

Intermittent Pneumatic Compression Therapy of Lymphedema in Iraq

A Clinical Experience

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ABSTRACT

Background: Lymphedema is a condition of limb swelling due to impaired lymphatic drainage which is still incurable and progressive disease.

Objective: To report on personal experience with intermittent pneumatic compression therapy.

Methods: Sixty patients with lymphedema were included in the study for the period from 1st January 2015 to 31st December 2017.

Results: Age of patients ranged from 25 to 65 years with male to female ratio of 1:4. All of them presented with edema of a limb, non-pitting in character, right or left lower limb, some of them with bilateral lower limb involvement. The minimum number of sessions needed to obtain a clear reduction in the circumference of the three measurements (mid-thigh, mid-leg and mid foot) was only five sessions. No complications encountered during compression therapy period.

Conclusion: IPC therapy is useful in initial conservative therapy of lymphedema.

Keywords: Lymphedema, Intermittent pneumatic compression therapy, Lymphatic dysfunction.

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Lymphedema is a localized fluid retention and tissue swelling due to impaired lymphatic drainage. It is incurable and progressive condition⁽¹⁾. It is a primary (congenital) or secondary due traumatic injury to the lymphatic vessels. It is frequently seen following lymph node dissection in women after breast surgery with axillary clearance or radiation therapy⁽²⁾.

Diagnosis is based on clinical and imaging studies such as lymphoscintigraphy and indocyanine green lymphography⁽³⁾. No generally accepted criterion for diagnosis, although a volume difference of 200 ml between limbs or a 4-cm difference (at a single measurement site or set interval along the limb) is often used. Bio - impedance measurement (measuring the amount of fluid in a limb) offers greater sensitive than existing method⁽⁴⁾.

Other potential causes of lower extremity swelling such as renal failure, hypoalbuminemia, congestive heart failure, protein - losing nephropathy, pulmonary hypertension, obesity, pregnancy and drug-induced edema must be excluded⁽⁵⁾.

Several classification systems were adopted for lymphedema to ease management⁽⁶⁻⁸⁾. Many methods were used for treatment of lymphedema e.g. complete decongestive therapy (CDT), manual lymphatic drainage, compression and low-level laser therapy⁽⁹⁻¹¹⁾. Recently, intermittent pneumatic compression therapy (IPC) was used also⁽¹²⁾. IPC was established in 19th century (one chamber), and nowadays with multiple chambers digitally controlled. Publishing on treatment lymphedema by IPC is scarce, so it was the impetus to carry out this research.

This study was carried to report a personal experience in IPC in treatment of lymphedema.

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Methods

A review of case files of 60 patients with lymphedema was included in the study. They were treated for the period from 1st Jan 2015 to 31st Dec 2017. The collected information was demographic variables and session for IPC. Patients were treated by IPC using BT 6000 lymphastim. It is a new pressure therapy for medical and aesthetic practices. It encourages natural circulation of lymph through the body like drainage provided by therapist hands. Doppler ultrasound was used to assure that all the veins both superficial and deep were patent, with competent valves. Deep veins thrombosis was excluded in addition all arteries of both lower limbs were patent i.e. any vascular problem was ruled out.

Clinical improvement was judged by decreasing in the circumference of calf i.e. mid leg circumference. Data were presented in a descriptive manner. Chi square or Fisher Exact test was used when it is applicable. The test was used to examine the association between variables. $P < 0.05$ was considered significant.

Results

Sixty-patients with the diagnosis of lymphedema were referred by a vascular

surgeon and managed at the department of physiotherapy and rehabilitation of the Al-Shahid Ghazi Subspecialties Hospital of the Medical City Teaching Complex. Their age was ranged 25-65 years, 38% of them were within the age of 41- 50 years.

The right limb was affected in 6 (50%) males and 25 (52.1%) females. The left was affected in 5 (41.6%) males and 22 (45.8%) females. No significant difference in the side effect by lymphedema between males and female ($p = 1$), (Table 1).

The distribution of sessions of IPC needed to obtain clear reduction in lymphedema (measured by circumference of mid thigh, leg and foot) is shown in table 2. Forty-two patients (70%) showed a clear reduction in lymphodema in ≤ 20 sessions of IPC.

Each session lasts for thirty minutes and done on every other day. Clinical improvement judged by decreased in the calf circumference.

Patients were attaining regular visits to the rheumatology physiotherapy department to perform physiotherapy and continue practicing it at home. Encouraging moving the feet, ankles and knee and practicing exercises.

No complications encountered during compression therapy period.

Table 1: Sex distribution of lower limb lymphedema.

sex	Right		Left		Both	
	No.	%	No.	%	No.	%
Male	6	50	5	41.6	1	8.3
Female	25	52.1	22	45.8	1	2.1
total	31	51.7	27	45	2	3.3

Table 2: Distribution of sessions to induce difference in lymphedema.

Session	Clear improvement in lymphedema	
	No.	%
≤ 20	42	70
>20	18	30

Discussion

Lymphedema still presenting a cosmetic problem interfering with appearance of human being and daily activity. Patients were satisfied with 5-10 cm reduction in the circumference of the limb and regarded it as a favorable outcome.

In the line of that in literatures⁽¹³⁾, the females were four times that of males. Age distribution was similar to that reported in literatures^(13, 14).

In this series, the right limb was affected in 51.7% of patients. This finding is similar to the reported figure⁽¹³⁻¹⁵⁾. Bilateral lower limb affection was seen in 40.4%. Most of them with bilateral lower limb involvement were due to primary lymphedema.

It was reported that patients had bilateral lower limb edema, groin and abdomen involved simultaneously⁽¹⁶⁾. It is mostly due to underlying abdominal malignancy. No such finding was observed in this study as the medical practice is not usually concern with lymphedema after malignancy.

Almost all patients presented with swelling had great anxiety about the look of tight and heavy legs, and few young females were depressed. This finding is in agreement of other's findings^(14, 16).

In contrast with that in literature^(16, 17), minority of patients in this study were experienced pain. The difference might be attributed to difference in etiology of lymphedema i.e. the two studies included patient with underlying abdominal malignancies especially post-operative gynecological malignancies.

Most of patients were young female patients. This finding might be explained by the fact that young female is more concern about their look and lymphedema interfere with their appearance⁽¹⁶⁻¹⁹⁾.

The impact of lower limb lymphedema on the sexual life with the feeling of being unattractive to their husbands was reported^(11, 16, and 17). No such problem was observed in this study. The difference might be

attributed to difficulties in discussing such a problem. Social and religious issues interfere with it.

Shortage of instruments e.g. one IPC machine, in the department of physiotherapy limits the collection of patients for treatment of lymphedema. The explanation is in the fact that physiotherapy is a new practice in health services in Iraq. It is expected a high figure with lymphedema recently as a sequelae of management of cancer and trauma.

Other modalities of treatment such as surgery with the description of vascularized lymph node transfer (VLNT) which is mainly for arm and upper extremity⁽¹⁹⁾. Lymphaticovenous anastomosis (LVA) uses super microsurgery to join the affected lymphatic channels to nearby tiny veins is effective in early stages of the disease^(19, 20). The low level laser therapy⁽⁹⁾ (LLLT) decreases fibrosis, stimulation of macrophages and the immune system, and a possible role in encouraging lymphangiogenesis. Unfortunately, microsurgery and laser therapy are not in use in Iraq.

In conclusion, IPC therapy is useful in initial conservative therapy of lymphedema.

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