than those who exert hard physical daily work<sup>31</sup>.

Accordingly, dysmenorrhoea is one of the most common gynaecological disorder. The incidence is vary from 3% to 90% depending on the population and it is perhaps the greatest single cause of lost work and school days among young girls. Therefore, correct diagnosis and treatment can have a significant effect on individual well-being and economic loss<sup>12</sup>.

It has been reported that the degree of potency of analgesics in alleviating dysmenorrhoea is related to their effectiveness in depressing prostaglandin synthesis or its action<sup>26</sup>. Other drugs that have been used in the treatment of primary dysmenorrhoea are hormonal preparations that inhibit ovulation<sup>30</sup>. However, a non pharmacological method for the alleviation of dysmenorrhoeic pain can be of great value especially in patients suffering from various side effects from the drug used. Hence, methods of treatment for dysmenorrhoea range from prostaglandins synthetase inhibitors and oral contraceptives, to non invasive methods such as heat packs, microwave diathermy, meditation and other relaxation techniques, acupressure, massage, exercises, transcutaneous electrical nerve stimulation (TENS) and traditional acupuncture have been documented successfully<sup>6,16,21,32</sup>. One of the most recent widely used non-pharmacological methods for the relief of pain is Laser. In several studies this method has proved to be an effective measure against a number of pain conditions of varying origin<sup>13,28,34,38</sup>.

The purpose of this study was to determine the effect of low level laser therapy (LLLT) in alleviating primary dysmenorrhoea.

## SUBJECTS, MATERIAL AND METHODS

### Subjects:

A random sample of 50 volunteer virgin females, experienced regular menstrual cycles with primary dysmenorrhoea, selected from out-patient clinic of Obstetric & Gynaecologic Department of Ain Shams Hospital / Ain Shams University, were participated in this study. Their age ranged from 15-25 years.

All subjects were screened through ultrasonography to exclude any pelvic pathological problems. None of the subjects, received any anti-inflammatory, antiprostaglandins drugs or oral contraceptive pills during the study. Informed consent form was signed from each subject before starting the study. Subjects were divided into two groups: group A (study) : 30 subjects were treated by low level laser therapy (LLLT) and group B (Control) : 20 subjects were treated by placebo LLLT. Both groups (A & B) were unaware of whether the laser device was active or inactive and the study procedures were identical for both groups.

### Material:

Laser-X LTU 904 Gallium-arsenide (Ga-As) diode laser system, infra-red source, made in Austria was used in this study. The LTU - 904 retro-reflective shield has a wave length of  $904 \pm 10$  nm, peak power of 5w, pulse width of 200 ns, pulse frequency of 5000 HZ and average output power of 5 mw. Ranking scales<sup>27</sup> ( present pain intensity (PPI) scale & pain relief (PR) scale ) were used to assess the pain intensity.

### Methods:

#### A. Evaluation:

Assessment of pain intensity for each subject

was done , before and after treatment through :

1. a- The present pain intensity (PPI) scale (0-4) : pain intensity was scored as being : no pain = 0, mild pain = 1, moderate pain = 2, severe pain = 3, unbearable pain = 4.

b- The pain relief (PR) scale (0-4) : relief was scored as being: no relief = 0, slight relief ( satisfactory ) = 1, good relief = 2, excelrelief = 3, complete relief = 4. It was done only after the treatment for both (study & control ) groups.

2. Questionnaire: Was done after the application of LLLT for each subject in group (A), to determine how long passed for the recurrence of dysmenorrhoeic pain after each session.

#### B. Procedure:

All subjects were instructed briefly about the nature of low level laser therapy (LLLT) and its value in controlling their spasmodic pain, to maintain their confidence and cooperation. The first session was carried out when the subject complained of unbearable pain and needed any sort of analgesia (few hours or half a day before the beginning of the menstrual blood flow). While, the second and third sessions were carried out, in the other next two consecutive days (first & second days of menstrual cycle). Treatment and follow up were repeated for three consecutive menstrual cycles, for each subject of both groups (A & B). The subject was positioned in a relaxed comfortable crock - lying, treatment was applied on the supra-pubic region (the head of the unit was held perpendicular and with direct contact to each treated point to gain the optimal penetration with minimal loss of energy). The supra pubic region was treated by three shoots and each shoot lasted 60 seconds. After that the subject was asked to lie in prone position with a pillow under her abdomen. Treatment was applied on the paravertebral

region from L4- S3. This area was treated by three shoots for each side and each shoot lasted 60 seconds. While, the subject in the control group was treated by placebo LLLT, she was positioned in a relaxed comfortable crock and prone lying positions respectively as mentioned before. The laser unit was switched on, without pressing the treatment switch, and so, there was no laser radiation output. This was done to detect the placebo effect of laser on controlling the dysmenorrhoeic pain.

## RESULTS

In this study, the present pain intensity (PPI) score in both the study and control groups before and after treatment were investigated. As shown in table (1), the severity of dysmenorrhoeic pain in the study group, decreased significantly after each application of the first two sessions and completely disappeared after the third session. During the second month the same pattern was observed at a lower level of severity of menstrual pain, with a further decrease during the third month (Fig. 1). While, for the control group, there was no statistical difference between the severity of dysmenorrhoeic pain before and after placebo LLLT, with almost the same severity of pain during the three months of the study (Fig. 2). All levels of pain in the study group were lower than that in the

control group (Figs. 3 & 4). However, all differences between the severity of the menstrual pain before and after treatment were statistically highly significant ( $P < 0.0001$ ).

