

## Short Communication

# A STUDY OF LOW LEVEL NITROGEN LASER THERAPY IN THE TREATMENT OF NON-RESPONDING TUBERCULAR LYMPHADENOPATHY AND SINUSES

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**Summary:** Forty-four cases of tubercular lymphadenopathy and sinuses, who were taking anti-tubercular treatment for more than 6 months and not responding to it, were randomly selected in this study. Overall cure rate in cases of lymphadenopathy was 93.99% , sinus 77.77% and cold abscess 100%. Mean age of the patients was 30.13 (Male: female1:4.5). Most common site of lymphadenopathy was cervical , smear was positive in 19(43.18%) cases and culture in 25(56.81%) cases. Low Level Nitrogen Laser Therapy may be used as an adjuvant to anti-tubercular drugs in cases of chronic non-responding tubercular lymphadenopathy and sinuses. [*Indian J Tuberc* 2006; 53:229-231]

**Key Words:** Tubercular Lymphadenopathy, Low Level Nitrogen, Laser Therapy.

## INTRODUCTION

Resurgence of tuberculosis and the emergence of MDR strains have led to a growing realization of an urgent need for developing an effective treatment modality for this disease. The cure rates of the patients with tubercular lymphadenopathy with 6 months chemotherapy has been found to be about 50%-90%. However, many of these cases are due to drug resistance tuberculosis and Non-tubercular Mycobacteria (NTM). Treatment of these cases is very difficult, as they do not respond properly to the routine chemotherapy. They require longer duration of chemotherapy along with second line drugs i.e 12-24 months of treatment in various studies<sup>1-2</sup>. Recurrence even after surgical excision is seen in 2%-15% cases of TB lymphadenopathy<sup>3</sup>. In about 20%, patients develop abscess and sinuses.

We have successfully treated 42 cases of tubercular lymphadenopathy with or without non-healing tubercular sinuses or tubercular cold abscess, which were not responding to given medical and surgical treatment, with the use of Intralesional Laser Therapy

along with anti-tubercular drugs.

## MATERIAL AND METHODS

Longitudinal study entitled "The Role of Low Level Nitrogen Laser Therapy in not-responding Tubercular Lymphadenopathy and Sinuses" has been studied for a period of four years from 2001 to 2004 and follow-up was done for a period of two years.

Four patients lost to follow-up were excluded from the study. Inclusion criteria for the study were patients received ATT for > 6 months showing no response, Acid Fast Bacilli (AFB) grown in culture after 6 months of ATT, abscess formation, sinuses tract formation, Age group > 15 years but < 65 years with diagnosis of lymphnode tuberculosis.

Detailed medical history was taken and physical examination was done. All patients gave informed consent to participate in the study.

In all the patients we did histological and microbiological analysis for the presence of

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mycobacteria in the lymph node tissue. Pus aspiration from lymph node for AFB microscopy and culture and FNAC were used to investigate tuberculosis. Routine tests included complete haemogram, Blood sugar, screening test for Human Immunodeficiency Virus, Australia antigen, Mantoux test and sputum examination for AFB.

After confirmation of the diagnosis, we gave intralesional laser therapy along with ATT. 2mW nitrogen laser was given for 780 sec, twice weekly for total 10 sittings, laser used in this study was a pulsed laser with a pulse duration of 7 ns, energy 30 microjoules and an average power output of 2mW at the tip of the fiber. The Jalco Canula (16 G, 50 mm length) was first introduced inside the lymph node and through it the fiber of the laser equipment was introduced about 5 mm inside the lesion. Then the laser was started and was given for 780 sec.

## RESULTS

Mean age of the patients was 30.13 years (range 15-65 yrs). There were eight males and 36 females. Mean duration of illness was 13.2 months. Mean duration of treatment received before laser therapy was 8.61 months.

Clinically, the main symptoms at the time of presentation were fever and weight loss. Cervical lymph node alone was involved in 30 patients, cervical and axillary in one patient, axillary in one and cervical and intra abdominal cold abscess in one patient. Single lymph node was present in 25, multiple discrete nodes were seen in 9 cases.

