

# LYMPHOEDEMA MANAGEMENT IN INDIA

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This article focuses on the management of secondary lymphoedema caused by lymphatic filariasis (LF) in India. LF is a parasitic infection spread by mosquitoes. The infection, which is caused by thread-like parasitic worms (*Wuchereria bancrofti* or *Brugia malayi*) that damage the human lymphatic system, is usually contracted in childhood, often before the age of five years.

One of the world's most disabling and disfiguring diseases, LF afflicts the poorest populations in the poorest regions, currently infecting over 120 million people in 80 countries, mostly in Asia, Africa and South America. It leaves more than 40 million people incapacitated or disfigured through swelling of the breasts and limbs (lymphoedema) or testes (hydrocele). It can also result in swelling of the limbs with dramatically thickened, hard, rough and fissured skin (elephantiasis).

It is estimated that there are more than 25 million people living with LF in India. In most parts of the world, the parasites have a 'nocturnal periodicity' that restricts their appearance in the blood to the hours around midnight. Therefore, diagnosis of LF traditionally depends on the laboratory examination of blood extracted between 10PM–2AM when the worms are most active. However, an antigen-detection test that is simple, sensitive and specific is now available (Global Alliance to Eliminate Lymphatic Filariasis, available online at: [www.filaria.org](http://www.filaria.org)).

## The Indian health system

Health care in India is a mixture of western biomedicine, homeopathy, Unani herbology and what is known as the Indian

system of medicine (ISM). This includes Ayurveda, the siddha system, yoga therapy and traditional healers whose techniques are passed down from generation to generation. It is a comprehensive system of medical therapeutics and describes several diseases similar to those found in western biomedicine.

The Indian system of medicine is available at the primary health centre level in India. It serves about 80% of the Indian population and is the major health system in rural India (Narahari et al, 2004).

Ayurveda is widely used in rural India and is the oldest system of healthcare in India, dating from 1000 BC. It deals with both the preventive and curative aspects of life. It was developed over centuries of observing nature. More than 400 medical colleges and 50 pharmacy colleges teach Ayurveda across India, with an intake of over 10,000 undergraduate students a year.

There is a government agency called the Department of AYUSH (Ayurveda, Yoga and naturopathy, Unani, Siddha and Homeopathy). Its mandate is to upgrade the educational standards of the Indian system of medicine, to strengthen existing Ayurvedic research institutions and to draw up schemes for promotion, cultivation and regeneration of medicinal plants used in the ISM ([www.indianmedicine.nic.in/](http://www.indianmedicine.nic.in/)).

There are more than 10,000 Ayurvedic recipes (medicinal formulations) composed of hundreds of medicinal plants, which are described in more than 100 pharmacopoeias.

In general, patients choose a system of medicine based on their faith but will invariably visit a doctor specialising

in a different system if their problem is not cured. Therefore, it is common for doctors of all systems to see patients with lymphoedema that has not responded satisfactorily to treatment.

## The origin of lymphology in India

Lymphology is found in the ancient books of the Indian system of medicine under the discipline of anatomy and embryology (*Sareera sthana*). *Sushruta Samhita* (meaning compiled book) and *Ashtanga Hridaya* are two classical ancient books that provide details on lymphology.

In the technical jargon of the Indian system of medicine, *saara* means chyle, *rasadhamani* means thoracic duct, *rasadhathu* means plasma and extracellular fluid, while *rasavaha srothas* is comparable to the medical lymphatic system.

The American Botanical Council's translation of *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines* – the definitive text on the safety and efficacy of phytomedicines – lists several plants described in the Indian system of medicine (Blumenthal, 1998).

## Diagnosis of lymphoedema

During the clinical examination of patients with lymphoedema in the integrated outpatient department of the Institute of Applied Dermatology, Kerala, it was found that the Ayurvedic term *shleepada* describes exactly the same condition as the biomedical term secondary lymphoedema due to LF.

In a study these patients were examined together by biomedical dermatologists and Ayurvedic physicians (Narahari et al, 2004). *Shleepada* is described in *Charaka Samhita*, *Sushruta*

*Samhita* and *Ashtanga Hridaya* (classical texts of ancient Ayurvedic writings). The term *shleepada* was given to the disease since the oedema in the later stages of the condition results in a stony or elephant skin appearance to the leg (*shila* = stone; *shlee* = elephant; *paada* = foot).