As shown in Table (2), there was a progressive increase in the percentage of the degree of pain relief in the study group to reach 100 % (complete relief) after the third session of each month, also the percentage of the degree of pain relief in each day of the second and third months was higher than that of the corresponding days of the previous cycles (Fig. 5). While in the control group, the percentage of the degree of pain relief never reach 5% (no relief). However, all differences between the study and control groups were found to be statistically highly significant ( $p < 0.0001$ ).

As shown in table (3), there was a progressive increase in the time of recurrence of the dysmenorrhoeic pain from ( $10.93 \pm 2.83$ ,  $11.97 \pm 2.04$  and  $13.73 \pm 3.31$  hours) to ( $17.03 \pm 2.77$ ,  $17.73 \pm 2.3$  and  $19.5 \pm 2.84$  hours) after the first and second sessions respectively, in the three consecutive months. While after the third session, there was no return of the dysmenorrhoeic pain in all the cycles (Fig. 6). However, the differences between the time of recurrence of dysmenorrhoeic pain after the first and second sessions, were statistically highly significant ( $P < 0.0001$ ).

Table (1): Shows the present pain intensity (PPI) score in the study and control groups before and after treatment.

			First Month			Second Month			Third Month		
			1 <sup>St</sup> session	2 <sup>Nd</sup> session	3 <sup>Rd</sup> session	1 <sup>St</sup> session	2 <sup>Nd</sup> session	3 <sup>Rd</sup> session	1 <sup>St</sup> session	2 <sup>Nd</sup> session	3 <sup>Rd</sup> session
Study n=30	Before	Mean	82.67	48.50	17.00	78.83	39.50	10.60	70.33	27.33	8.23
		S.D.	9.89	18.01	10.55	14.66	20.10	7.34	14.08	16.75	5.55
	After	Mean	29.67	16.17	0.00	22.70	11.00	0.00	15.00	5.50	0.00
		S.D.	9.18	8.70	0.00	9.88	9.41	0.00	9.28	6.21	0.00
Stat. Comp. Before/After	t		30.1973	11.2498	8.8228	19.5403	7.9229	7.9078	23.9428	7.3997	8.1159
	P		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Control n=20	Before	Mean	84.00	64.25	38.75	84.25	64.50	39.25	85.65	64.15	38.00
		S.D.	9.95	9.63	16.05	10.67	10.50	14.53	10.28	14.11	18.31
	After	Mean	84.00	64.50	38.75	83.75	63.75	38.75	85.65	63.65	38.00
		S.D.	9.95	9.58	16.05	10.11	9.16	13.94	10.28	13.30	18.31
Stat. Comp. Before/After	t		--	1.000	--	1.000	1.3708	1.000	--	1.000	--
	P		--	0.1649	--	0.1649	0.0932	0.1649	--	0.1649	--

Stat. Comp. : Statistical Comparison.

-- : Statistical Inapplicable.

