



Wollerau

Nov 2018

TO: Zepter International (intern)

CC: Ms. Zepter, Mr. Jankovic

SUBJECT: INT. Medical INFO-: Bioptron

Dear colleagues,

Please find below a brief summary about latest projects and testimonials proving positive effects of Bioptron Medical Light Therapy in:

- 1.) **Reproductive health.** This internal report has recently become available and was presented in St. Petersburg at the 'Actual questions of experimental and clinical medicine' in April 2018. Although the abstract can be found in the proceedings of the conference, the authors seek publication in the future.
- 2.) **Rehabilitation after wrist fractures (Publication, Serbia)**
- 3.) **Sports medicine in a patient with a frozen shoulder (Testimonial, Serbia)**
- 4.) **Polarized Light and orange Filter in Children after Burns (Publication, Egypt)**
- 5.) **Carpal Tunnel Treatment. (Testimonial, Germany)**
- 6.) **Diabetic foot. (Testimonial, Poland)**
- 7.) **Facial Inflammatory disease (Testimonial, Czech Republic).**
- 8.) **BIOPTRON in the cardiac department (Testimonial, Serbia)**

You may share this information with employees, customers, consultants and wider population through mailing and social media posts. If you have recently received reports of completed research or testimonials, please send them to me, so they can be archived and shared with other Zepter countries and their potential customers.

For information, clarification or the reports generated, please feel free to contact me.

Best wishes

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1. Bioptron and Reproductive Health

Approximately, 15-25% of couples in Russia suffer from infertility, with almost 50% of infertility problems residing in men. A spermogram or sperm analysis is the most important non-invasive method of the functional state of the male genital glands for assessing: sperm motility, the number of sperm/ml, sperm viability and sperm morphology.

Aim:

The aim of the study was to investigate the effects of Bioptron light therapy on the physical properties and basic parameters (sperm motility and viability) of sperm of men *in vitro* and *in vivo*.

Method:

The experiment consisted of 2 phases. During the first phase (*in vitro* condition): Men of reproductive age (n=9) provided ejaculate samples in the laboratory of the Family Clinic "Reproductive Health Center" in Izhevsk, Russia. The total mobility of the sperms, the number of progressively motile sperms, the non-progressively mobile sperms, the immobile sperms, and the viability of the sperms were assessed, before and after exposure to polarized polychromatic Bioptron light for 8 min at a distance of 5 cm (using a MedAll device).

During the second phase (*in vivo* condition): Ejaculate samples (n=4) were analyzed before and after photostimulation with polarized polychromatic light of the BIOPTRON Pro 1 device on the lumbosacral area from a distance of 10 cm for 10 minutes and perineum area from a distance of 10 cm for 5 minutes, for 10 days.

Results:

Single exposure of polarized polychromatic Bioptron light for 8 minutes on volunteers' sperm in *in vitro* conditions caused the following changes in the spermogram:

- Increased total mobility of sperms by 3%
- Increase in progressively motile sperms by 9%
- Decrease in the number of non-progressively mobile sperms by 24%
- The number of immobile sperms decreased by 8%
- Increased viability of sperms by 6%

The effect of polarized polychromatic light of the Bioptron Pro 1 device in *in vivo* conditions (10 sessions) caused the following changes in the spermogram:

- Increased total mobility of sperms by 16.2%
- The number of progressively motile sperms increased by 24.8%
- The number of non-progressively mobile sperms increased by 16.7%
- Decrease in the number of immobile sperms by 27%
- Increased viability of sperms by 14,7%

Conclusion:

Bioptron light therapy appears to induce an intracellular cascade of metabolic processes (including ATP and cellular membrane activation), activation of the lymphatic and circulatory system, which contribute to an increase in the functional status of spermatozoa. Studies conducted on volunteers in *in vitro* and *in vivo* conditions show a positive effect of polarized polychromatic Bioptron light on spermogram indexes after 10 days of use for 10 min at the lumbarsacral area and 5 min at the perineum, which opens opportunities to recommend this method of exposure for clinical, outpatient and home use in order to improve quality of sperm and enhance male fertility. The long term sustainability of these result however need to be determined.

Reference (available upon request):

- Kuznetsov S.F., Kanunnikov M.M., Vorobyeva A.S. Influence of Bioptron polarized light on the functional status of spermatozoa in vitro and in vivo conditions // Materials of scient.-pract. Conference "Actual questions of Experimental and Clinical Medicine - 2018". - St. Petersburg, April 2018. - P. 205

2. Complex regional pain syndrome (sudeck atrophy) prevention possibility and accelerated recover in patients with distal radius at the typical site fracture using polarized, polychromatic light therapy

INTRODUCTION:

Distal radius fracture (DRF) is one of the most frequent population fracture mostly affecting women, and frequently leading to complex regional pain syndrome (CRPS). Management of DRF in gerontology is complex, due to a number of comorbidities, skin atrophy and partial loss of sensitivity. The aim of the study was to evaluate Bioptron light therapy application combined with conventional treatment after DRF in gerontology and to follow up patients for CRPS-emergence for a period of six months.