Lymph node with discharging sinus was seen in 8 cases and only lymph nodes abscess was

present in 25 cases.

Total number of patients of post-operative sinuses were 9, 5 thoracic region, two in inguinal region, one in abdomen, and one in mid-arm.

Two cases were of cold abscess.

Acid Fast bacilli were demonstrated by smear in 19 (43.18%) cases. AFB culture was positive in 25(56.81%) cases. FNAC revealed a positive diagnosis in all cases. Criteria for diagnosis of tuberculosis in FNAC were taken as presence of epithelioid cell, multi-nucleated giant cells, Caseous necrosis, necrotic cells, granulomatous inflammation and presence of AFB in necrotic smear.

Associated chest lesion on radiograph was evident in 10 cases, parenchymal tuberculosis in 6 cases, pleural effusion in 4 cases and CNS tuberculoma was found in one case.

During the treatment with laser therapy, the lymph node resolved after five sittings in 4 (12.12%), seven sittings in 11 (33.3%), 8 sittings in 6 (18.18%), 10 sittings in rest of the patient 10(30.03%)(Table-1). However, we gave 10 sittings of laser therapy to all the patients, two patients (6.06%) of lymphadenopathy did not respond because lymph node was deep seated. They were subjected to surgical intervention. Patients with tubercular sinuses responded more dramatically with cessation of discharge and obliteration of tract after 7 sittings. However, there was recurrence in two patients (22.22%), in one patients after 2 ½ months and other patients after 6 months. Both were again put on laser therapy and then cured.

**Table:** Resolution of lymphnode, closure of sinus according to number of sittings

Type of lesion	5 sittings	7 sittings	8 sittings	10 sittings	Not improved	Total
Lymphadenopathy	4	11	6	10	2	33
Post operative Sinuses	0	5	0	2	2	9
Cold abscess	0	0	0	2	0	2
<b>Total</b>	<b>4</b>	<b>16</b>	<b>6</b>	<b>14</b>	<b>4</b>	<b>44</b>

At the end of 5 sittings, 8 patients (24.24%) became asymptomatic (they became afebrile, appetite improved, patients started feeling better and started gaining weight), 13 patients (39.39%) after 7 sittings, 5 patients (15.15%) after 8 sittings and 5 patients (15.15%), at the end of 10 sittings. Thus overall results in cases of lymphadenopathy are 93.99%, sinuses 77.77% and cold abscess 100%. All the patients received a full course of anti-tubercular treatment according to culture and sensitivity reports. In cases of culture negative, patients received empirical therapy. Follow-up was done for a period of 2 years.

## DISCUSSION

In continuation of the pioneering work of Finsen on treatment of skin TB by UV light<sup>4</sup> and *in vitro* reports on bactericidal effect of UV light on tubercular bacilli<sup>5</sup>, Eshanchanov et al reported the use of UVA radiation from nitrogen laser (337-nm) for the treatment of patients with PTB<sup>6</sup>. *In vitro* experiments have also been carried out to understand the therapeutic mechanisms involved. It has been shown that nitrogen laser irradiation can inhibit growth of tubercular bacilli, particularly at high intensities<sup>7</sup>.

***In vitro* experiments have also provided some evidence as possible influence of nitrogen laser irradiation on the immune system, for example nitrogen laser irradiation was seen to enhance the intra-cellular killing of intra-circular bacteria in human neutrophil. Nitrogen laser irradiation leads to temporary inactivation of drug sensitive as well as drug resistant clinical isolates of mycobacterium tuberculosis<sup>8</sup>.**

When we started giving intralesional laser therapy to these patients they showed response to the therapy in a short duration of time and both the size of gland as well as the symptoms improved. In a series of 10 patients, M. M. Puri

observed similar results with He-Ne laser<sup>9</sup>.

Two patients of lymphadenopathy did not respond because lymph nodes were deep seated. Two patients of sinuses had recurrence because of multiple sinuses. All the patients are still at our regular follow-up. No recurrence of lymph node or discharge at the site of laser given has been observed.

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