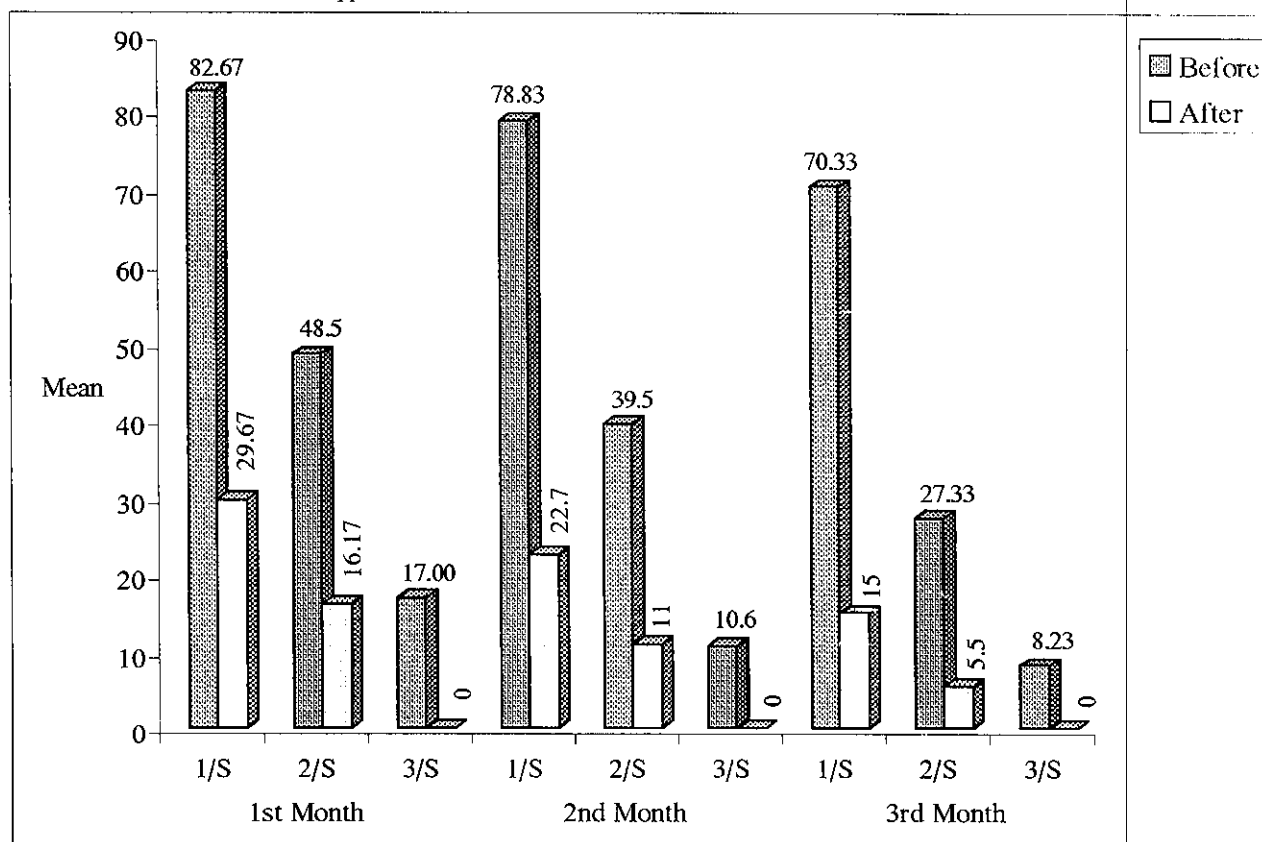
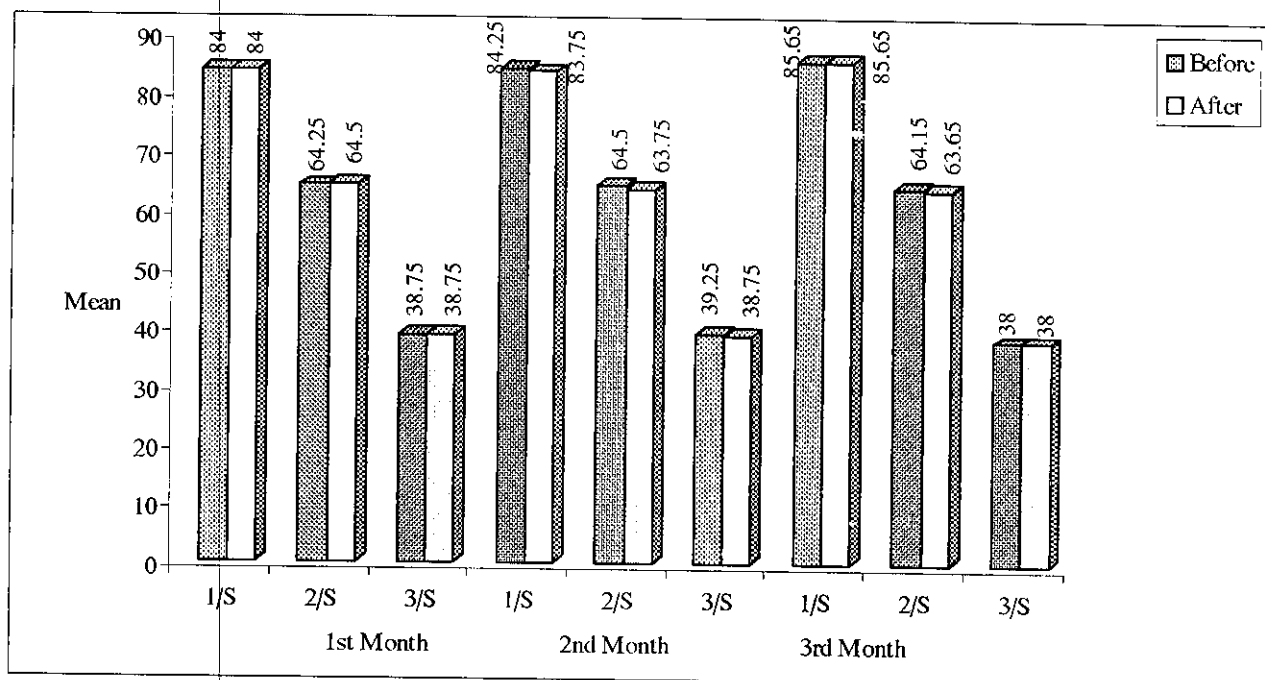
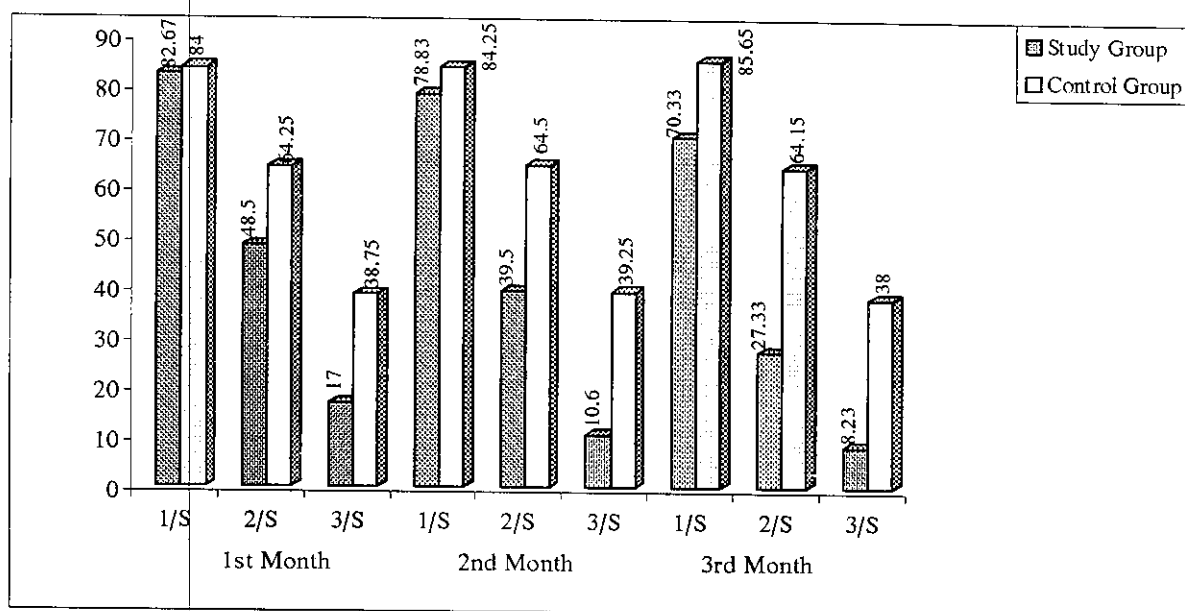