PATIENTS AND METHODS:

After removing of the plaster due to DRF, female patients (n=52) were divided into 2 groups. The first group of patients (n=26) were treated with exercises and cryotherapy on the wrist and dorsal side of the hand (control). Another set of patients (n=26) was treated with Bioptron (polarized, polychromatic, non-coherent, low energy radiation) light therapy in addition (intervention group). Bioptron light therapy was applied for a total of 10 minutes a day (5 points for 2 minutes each) at a distance of 10 cm from the dorsal hand region for a period of 15 days.

RESULTS:

While pain decreased and supination and pronation improved in all patients after 15 days of therapy, pain reduction was significantly accelerated and supination enhanced in the light therapy-treated group. None of the patients in the light therapy-treated group developed CRPS in the 6-months period of follow-up, compared to 4 patients (15.4%) in the control group. Complete hand-fist-forming capacity was achieved in 19 patients (73.1%) in the light therapy-treated group as compared with 16 patients (61.5%) in the control group. (All these presented results were statistically significant).

CONCLUSION:

After wrist fractures, early intervention with Bioptron light therapy for 10 min a day for 15 days improves wrist functionality and reduces complications in elderly patients, compared to standard treatment alone.

Reference (available upon request):

- Zlatkovic-Svenda MI, Leitner C, Lazovic B, Petrovic DM (2018) Complex regional pain syndrome (sudeck atrophy) prevention possibility and accelerated recover in patients with distal radius at the typical site fracture using polarized, polychromatic light therapy. *Photomedicine and Laser Surgery. In press.*



3. THE APPLICATION OF BIOPTRON LIGHT THERAPY IN TREATING PATIENTS WITH FROZEN SHOULDER

CASE REPORT

Dr. Dejana Petrovic

The city institution for gerontology, Belgrade

Date: 18.6.2018

Introduction: The adhesive capsulitis or the frozen shoulder is considered a non-joint rheumatic disease. It is very unpleasant and creates a movement dysfunction with pain. Most often, it is caused by precipitation of calcium salts in the muscles and the tendons of the shoulder area.

Clinical Manifestation: It is, most often, manifested in two ways: In the first case, the pain in the shoulder appears suddenly (acutely), with temporary limited function/ range of motion of the shoulder joint (acute painful shoulder). Secondly, it happens very often that the condition starts with medium pain in the shoulder and gradually decreasing range of motion, so that in the end phase almost none of the motions in the shoulder joint are possible. It usually begins with the tendons of the shoulder area, followed by pain during certain shoulder motions. During the next phase of the disease, inflammation of the synovial joint is present which causes very strong pain and limitation of the range of motions. This condition is called the frozen shoulder.

Diagnosis: It is diagnosed based on the anamnesis and the clinical findings. It is necessary to do a comparison of the RTG image of both shoulders, and in the elderly a profile image of the cervical spine. During the acute phase it is necessary to do the sedimentation rate, blood test and fibrinogen. It is desirable to do an ultrasound of the shoulders because of the differential diagnosis of Bursitis which is a limitation of the range of movement to a lesser degree but there is also a very strong pain present.

Treatment: The first part of the therapy is usually with NSAIDs (anti-inflammatory medicine which are used against pain and inflammation), and sometimes it is with local infiltration of glucocorticoid in the shoulder. One important aspect of therapy is kinesiotherapy (the application of which should improve the range of motion) as well as physiotherapy (which accomplishes an analgetic effect as well as improvement of the local and systematical circulation). In this case, Bioptron was used for 15 days for 10 min daily applied at the projection of the deltoid muscle, and in conjunction with assisted exercise. During these 15 days of additional Bioptron treatment considerable pain relief was observed and further pain relief was not required after this treatment (reducing the overall consumption of pain and anti-inflammatory medication).

4. Polarized Light and orange Filter in Children after Burns, Egypt, 2018

A study from a research group of Cairo University investigated the effect of the combination of Biopton medical polarized polychromatic light and Biopton's orange filter on children (aged 3-7 years of age) after a burn to the hands and wrists. This randomized controlled study investigated 30 children: 15 children with scar standard management (ultrawaves, massage & mobility exercises) and 15 children who were additionally treated for 15 min with BIOPTRON medical polychromatic polarized light, followed by 15 min with the orange filter from BIOPTRON's color therapy set.

The BIOPTRON treated children received medical polarized light 3 times/week for one month. The scars were assessed before treatment and after 1 month and compared to the children in the standard scar management group. Scar assessment included scores for vascularity, pigmentation, height/thickness and pliability. The children treated with BIOPTRON medical light therapy showed significant improvements in the scar assessment compared to standard scar management alone. Ultimately, the authors concluded that BIOPTRON polychromatic and the orange filtered polarized light have a special and beneficial effect on decreasing pediatric scars after burns.