### Local manifestations of the disease

Two of the great authors of Ayurvedic medicine, Charaka and Sushruta describe *shleepada* affecting the lower extremities, although in rare cases the disease will manifest in other parts of the body such as the lip, nose, ear, hands and pelvic area (Narahari et al, 2004). They also describe four types of lymphoedema (Table 1) based on the clinical presentation of the affected limb (*sthaneeya vikruthi*), two types of chronic lymphoedema (*vathaja* and *kaphaja*), as well as cellulitis developing over chronic lymphoedema, which is similar to acute dermatolymph-angioadenitis (ADLA) (*pittaja* or *abhighatha*).

Over time, *shleepada* becomes increasingly conspicuous and troublesome and so the management of such local features is as important as the systemic management. These locally distinctive doshas, meaning complex patterns of differing symptoms and signs, produce typical 'constellations' of clinical signs and symptoms, as summarised in Table 1. These features are due to the tissues responding in a different manner to the pathophysiological processes and, consequently, rational treatment should be formulated on the basis of the differing responses or doshas.

When the disease is more than a year old, there is a large warty growth with nodules and anthill-like growths, and it becomes more difficult to treat. Once all the symptoms are strongly manifested, and where the *prakruthi* (body constitution) is also of kapha type, it becomes incurable.

### Treatment

The selection of the Ayurvedic drug used to treat lymphoedema is made on the basis of local clinical manifestations (*sthaneeya vikruthi*). Ayurvedic medicines administered orally include the following formulations:

- ▶▶ Nithyananda rasa
- ▶▶ Shleepadari rasa
- ▶▶ Shleepadantika tab
- ▶▶ Mahamanjisthadi quatha
- ▶▶ Shakotaka quatha
- ▶▶ Vidangadi oil
- ▶▶ Srveshwara ghee
- ▶▶ Vruddhadaruka powder.

Topical medications include *manjisthadi* and *dhathuradi*. Venesection treatment, known as *rakthamokshana*, is practiced using leeches. Leeches are made to bite four finger widths above the ankle joint in *vathaja* and *pittaja* varieties of *shleepada*. In *kaphaja* it is done over the first phalangeal joint of the big toe. Leech therapy is generally used in those patients who do not respond to routine treatments.

Biomedical doctors in India also treat chronic lymphoedema of any aetiology and they generally advise the use of crepe bandages. Recently there has been increased awareness of secondary

lymphoedema caused by lymphatic filariasis, and biomedical doctors are advocating treatment of entry points for skin care and the use of compression bandages. Entry points are micro- or macro-breaches on the skin that provide entry to bacteria and produce acute cellulitis of lymphoedematous limbs. Doctors practising the Indian system of medicine consider entry points as *dusta vrana*, meaning chronic ulcer.

The Indian system of medicine advocates soaking the limb in a herbal solution, *phanta*, to treat entry points.

Studies conducted in the Vector Control Research Centre (VCRC) at Pondichery showed that foot hygiene brought about a significant decline in the incidence of ADLA. The biomedical surgical care (nodo-venous shunt) (Nielubowic and Olszewski, 1968) of chronic lower limb lymphoedema, particularly of filarial origin, was initially pioneered in 1970

**Table 1**

### Ayurvedic descriptions (*sthaneeya vikruthi*) of chronic lymphoedema

Clinical features	Vathaja (energy) variety	Pittaja (metabolism) variety	Kaphaja (stabilising force) variety	Abhighatha (due to wound, ulcer, etc) variety
Appearance	Appears without reason, observed on pressing, shifts and increases during the day	Appears suddenly and disappears gradually	Appears gradually and increases at night	Has all the features of pittaja variety
Colour	Black or pink	Red	White	Red as blood
Palpation	Firm to hard, lowered sensation, prominent follicles and not organised	Soft	Organised	Soft
Local temperature		Feels hot with fever and sweating	Cold	Very hot
Smell	0	+	0	+
Pain and tenderness	0	Acute and burning	0	Acute and burning
Other	0	Giddiness, thirst, reddish eyes	Feeling heavy, loss of taste and generally immobile	<i>kashatha</i> and associated ulcer

in India by Dr Jamal, a plastic surgeon affiliated to Thanjavur Medical College, Tamil Nadu. Nodo-venous shunt is a technique for anastomosing inguinal lymph nodes with a long saphenous vein. This procedure has now replaced the surgical amputations that used to be carried out in biomedical teaching hospitals.