Fig. (1): Illustrates the present pain intensity (PPI) score of the study group before and after ttt.



*Fig. (2): Illustrates the present pain intensity (PPI) score of the control group before and after ttt.*



*Fig. (3): Illustrates the present pain intensity (PPI) score in both (study and control) groups before ttt.*

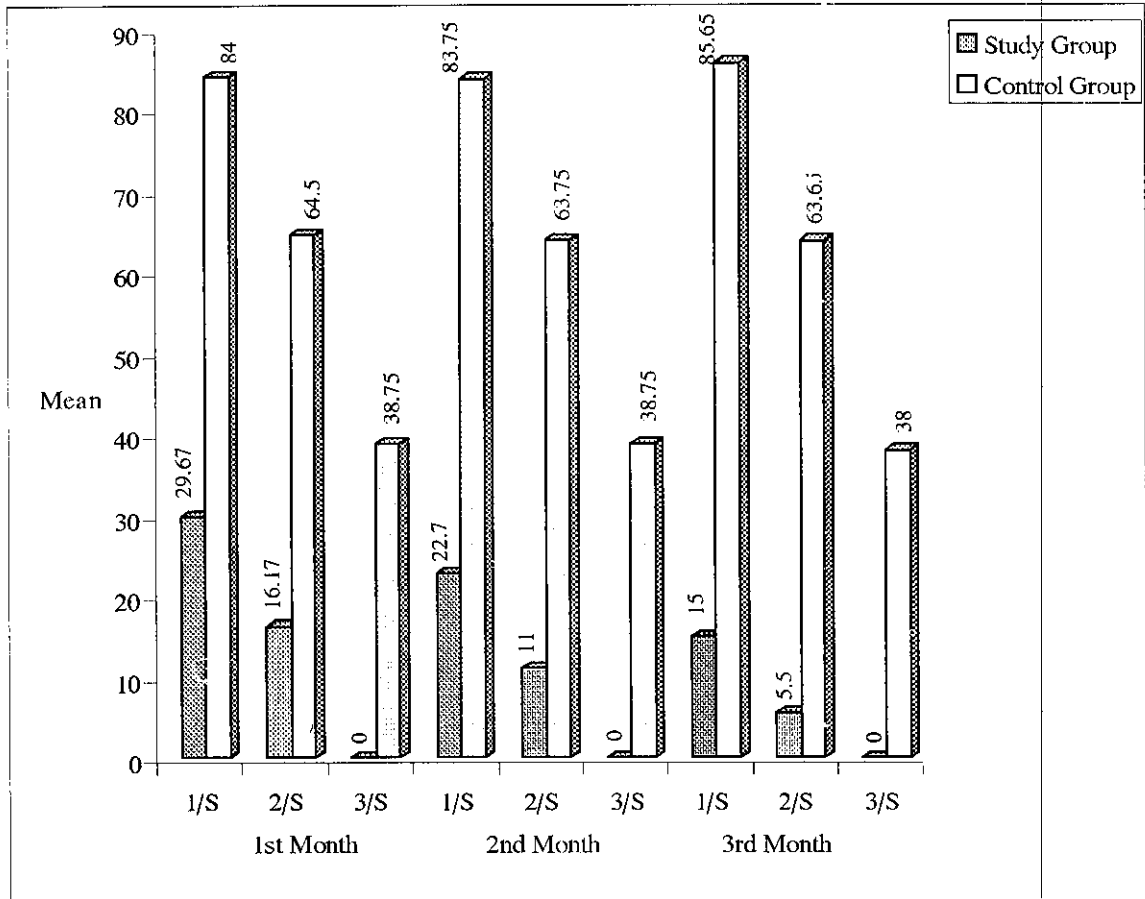


Fig. (4): Illustrates the present pain intensity (PPI) score in both (study and control) groups after ttt.

Table (2): Shows the percentage of the degree of pain relief after the application of low level laser therapy as experienced by the subjects in both (study & control) groups.