Available Reference upon Request:

Nesrein A. Abd Elrashid NA, Sanad DA, Mahmoud NF, Hamada HA, Abdelmoety AM, Kenawy AM. Effect of orange polarized light on post burn pediatric scar: a single blind randomized clinical trial. *J Phy Ther Sci.* 2018. 30: 1227–1231,

5. BIOPTRON for fast and effective treatment for Carpal Tunnel Syndrome

Testimonial received: July 2018 (Treatment occurred May/June, 2018)

I treated a patient in my clinic in Germany (Starnberg, Germany) for carpal tunnel syndrome. The patient was treated with BIOPTRON twice daily for 10 minutes each day, over a period of 3 weeks. Significant improvements were already observed after a few days, with significant reductions in pressure sensation in the wrist, and the patient being able to do small jobs that previously caused pain. After 3 weeks of treatment, the patient only required his wrist support at work for heavy duties, but most other duties were performed without the wrist support again. The patient was significantly relieved and happy, particularly by the lack of pain after only 3 weeks of daily treatment, and the resulting improvements in quality of life.

Unfortunately the patient reallocated so I could not treat him any longer, but the 10 minutes 2 x/day improved his condition so well that he no longer needed the arm brace. I am pleased and the patient is amazed that in his packing and moving to another state, he had no pain or complaints.



Prof (hon) Dr. Dana F. Flavin, Dr. med univ, M.S

Starnberg, Germany
(Alternative Cancer Therapy)

German Clinician & Former (Food & Drug Administration)
FDA official

President of Collmed- Foundation for Collaborative Medicine
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Alternative Cancer Research

6. Diabetic Foot Treatment- Zepter Treatment Center & Spitalo Pomorskie, Gdynia, Poland, September-December 2017

The diabetic patient was discharged from the hospital after the initial treatment (Hyperbaric chamber & wound dressing) in July, 2017. But minor improvements were noticed after 60 treatments in the hyperbaric chamber, and the treating doctor from the hospital recommended amputation at this point. The patient was seen in a Zepter medical center (Poland) with a relatively large wound shortly thereafter (in August 2017), and daily treatment started immediately. After only 3 treatments, the patient was able to reduce painkiller intake, and after 5 treatments, in accordance with the treating doctor, the patient was able to discontinue antibiotic treatment. The patient was treated daily in a Zepter medical center for 20 days (including weekends) with BIOPTRON BPRO1 light therapy for 2h included the use of the green and blue color filters. Oxy spray was applied prior to treatment until the swelling was minimal and the wound reduced significantly in size. The patient then continued treatment at home, after having received adequate training. Complete wound closure was achieved in December 2018 (3.5 months of treatment).



7. Case Report - Facial inflammatory disease (after a long course of antibiotic treatment). Czech Republic, April 2018

The woman (age 27) first presented with an extensive inflammatory face infection after 6 months of Anti-biotic treatment.

Starting state before treatment:

- very dry skin with scales
- pigment spots after purulent manifestations
- very widespread pores
- newly inflamed pimples
- black dots
- painful bulky skin depth
- tingling sensation in the face
- at the pigment site, the skin's sensitivity is heightened

First 10 treatment days, BIOPTRON light was applied twice daily (10 minutes), and starting from the 11th treatment day, treatment was once per day for 12 min

Prior to therapy:



After 10 Treatments (April 11th, 2018):



After 14 treatment days (April 27th, 2018)



the skin is not as dry
there is a lack of tension in the face
visible loss of inflamed bearings
the skin is more flexible and "lighter"

After 26 treatment (May 11th, 2018)



Dry scales cease to form.
The pores are no longer open.
Less inclination to create new
pimples, black dots cease to form.
The affected pigment spots
gradually return to normal skin
color.

8. BIOPTRON in the Cardiac Department

Dr. Kocica- Cardiac Surgeon, Belgrade, Serbia, 2017

Surgical wound treatment with BIOPTRON after open chest surgery and wound treatment of leg after venous graft was taken for cardiac surgery (e.g. bypass surgery)



Case Study: Limb salvage (patient: 79y old)



Patient was initially treated for:

Severe ischemic cardiomyopathy, coronary artery disease with coronary artery bypass surgery and discharged

But re-admitted with

Crural ischemia and necrotizing fasciitis after leg venous graft was taken for by-pass heart surgery

- **Vascular surgeon: "Primary amputation."**

Treatment(s) - local:

Overall duration – 62 days!

1. Surgical dressing and debridement
2. Hyperbaric O₂ therapy – 10 sessions from 15th to 25th day
3. **Zepter BIOPTRON: 2x5 min (after each debridment and before dressing) during 47 days & 1x10 min starting 1 day after Thiersch skin grafting up to discharge**

- ... Patient's leg was saved!