Dr Terence Ryan, Emeritus Professor of Dermatology at Oxford Medical School, has become involved in the low-cost medical treatment of FL in rural India. Under his guidance, the Global Initiatives for Traditional Systems of Health has operated since 1997 to explore the possibility of using Ayurveda and other Indian systems of medicine for the care of chronic skin diseases and lymphoedema. Dr Ryan later became associated with the Institute of Applied Dermatology in Kerala and pioneered a new way of managing FL (Narahari, in press). This self-help treatment, known as the Shleepada-IAD-Ryan regimen, is the integrated management of chronic lymphoedema using elements of Ayurvedic skincare, yoga and compression bandaging. Biomedicines are used to treat entry points.

Indian government funding agencies provided a small part of the assistance to develop this integrated treatment protocol. This treatment has been much discussed in the national forum, and the Indian Council for Medical Research recognised it as a new medical development in India in January 2006. The International Society of Lymphology (ISL) also awarded its president's prize for this work in 2005 during the 20th International Congress of Lymphology (ICL).

Certain government-run insurance agencies are presently reimbursing the entire cost of treatment for six months, depending on the size of the swollen leg (this includes the cost of compression bandages).

### Indian government studies

Most of the studies are conducted in the VCRC as part of the World Health Organization's tropical diseases research programme. The highlights of their findings are:

- ▶▶ Repeated courses of diethyl-carbamazine citrate with supportive

physiotherapeutic measures significantly reduced the volume of oedema in early grade I (recent oedema) cases, and the incidence of acute disease episodes in LF caused by the parasite *Brugia malayi*

- ▶▶ Hydroceles (a collection of serous fluid that results from a defect or irritation in the tunica vaginalis of the scrotum) and lymphoedema are the predominant manifestations of LF caused by the parasite *Wuchereria bancrofti*
- ▶▶ Brugian filariasis does not involve the male genitals
- ▶▶ The prevalence of bancroftian filariasis is significantly higher in males than females (because of the occurrence of hydrocele in males), while brugian filariasis disease affects both genders equally
- ▶▶ The incidence of the acute disease and the prevalence of the chronic disease show an age-dependent rise
- ▶▶ The occurrence and progression of lymphoedema depends on the incidence of ADLA
- ▶▶ Because of huge variations in the shape of lymphoedematous limbs, practical errors are common while carrying out the water displacement method of measurement (performed by dipping the limb in a bucket of water). Limb circumference measurement was therefore developed as an alternative to water displacement by volumetry for oedema volume measurement in filariasis. There was significant correlation between the two techniques in all stages of lymphoedema
- ▶▶ From 1989, VCRC has developed mathematical models for LF transmission and control. This has contributed to a better understanding of the dynamics of infection and disease in humans and mosquitoes ([www.icmr.nic.in/](http://www.icmr.nic.in/)). Two different approaches were made for developing comprehensive models, namely:
  - 1: A stochastic micro-simulation model based on differential equations (LYMFASIM) — the result of collaborative work between VCRC and the Department of Public Health, Erasmus University, Rotterdam (Plaisier et al, 1998).

2: A deterministic macro-simulation model based on differential equations (EPIFIL) — the result of collaboration between VCRC and the Department of Parasite Epidemiology, Oxford University, Oxford (Norman et al, 2000).

### The current agenda of the Indian government

The Indian Council for Medical Research is conducting further studies on the integrated treatment developed by the Institute of Applied Dermatology. More studies are likely to be conducted into the Ayurvedic internal medications used for LF. The Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy (AYUSH) is also discussing the possibility of conducting more research on Ayurvedic components of the Institute of Applied Dermatology's integrated treatment.

### Conclusion

Clinical studies conducted in the Institute of Applied Dermatology have shown that the Indian system of medicine can significantly benefit LF using locally available, sustainable and affordable means. Components of the Indian system of medicine deserve further study. JL

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