



## ROLE OF WATER CUPPING THERAPY IN NOCTURNAL LEG CRAMPS

### – A CASE REPORT

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**Abstract:** Nocturnal Leg Cramps(NLC) in the calf, hamstrings, or foot are characterized as intensely painful, involuntary muscle contractions lasting from mere seconds to a maximum of 10 minutes, which affect the quality of sleep and may result in distress. The incidence and prevalence of NLC increases with age. There are not many existing literature supporting the use of water cupping therapy complimented with the traditional regimen to cure nocturnal leg cramps of the calf in elderly. The purpose of this study is to document the lasting effect of this intervention on leg cramps in an 85-year-old male.

**IndexTerms** – Nocturnal Leg Cramps, Water Cupping, Lasting Effect, Stretching

#### I. INTRODUCTION

Existing prevalence data suggest that 37–50% of older adults have Nocturnal leg cramps (NLC) commonly occurring in the calf, hamstrings, or foot which are characterized as intensely painful, involuntary muscle contractions lasting from mere seconds to a maximum of 10 min, which affect the quality of sleep and may result in distress. NLC is often associated with chronic diseases such as chronic liver and renal failure, vascular diseases, varicose veins, dehydration, and magnesium or calcium deficiency.<sup>1</sup> Others have suggested that in the nocturnal recumbent position, the foot is passively in plantar flexion and the calf muscle fibres are already maximally shortened, so uninhibited nerve stimulation leads to cramping.<sup>2</sup> The incidence and prevalence of NLC increases with age, and older females are more affected than older males. With age a person tends to lose medullary neurons, creating neuromuscular incoordination more in the lower limbs than in the upper limbs.<sup>3</sup> NLC is a specific entity of idiopathic cramps occurring at rest in the lower limb during the night. Patients rarely report NLC to their general practitioners may be due to the known lack of both effective and safe treatments.<sup>4</sup> The patient history is the key to identifying the possible cause of leg cramps. The diagnostic criteria for sleep-related leg cramps put forth by the American Academy of Sleep Medicine are as follows: 1) a painful sensation in the leg or foot is associated with sudden muscle hardness or tightness, indicating a strong muscle contraction; 2) the painful muscle contractions in the legs or feet occur during the sleep period, although they may arise from either wakefulness or sleep; 3) the pain is relieved by forceful stretching of the affected muscles, releasing the contraction; and 4) the sleep-related leg cramps are not better explained by another current sleep disorder, medical or neurologic disorder, medication use, or substance use disorder<sup>(5)</sup>. Current interventions for nocturnal leg cramps have been classified as pharmacologic or non-pharmacologic treatments. Of the common pharmacologic interventions, only quinine and hydroquinone have been shown to be moderately effective. Non-pharmacologic interventions have included muscle stretching, massage, relaxation, sensory nerve stimulation, footwear changes, weight loss, physical exercise, avoiding physical fatigue, heat therapy, compression garments, night ankle dorsiflexion splints, reassurance, and changes to sleeping sitting positions<sup>(6)</sup>.

Cupping therapy can improve local blood flow, alleviate muscle pain and reduce muscle stiffness<sup>(7)</sup>. The main postulated aim of this therapy is the extraction of harmful substances or toxins from the body by creating negative pressure in a cup.<sup>(8)</sup> It has been traditionally used for the treatment of painful conditions but has also been used to treat chronic diseases such as cardiovascular disorders, skin diseases, inflammatory disorders, and metabolic diseases.<sup>(9,10)</sup> Mechanism of action of cupping therapy to alleviate pain is based on the 3 main theories - pain-gate, the

conditioned pain modulation, and the reflex zone. Water cupping is done with cups containing warm water. The therapist will fill a third of a cup with warm water and then a burning cotton wool will be inserted into the cup prior to placing the cup over the skin<sup>(11)</sup>

The aim of this report is to describe the lasting effect of physiotherapeutic interventions paired with hot water cupping on nocturnal leg cramps in an elder male.

