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## The study of the efficiency of the low energy laser combined treatments in chronic pelvic inflammatory disorders

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### ABSTRACT

We have studied the effects of the low energy laser treatment (HeNe combined with Ga-As) laser versus placebo laser, Ga-As laser combined with classical medical treatment and classical therapy, alone, on a group of 148 female patients with chronic pelvic diseases.

The results show highest efficiency for the laser combined treatment (He-Ne and Ga-As) versus all the others kind of therapy.

*The chronic pelvic pain has a different etiology taking into account the pelvic viscera belong to genital, urinary and digestive systems.*

*Nowadays, in order to treat the chronic pelvic pains having its origin in the genital organs, when failing with normal medical (or physiotherapeutic) treatment someone proceeded to a surgery solution. About 12 % from total amount of hysterectomies are advised for the algic pelvic syndroms. After operation usually in about 1/5 of the patient, the pelvic pain recurring.*

*In our study we choosed the low energy laser irradiation as an alternative to the classical therapy.*

### PATIENTS

*148 in female patients with chronic pelvic inflammatory diseases were split into five homogenous groups as age duration and gravity of the disease.*

*A. Infrared GaAs laser alone was applied on 36 patients;*

*B. Simultaneous He-Ne and Ga-AS irradiation were applied on 28 patients;*

*C. Ga-As laser combined with classical medical therapy were applied on 31 patients;*

*D. Classical therapy with medicine was given to 30 patients;*

*E. Placebo laser therapy without irradiation was performed on 23 patients. The patients were "treated" in the same manner as A group but with the infrared Ga-As laser switched off.*

*Each patient in the study group was treated no more than 7 days before any kind of therapy with conventional medicine. Thus patients treated with laser therapy was himself's witness.*

### ***LASERS AND THERAPEUTICAL PROTOCOL***

*We used two kind of lasers:*

- 1. Gallium-Aluminium-Arsenide laser was an infrared pulsed one, non-collimated operating at 904 nm, with 120 ns pulses, peak power 8W and average output power at 2mW.*
- 2. Helium-Neon laser was a continuous 633 nm in visible (red) spectrum and an output power of 2mW*

*Laser irradiation was given per point, for He-Ne 3 min and for Ga-As 2 min, in 14 points localized on lower abdomen (10 points), lumbar (2 points) and sacrum region (2 points).*

*With Ga-As we applied a manual scanning on this areas. The laser therapy was given 4-5 time a week for 2-4 weeks, function of the effect obtained.*

### ***EVALUATION OF THE TREATMENT***

*The patients appreciated of the changes of the pain on a visual analogue scale from -1 (exacerbation of the pain), 0 (status quo) to 10 (complete remission of the pain).*

*This scale was used for both spontan and provoked pain (bimanual examination).*

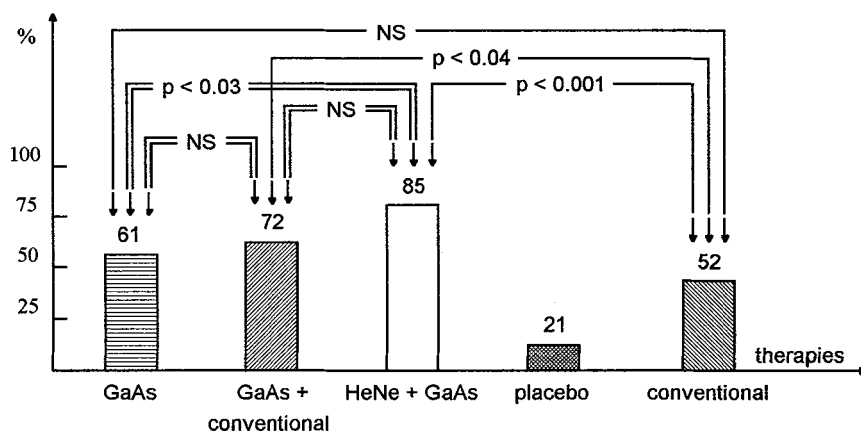
*All the patients were examined by bimanual technique and also by echografic exam, before, immediatly and after 6 weeks from stopping the treatments.*

### ***RESULTS***

*All kinds of therapy were more efficient than placebo or conventional therapy alone.*

*The lower effects of the laser therapy proved single GaAs laser, more efficient than conventional therapy, but not statistical significant.*

*HeNe and GaAs have had significantly greater efficiency versus placebo, conventional therapy and GaAs single. Compared to GaAs combined with classical medical therapy, HeNe and GaAs laser therapy have had greater effeciency, but without statistical significancy.*



*No statistical significance was found at the bimanual examination (excepted provoked pain), before and after the laser treatment. The same non significant results were found at the echographical examination.*

Generally, we didn't find any side effect with laser treatment excepting 9.5% of patients which accused increasing of menstrual blood flow, only when the laser biostimulation (GaAs or HeNe with GaAs), was done at the monthly period.

Six weeks after laser therapy we reexamined almost all patients (135 from 148), both clinical and echographical. We didn't find significant changes as compared to the clinical status just after laser therapy.

## DISCUSSIONS

The good effect of the laser irradiation obtained on this kind of pain could be due to:

- changes in the concentration of neuro-synaptic transmitters;
- muscular relaxation ;
- increasing of beta-endorphins realising;
- a mesurable modification in the neural potential which are leading to a hyperpolarization of the membrane and determining the analgesis;
- local vassodilatation;
- decreasing of local acidosis
- decreasing of the nociceptive bioelectrical activity;

We prefer irradiation with Ga-As laser alone instead of He-Ne laser alone, because:

- the wave length of the beam emitted has very low ray absorbtion by the tissue;this has the great advantage of not generating any heat during treatment;
- the GaAs laser beam penetrates deeper in the tissues (4 cm) than HeNe (1-2 cm);
- infrared laser source is located at the stimulated point avoiding any any power loss (optical fibre like in the HeNe based laser);
- the very low power GaAs laser irradiation used in this study can act mainly by the 'clasic' biostimulation effect.

The therapeutical higher effect of the combined irradiation HeNe and GaAs laser could be due to:

- rise of the optical window of the skin by sumation of the optional transmission capability of the laser lights;
- different fotochemical wavelength depending effects in the same time;

## CONCLUSIONS

1.The most efficient among the laser irradiation types proved to be the mixt irradiation HeNe-GaAs (laser puncture and scanning), but comparable with GaAs combined with classical medical therapy (no statistical significance).

2.Laser biostimulation proved itself to be significantly more efficient either placebo treatment or clasical therapy.

3.No significant local genital changes have been noticed after laser treatment regarding bimanual examination (excepting provoked pain) and also regarding the ecographical examination.

4.No side effects were noticed, excepting the increase of the menstrual flow ( at 9.5% of the patients) when laser therapy has been applied during the monthly period.

5.The clinical efficiency remains unchanged for at least 6 weeks.

6.Low energy laser therapy especially GaAs in combination with HeNe irradiation can be useful alternative of the conventional treatments for pelvic inflammatory disease.

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