		First Month			Second Month			Third Month		
		1 <sup>St</sup> session	2 <sup>Nd</sup> session	3 <sup>Rd</sup> session	1 <sup>St</sup> session	2 <sup>Nd</sup> session	3 <sup>Rd</sup> session	1 <sup>St</sup> session	2 <sup>Nd</sup> session	3 <sup>Rd</sup> session
Study Group	Mean	70.33%	83.83%	100%	78.17%	89.00%	100%	85%	94.50%	100%
30 cases	S.D.	9.18	8.17	0.00	9.60	9.41	0.00	9.28	6.21	0.00
Study Group	Mean	4.50%	4.25%	2.50%	4.50%	3.00%	2.50%	3.75%	3.75%	4.50%
30 cases	S.D.	6.13	6.74	4.14	7.05	4.70	4.73	5.09	6.04	7.24
t		28.12	36.13	129.98	29.44	37.76	114.21	35.76	51.35	72.72
P		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

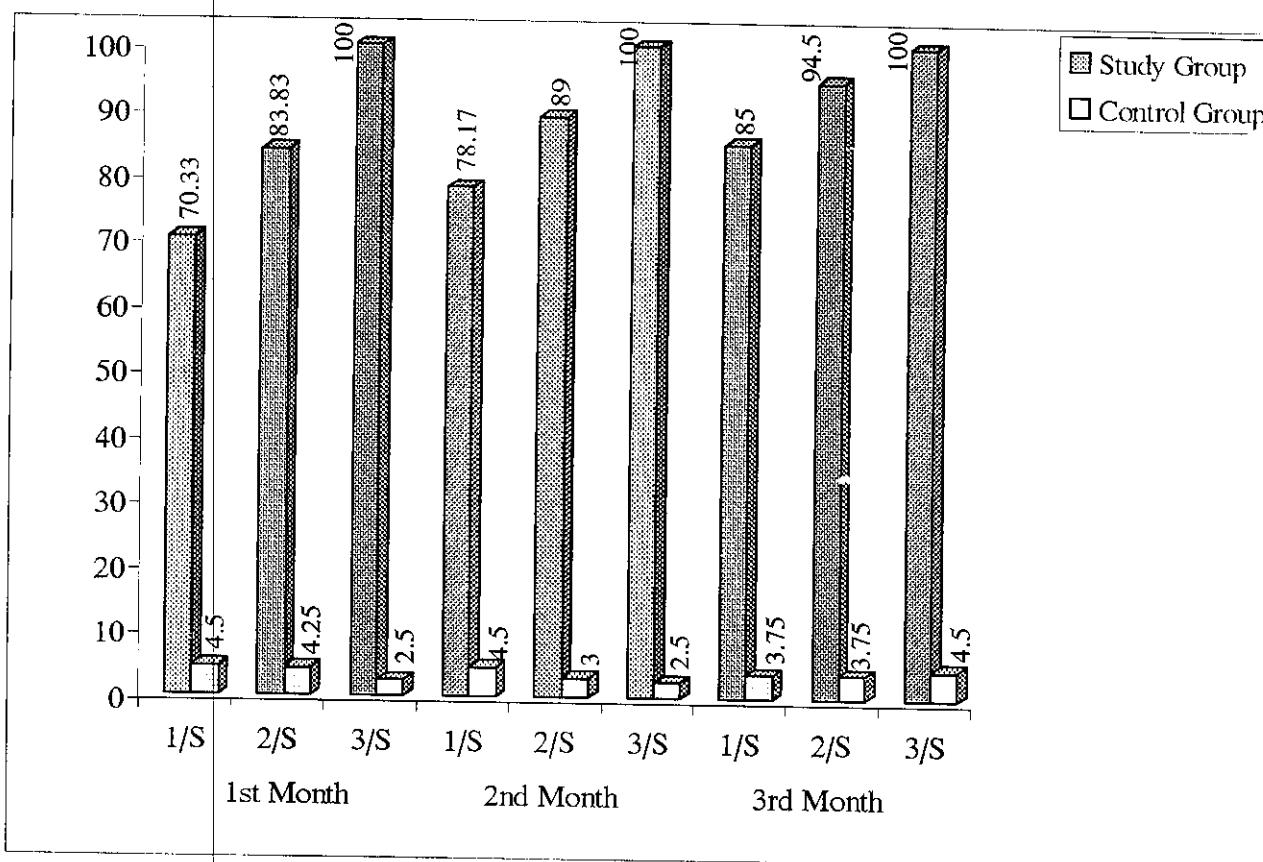


Fig. (5): Illustrates the degree of pain relief after the application of LLLT as experienced by the subjects in both (study and control) groups.

## DISCUSSION

Laser are now being used very actively in almost every area of human medicine. The laser's clinical application is changing from the generation of the first stage of application of its thermal effect (high energy laser) into the second stage of application of its photobioactive or photochemical effect (low energy laser; a laser ray without any thermal effect). So, laser therapy has been extensively used in recent years for the relief of a variety of pain syndromes.