## II. CLINICAL REPORT

A male aged 81 years presented with bilateral calf pain and night cramps with progressively worsening symptoms. He began experiencing such pain a year prior to the initial examination. The primary symptoms included severe, nocturnal, bilateral calf muscle cramping; right more affected than the left. The cramping had become frequent and he started experiencing distress and disturbed sleep. Additionally, due to leg pain, he was unable to carry out his recreational activities in the day. Relieving factors included supported leg sitting and massage. He had also taken acupuncture laser treatment for the same which provided him temporary relief. However, his symptoms revived after a month post laser therapy sessions. His blood and urine reports were clear of any etiology and he reported intake of water of about 3.5 liters per day. Hence, his cramps were directed as 'Idiopathic Nocturnal Leg cramps'. His expectations from physiotherapy were to have relief from pain and reduce the frequency of leg cramps if not recover completely.

Assessment included manual muscle testing for ankle dorsiflexors and plantar flexors, pulses were checked over popliteal artery and dorsalis pedis, range of motion for ankle and flexibility test of soleus and gastrocnemius was done which revealed tightness of calf muscles. Lower extremity function scale was used as an outcome measure. Intensity of pain on NPRS was 8/10 during rest at night and 7/10 in the day during his regular activities.

The intervention was performed over 4 weeks. 3 sessions were done per week. Steps of intervention – Ankle toe movements 15 repetition, Heel slides 15 repetitions, hot water cupping for 15 mins, stretching of gastrocnemius and soleus twice for 60 seconds followed by calf release.

Hot water cupping was selected because the condition was chronic. Hot water of 45-50 degrees Celsius was poured into the cup and put upside down over the calf area. Two vacuum cups were used for each leg. One cup was approximately 1.5 inches below the popliteal crease while other was vacuumed little below the central calf area. Vacuum of 2 sucks was created through the manual pump. These cups were kept for 15 minutes per session. This is shown in Fig.1-3

Assessment was repeated after 4 weeks when the treatment sessions scheduled were over. Follow up assessment was done 3 months later. The assessment details are listed in table 1.

Table 1 – Pre intervention and assessment at 4th week after intervention concluded

Assessment		RIGHT		LEFT	
		Pre Intervention	Post Intervention	Pre Intervention	Post Intervention
MMT	Dorsiflexors	4/5	4+/5	4-/5	4+/5
	Plantarflexors	4/5	5/5	4/5	5/5
ROM	Dorsiflexion	15	20	20	20
	Plantarflexion	45	55	50	55

## III. CONCLUSION

Hot water cupping with stretching, release and exercise has proved to have a lasting effect on decreasing the severity and frequency of nocturnal leg cramp experienced by the 85-year-old male. Patient has till date not reported recurrence of symptoms and the strength, flexibility and ranges are well maintained.

## IV. DISCUSSION

The already established regimen have been successful to treat nocturnal leg cramps. This report was done to document the lasting effects of hot water cupping with routine physiotherapy for an elderly male with nocturnal leg cramps. The effect of stretching and hot water inside cup showed long term effect of lessening the frequency as well as severity of leg cramps which aligned with the findings of study done in Krishna College of Physiotherapy, Karad District, Maharashtra where calf stretching with application of moist heat for 10 minutes showed better results (12). The mechanism of long term effect caused by hot water cupping on NLC would have been due to the combined action of hot water application and vacuum i.e. increasing the blood flow, resultant increase in opioid production, stimulate peripheral nervous system plus eliminate trapped toxins. Water cupping is said to be especially beneficial for treating asthma and related conditions including dry cough which was stated in previous studies done in China. (14) However, hot water cupping has not been demonstrated as a method to cure leg cramps in any literature and this report is one of its kind. More studies are required to successfully establish use of hot water cupping with traditional physiotherapy regimen as new mode of treatment for nocturnal leg cramps.



Figure 1



Figure 2



Figure 3



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