THE TREATMENT OF CHRONIC REFRACTIVE RADICULOPATHY WITH HIGH POWER LASER THERAPY

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CLASS IV LASER THERAPY CASE REPORT

HISTORY:

A 47 year old eastern European male patient presented with a long term history of back and left leg pain of 10 years duration. He denied any bowel and bladder signs. He had failed all forms of conservative care which was available to him in his country. He refused surgical intervention. Traditional treatment options for this patient would typically have included a series of epidural steroid injections, pain medication, acupuncture, physiotherapy, and spinal manipulative therapy.

CLINICAL PRESENTATION:

Weight: 197 lbs.

NEUROLOGICAL:

DTR: 2/2, left achilles was 1+ with reinforcement. Dermatomes reveled left S1 hypesthesia. Myotomes showed EHL's 5/5 and symmetrical. Circumferential mensuration reveled no atrophy of either calf. Heel/toe walking was also 5/5.

ORTHOPEDIC:

SLR was classic on the left for radiation into the foot @ 30 degrees, 70 degrees on the right. The left sciatic notch was exquisitely tender on the left. Springing maneuver was painful at L5/S1. Sitting SLR combined with long axis traction and popliteal compression were classic for extreme leg/buttock pain. ROM reveled that his leg pain was exacerbated by flexion and alleviated by extension.

ORTHOKINETIC WEIGHT-BEARING:

Bilateral subtalar pronation was noted more so on the right which resulted in slight inferiority of the right hemipelvis. No tibial or Femoral torsion was noted.

DIAGNOSIS:

Chronic left S1 radiculopathy complicated by kinetic chain dysfunction.

TREATMENT PLAN AND RESULTS:

Prior to initiating therapy, the patient was prescribed custom fabricate orthotics which were posted as follows: Rearfoot posting: 5 degrees varus, forefoot posting 6 degrees varus in order to correct the kinetic chain dysfunction and to create an "optimal healing environment". The patient then underwent flexion/extension provocation testing. It was noted that he had dramatic centralization of his left leg pain with hyperextension coupled with right side bending. The patient began High Power Laser Therapy (12 watts, for 10 minutes) to the following locations: L5/S1 disc, Left Sciatic notch, and left common Peroneal nerve. He was treated daily, 5 days a week, for 2 weeks. At the end of the 10 treatment sessions, the patient indicated a reduction in pain and activity intolerance of between 60-70 %. His supine and sitting root tension signs had also dramatically improved.

DISCUSSION:

Laser therapy is classified as an Actinotherapy which results in biostimulation of the Chromophores

Treatment	Wattage	Time (minutes)	Dosage-Joules	Treatment Notes
1	10W	25	15,000	Left leg pain appears to centralize with extension and right side bending
2	12W	25	18,000	Positive root tension signs in left leg (supine & sitting). No change after initial treatment.
3	12W	30	21,600	Slight decrease in severity of left leg pain.
4	12W	30	21,600	Pain in left buttock and left leg is intermittent at this time.
5	12W	30	21,600	Mild degree of improvement in severity of left leg pain. 5/5 power EHL, Heel/Toe walking.
6	12W	30	21,600	Continued signs of improvement regarding severity and frequency of radiation into left leg.
7	12W	30	21,600	Significant reduction in left leg pain. Mild tenderness in left sciatic notch.
8	12W	30	21,600	Dramatic reduction in left leg pain. Minimal tenderness at the lumbosacral junction.
9	12W	30	21,600	Patient reports 60% overall reduction in severity of left leg pain. No appreciable root tension signs present.
10	12W	30	21,600	Patient reports 70% overall improvement after 10 sessions. No sitting root tension signs are present. Patient had to return to Europe.

Table 1 – Treatment and Progress Note

inside the mitochondria of each cell[1,8]. This photo-stimulation results in increased cellular metabolism. Although the High Power Laser is warm, the results are photochemical and not thermal[8]. Biostimulation translates into reduction of inflammation, increased blood flow, nerve regeneration and lymphatic drainage[5,6]. Regarding patients suffering from back and leg pain, the High Power Laser is thought to decrease inflammation of the disc and nerve root as well as aid in nerve regeneration. Healing of annular defects in the outer 1/3 of the disc (which is vascularized) have the ability to heal[9]. In order to achieve optimal healing and long term results, it has been found in a clinical setting that all biomechanical abnormal forces need to be removed so healing is not interrupted or compromised during gait.

SUMMARY:

High Power Laser Therapy has the ability to reach deep within the body when compared to Low Level Laser Therapy[8]. When used in a patient who's biomechanical abnormalities have been corrected, the results achieved seem to be long term in nature. This may also be due to the fact that laser energy appears to also biostimulate collagen and fibroblast growth which would enhance the tensile strength of the annular fibers of the degenerative disc patient[1,2,3,4]. Clearly, further investigation regarding a blinded study with pre and post MRI evaluations is necessary to help further visualize the anatomical effects of photo-stimulation with High Power Laser Therapy.

ABOUT THE AUTHOR

Dr. Costello is a Board certified chiropractic orthopedist. He is also Board certified in quality assurance and utilization review, and has been practicing continuously in Palm Beach County for 26 years. Dr. Costello was formerly the president Florida College of Chiropractic Orthopedist (1993 to 2005), and also the chief of clinical services Avicenna Laser Technology (April 2006 through September 2011). He is a published author and lecturer on Class IV laser therapy and clinical practice.

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Source of Study: AspenLasers.com