Low level laser therapy (LLL) has

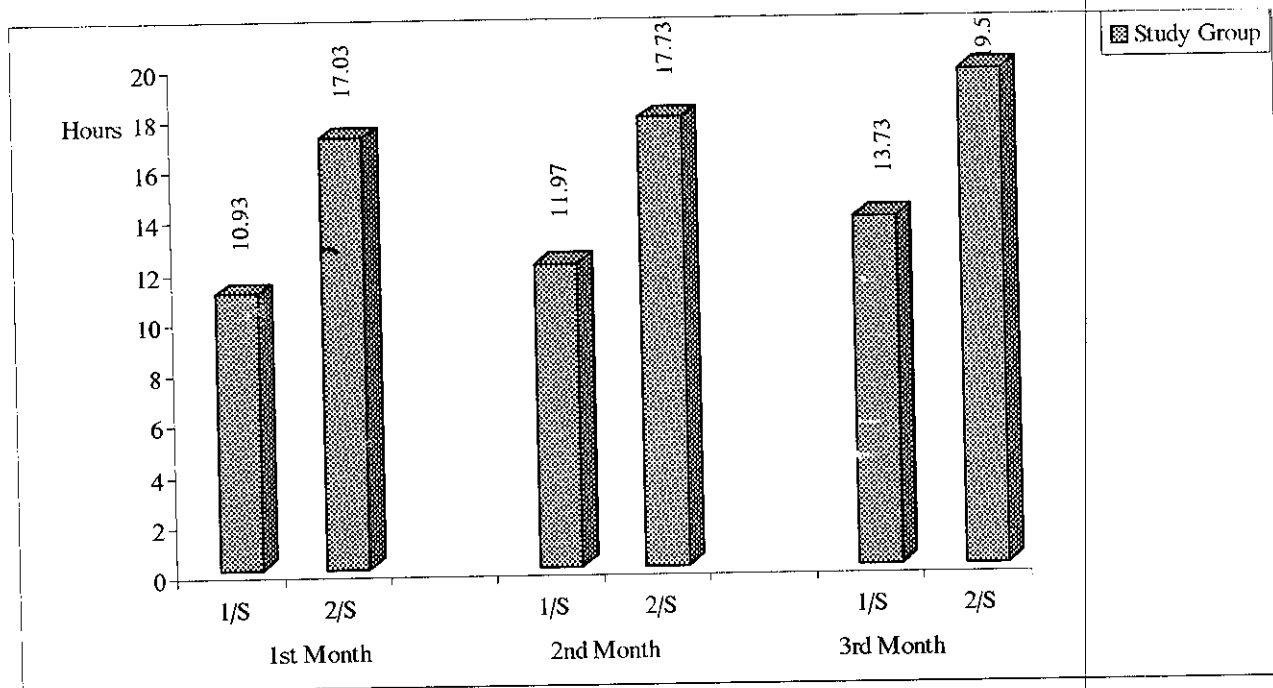
recently been reported in the treatment of pain and has yielded some promising results in human medicine<sup>24,25</sup>.

Although it has been known that LLLT can effectively suppress pain, this method not yet have been used in clinical practice for the alleviation of dysmenorrhoeic pain. Therefore, the results of this study could not be compared with others, but only showed the effect of LLLT for relieving pain without medication as in: trigeminal neuralgia<sup>35</sup>, post-herpetic pain<sup>17</sup>, both acute & chronic osteoarthritis<sup>36</sup>, myofascial pain<sup>5</sup>, low back pain<sup>20</sup> and lateral epicondylalgia<sup>15</sup>.



**Table (3): Shows the recurrence of dysmenorrhoeic pain (per hour) after the application of low level laser therapy as experienced by the subjects of the study group.**

Study Group	First Month		Second Month		Third Month	
	1 <sup>st</sup> session	2 <sup>nd</sup> session	1 <sup>st</sup> session	2 <sup>nd</sup> session	1 <sup>st</sup> session	2 <sup>nd</sup> session
30 cases	10.93±2.83	17.03±2.77	11.97±2.04	17.73±2.30	13.73±3.31	19.50±2.84
t	8.41		10.36		7.24	
P	<0.001		<0.001		<0.001	



**Fig. (6): Illustrates the recurrence of dysmenorrhoeic pain after the application of LLLT as experienced by the subjects in the study group.**

The main purpose of this study was to investigate the efficacy of LLLT in alleviating primary dysmenorrhoeic pain.

The results of this study indicated that LLLT has analgesic efficacy through a strong photochemical and photoactivating effects on the living body<sup>25</sup>.

The highly significant improvement in the degree of pain relief in the study group (A) compared to the control group (B) was attributed to the photobiological effects of LLLT. However, all biostimulating effects of

LLLT are based on the interaction of laser light with the biological systems, such interaction causes a broad spectrum of effects. It was reported that there was a decrease in the production of prostaglandins E<sub>2</sub> & F<sub>2a</sub> following LLL irradiation, due to acceleration of superoxide dismutase which acts as a blocker in the production of prostaglandins<sup>13</sup>.

It has been reported that enhanced enkephalin and endorphin production post-LLL irradiation have also been demonstrated. The endorphins are an interesting series of

longer peptide autanarcotic compounds, whose name comes from endogenous morphine. The endorphins are believed to be pituitary regulated, and their release is triggered by pain stimuli in addition to LLLT. Where upon they proceed to the cerebral cortex and 'key in' to pain receptor sites, thereby blocking the transfer of pain stimulus. Their natural antagonist is one of the prostaglandins, which appears seemingly in response to the increased endorphin production and which speeds up synaptic communication of pain stimuli, so that the receptor sites are already occupied by their rightful owners before the endorphins get there<sup>35</sup>. However, it could be suggested that LLLT has a double action, firstly stimulating endorphin production, and secondly inhibiting the appropriate prostaglandin synthesis.

Walker and Katz (1986)<sup>33</sup> attributed laser analgesia to the release of neurotransmitter serotonin and endogenous opiates, suggesting that LLLT may affect serotonin metabolism, because of a large increase in urine excretion of 5-hydroxyindoleacetic acid. They added that post-LLLT, there was a significant increase in latency corresponding to decrease in sensory conduction velocity which explained how could laser decreases pain. Also, Choi et al (1992)<sup>7</sup> reported that LLLT stimulates the gate control to inhibit pain pathways.

There was also a highly significant prolongation in the time of recurrence of dysmenorrhoeic pain after the first and second sessions. While after the third session in all the three consecutive menstrual cycles, there was no return of dysmenorrhoeic pain for all subjects in group (A). This result was attributed to the action of LLLT which has three phases: immediate, at a sub-cellular and cellular level; quick, within seconds to minutes following irradiation at a local tissue block

level; and the lasting effect, from hours to days or even weeks irradiation<sup>1</sup>.

Finally, this study confirms and adds strong evidences that low level laser therapy (LLLT) is an excellent additional new method of alleviating primary dysmenorrhoea that the gynaecologic physiotherapist is able to use it in treating such cases.

## CONCLUSION

The results of this study objectively demonstrates the potential use of LLLT on relieving primary dysmenorrhoeic pain and stand as an effective non pharmacological method of controlling spasmodic dysmenorrhoea in comparison to traditional pain relief modalities.

## REFERENCES

1. Abe, T.: "Orthopaedic surgical aspects of low reactive level laser therapy (LLLT)". *Laser therapy*, 2: 15, 1990.
2. Akerlund, M.: "Pathophysiology of dysmenorrhoea". *Acta Obstet. Gynaecol.*, 87:27-32, 1979.
3. Andersh, B., and Milsom, I.: "An epidemiologic study of young women with dysmenorrhoea". *Am. J. Obstet. Gynaecol.*, 144: 655-660, 1982.
4. Cailliet, R.: "Low back pain syndrome" F.A. Davis, Philadelphia, PP. 135-140, 3<sup>rd</sup> Ed. 1984.
5. Ceccherelli, F., Alrafini, L., and Locastr, G.: "Diode laser in cervical myofascial pain: a double-blind study versus placebo". *Clin. J. Pain*, 5: 301-304, 1989.
6. Choi, P.Y.: "The psychological benefits of physical exercise: Implications for women and the menstrual cycle". *Journal of Reproductive and Infant Psychology*, 10: 111-115, 1992.

7. Choi, J.J., Srikantha, K., and Wu W.H.: "A comparison of electro-acupuncture transcutaneous electrical nerve stimulation and laser photobiostimulation on pain relief and glucocorticoid excretion". *Inter. J. Acupun. Electrother. Res.*, 11:45-51,1986.
8. Clark, W.C.: "Pain Sensitivity and the report of pain: An introduction to sensory decision therapy". *Anaesthesiology*, 40(3):272-278, 1974.
9. Dawood, M.Y.: "Dysmenorrhoea" *Clin. Obstet. Gynaecol.*, 26:719-726,1983.
10. Dawood, M.Y.: "Current concepts in the aetiology and treatment of primary dysmenorrhoea". *Contemp. Obstet. Gynaecol.*, 70:785-790, 1987.
11. Dawood, M.Y.: "Dysmenorrhoea". *Clin. Obstet. Gynaecol.*, 33(1):23-35,1990.
12. Dawood, M.Y., and Ramos, J.: "TENS for treatment of primary dysmenorrhoea a randomized cross over comparison with placebo TENS and ibuprofen". *Obstet. Gynaecol.*,75(4): 656-660,1990.
13. England, S.: "Introduction to Mid laser therapy". *Phys. Ther.*, 74:100-102,1988.
14. Filler, W., and Hall, W.: "Dysmenorrhoea and its therapy: A uterine contractility study". *Am. J. Obstet. Gynaecol.*, 106: 104 - 109, 1970.
15. Haker, E., and Lundeberg, T.: "Laser treatment applied to acupuncture points in lateral epicondylagia". *Pain*, 43:243 -248, 1991a.
16. Helms, J.M.: "Acupuncture for the management of primary dysmenorrhoea". *Obstet. Gynaecol.*69:51,1987.
17. Lijima, K., Shimoyama, N., and Shimagama, M.: "Effect of repeated irradiation of low power He - Ne - Laser in pain relief from post - herpatic neuralgia". *Clin. J. Pain*, 5:271 -274, 1989.
18. Jeffcoate, N.: "Dysmenorrhoea in principles of gynaecology". London, Butter Worth & co, pp. 115 - 130, 9 th. Ed. 1982
19. Kaplan, B., Peled, Y., Pardo, J., and Nert, A.: "Transcutaneous electrical nerve stimulation as a relief for dysmenorrhoea" *EXP. Obstet. Gynaecol.*, 2:87-90, 1994.
20. Klein, R.G., and Eck, B.C.: "Low energy laser treatment and exercise for chronic low back pain" *Arch. Phys. Med. Rehabil.*, 71: 34-37, 1990.
21. Lewers, D., Jackson, J.A., and Varner, J.: "TENS in the relief of primary dymenorrhoea." *Phys. Ther.*, 69(1): 332-337, 1989.
22. Lumsden, M.A., Baird, D.T., and Kelly, R.W.: "Isoprostaglandin F<sub>2α</sub> Involved in the increased Myometrial contractility of primary dysmenorrhoea" *Prostaglandins*, 25: 683-692, 1983.
23. Lundtrom, V., and Green, K.: "Endoganous levels of prostaglandin F<sub>2</sub> and its main metabolites in plasma and endometrium of normal and dysmenorrhoeic women". *Am. J. Obstet. Genaecol.*, 130:640-646, 1978.
24. Ohshiro, T.: "Practical application of the contact technique, low level laser therapy" : A practical introduction (ed Ohshiro T & Calder head RG) John Wiley & Sons Chichester. PP. 86 - 115, 1988
25. Ohshiro, T., and Calderhead, R.C.: "Low level laser therapy: A practical Introduction". John Wiley & Sons, PP. 30-70, 2<sup>nd</sup> Ed. 1988.
26. Reiner, O., and Marchall, J.M.: "Action of Prostaglandin, PGF<sub>2α</sub> , on the uterus of the pregnant rat". *Naunyn Schmiedebergs Arch. Pharmacol.*, 292:243-250,1976.
27. Scudds, R. A.: "Pain assessment" *Aust. J. Phys. Ther.*, 29(3): 96-102, 1983.
28. Seitz, L.M., and Kleinkort, J.A.: "Low power laser: Its application in physical therapy in thermal agents and Rehabilitation". F.A. Davis, Philadelphia, PP. 217-237, 3<sup>rd</sup> Ed. 1986.
29. Smith, R.P.: "Cyclic pelvic pain and dymenorrhoea". *Obstet. Gynaecol. Clin. North Am.*,20:4-8, 1993.
30. Strugis, S.H., and Albright, F.: "Mechanism of estrogen therapy in relief of

- dysmenorrhoea". Endocrinology, 26:68-72, 1940.
31. Topozada, M.: "Topozada's textbook of Gynaecology". El-Shayma Press, Alex., PP. 117-119, 4<sup>th</sup> Ed. 1995.
32. Vance, A.R., Hayes, S.h., and Spielholz, N.I.: "MicroWave Diathermy treatment for primary dysmenorrhoea". Phys. Ther., 76(9): 1003-1008, 1996.
33. Walker, J.B., and Katz, R.L.: "Peripheral nerve stimulation in the management of dysmenorrhoea". Pain, 11: 355-361, 1986.
34. Walker, J.B., Akhanjee, L.K., Cooney, M.M., Goldstein, J., Tamayoshi, S., and Segal, G.F.: "Laser therapy for pain of rheumatoid arthritis". Clin. J. Pain, 3: 54-59, 1987.
35. Walker, J.B., Akhanjee, L.K., Cooney, M.M.: "Laser therapy for pain of trigeminal neuralg". Clin. J. Pain, 3: 183-187, 1988.
36. Willner, R., Abeles, M., and Myerson, G.: "Low power infra-red laser biostimulation of chronic osteoarthritis in hand". Laser Surg. Med., 5: 149-150, 1985.
37. Ylinkorkala, O., and Dawood, M.Y.: "New Concepts in dysmenorrhoea". Am. J. Obstet. Gynaecol., 130: 833-847, 1978.
38. Zhouet, M., and Doron, A.: "The biomedical effect of laser application". Laser Surg. Med. 5: 31-39, 1985.

### الملخص العربي

#### العلاج بأشعة الليزر منخفضة مستوى الطاقة في مقابل العلاج الإيحائي لحالات عسر الطمث الأولي

أجريت هذه الدراسة لتقييم مدى تأثير أشعة الليزر منخفضة مستوى الطاقة في علاج وتخفيف الألم الحاد المصاحب لعسر الطمث الأولي . شملت الدراسة خمسون فتاة عذراء متطوعات يعانين من عسر طمث أولي (مع انتظام الحيض) وكانت تتراوح أعمارهن ما بين ١٥-٢٥ عاما وتم اختيارهن عشوائيا من العيادة الخارجية لقسم أمراض النساء والتوليد بمستشفى عين شمس الجامعي . وتم تقسيمهن إلى مجموعتين : المجموعة (أ) تجريبية وتضم ثلاثون فتاة وهي المجموعة التي طبق عليها العلاج بأشعة الليزر منخفضة مستوى الطاقة والمجموعة (ب) وهي المجموعة الضابطة وكانت تضم عشرون فتاة وقد طبق عليهن العلاج الإيحائي بأشعة الليزر منخفضة مستوى الطاقة . وتم تقييم شدة الألم ودرجة تخفيفه لكل من المجموعتين (أ ، ب) من خلال استخدام المقياسان المدرجان (لقياس شدة الألم الحالية ولقياس درجة تخفيف الألم) وقد أجريت القياسات والتسجيل قبل وبعد العلاج لثلاث جلسات علاجية متعاقبة وتكرر العلاج لثلاث شهور متتالية . وأوضحت النتائج أن هناك نقص نو دلالة معنوية عالية في الإحساس بشدة ألم عسر الطمث الأولي وزيادة ذات دلالة معنوية عالية في درجة تخفيف الألم بعد كل جلسة علاج، وأيضا هناك زيادة ذات دلالة معنوية عالية في زمن ارتجاع ألم الطمث بعد الجلستين الأولى والثانية ولم يحدث ألم الطمث بعد الجلسة الثالثة في المجموعة (أ) العلاجية بالمقارنة بالمجموعة (ب) الضابطة التي لم تكن لها دلالة معنوية وكانت شدة الألم في معظم الحالات بنفس درجة الشدة قبل وبعد العلاج الإيحائي خلال دورات الحيض الثلاث المتعاقبة . وهكذا فقد أثبتت هذه النتائج أن أشعة الليزر منخفضة مستوى الطاقة لها تأثير فعال في علاج وتخفيف ألم عسر الطمث الأولي ومن الناحية الأخرى لم يكن هناك أي تأثير لاستخدام العلاج الإيحائي ، وبذلك يعد العلاج بأشعة الليزر منخفضة مستوى الطاقة علاجاً فعالاً وبديلاً للوسائل العلاجية الأخرى مثل العقاقير الطبية (كأقراص منع الحمل ومضادات تخليق البروستاجلاندينات) في علاج ألم عسر الطمث الأولي.