

 <p>ISSN NO. 2320-5407</p>	<p>Journal Homepage: -www.journalijar.com</p> <h2 style="text-align: center;">INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)</h2> <p style="text-align: center;">Article DOI:10.21474/IJAR01/3710 DOI URL: http://dx.doi.org/10.21474/IJAR01/3710</p>	 <p>INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR) ISSN 2320-5407 Journal homepage: http://www.journalijar.com Journal DOI:10.21474/IJAR01</p>
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RESEARCH ARTICLE

EFFICACY OF COMBINED DRUG THERAPY ON CARPAL TUNNEL SYNDROME.

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Manuscript Info

Manuscript History

Received: 15 January 2017

Final Accepted: 05 February 2017

Published: March 2017

Key words:-

Carpal tunnel syndrome,
Ammukkarachooranam, pinder oil,
Likert scale

Abstract

Carpal tunnel syndrome (CTS) is characterized by pain, numbness and tingling sensation in the hand caused by compression of median nerve at the wrist. Ammukkarachooranam(AMC), as internal drug and Pinder oil(PT) as external drug along with thokkamam(massage) were included in this combined strategy of therapy. The Aim of study is to evaluate reduction of signs and symptoms of CTS as per 5 point- Likert scale. The study was conducted at Teaching Hospital of Siddha medicine, Konesapuri, Trincomalee, the period of study was two years and four months. The Hospital drug is given for the CTS patients who were selected for the documentation of this research study. A patient should receive the drugs for three months. The base line and follow up symptoms were recorded with the global assessment of five point likert scale. The evaluation made to observe the reduction of significant symptoms such as pain, numbness and tingling. Amukurachooranam(AMC) 1 gram twice a day given orally with warm water and Pinder oil(PT) applied externally to the affected area. The clinical trial showed remarkable reduction of symptoms of pain and numbness. Because experimental phase shows the trial drugs have reducing effect in pain, numbness and tingling sensation from "always"(5) and "often"(4) to "never"(1) as per Likert scale. This was correlated with SPSS version 16, T Test paired sample statistics, trial combined drug showed significant reduction of symptoms of pain and numbness and tingling sensation compared to base line symptoms, because mean value of pain in base line 3.72 ± 0.54 , final visit 1.24 ± 0.52 ; mean value of numbness in base line 4.12 ± 0.6 , final visit 1.4 ± 0.64 , mean value of tingling sensation in base line 3.32 ± 0.62 , final visit 1.04 ± 0.2 with. It has been concluded that the strategy of this combination of therapy of tested drugs along with thokkanam is effective in the management of Carpal tunnel syndrome.

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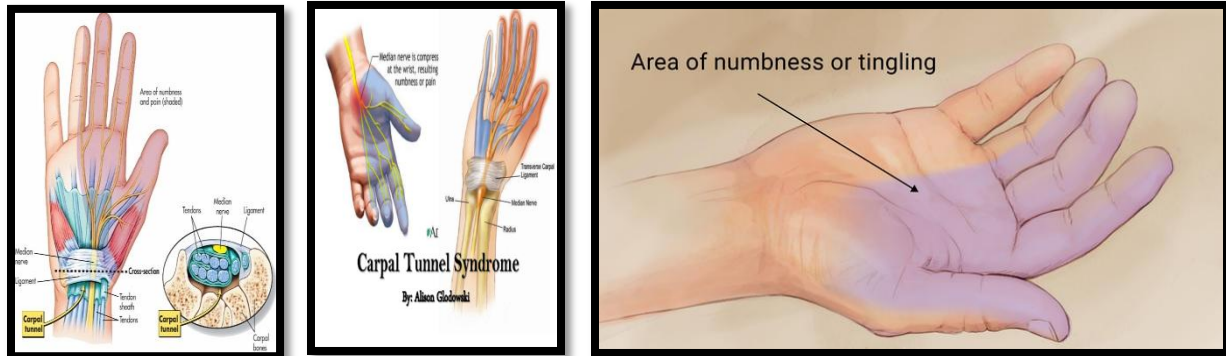
Introduction:-

The carpal tunnel is located at the middle third of the base of the palm, is a narrow rigid passage way along in the wrist, about an inch wide. The floor and sides of the tunnel are formed by small carpal bones namely scaphoid tubercle and trapezoid, the roof of the tunnel is a strong band of connective tissue called the transverse carpal

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ligament. Nine tendons joint together called as flexor retinaculum, which bend the fingers and thump also travel through the carpal tunnel. The median nerve is the one of the main nerve in the hand. It originates as group of nerve root in neck. The roots come together and form a single nerve in the arm. The median nerve goes down the arm and forearm, passes through the carpal tunnel at the wrist and goes to the hand. The nerve provide sensation in the thump, index, middle and ring finger and also controls muscle around the base of the thump as well as impulses to some small muscles in the hand for the movements of fingers. Sometimes thickening from irritated tendons or other swellings narrows the tunnel and causes compression of the median nerve as it runs deep to the transverse carpal ligament causes atrophy of the thenar eminence, weakness of the flexor pollicis, abductor pollicisbrevis as well as sensory lost in the digits supported by the Median nerve. Carpal tunnel syndrome is neurological condition commonly occurs in female, they are three times more likely than men. It is characterized by pain, numbness or tingling sensation in the wrist. Symptoms most often occur in thump, index finger, middle finger and half of the ring finger.



The patient with Carpal Tunnel Syndrome is frequent burning sensation, tingling, itching, and numbness in the palm of the hand and the fingers, especially in thumb, index and middle finger. These Symptoms usually start gradually. The symptoms often first appear in one or both hands during the night .As symptoms worsen, patient may feel tingling during the day. Decreased grip strength .Muscle wasting noticed in the base of the thump in chronic patients.

Aim and objective:-

The feedback of some of the CTS patients regarding this therapeutic effect made me to document this therapy as a research study. At the same time, no previous studies were conducted to focus the scientific view for this type of condition with combined drug therapy. Therefore the aim of the researcher is to design this study to explore the combined efficacy of AMC and PT oil along with Thokkanam on carpal tunnel syndrome.

Materials and Methods:-

The study was conducted at Teaching Hospital of Siddha medicine, Konesapuri, Trincomalee. The Hospital drug is given for CTS patients and randomly selected for the documentation of this research study. A patient should receive the drugs for three months. The period of study was two years and four months since this type of patients rare to attend hospital. All the patients were screened after history taking and physical examination along with differential diagnosis. The consent was obtained while the patients were made to aware this therapy will be documented and used for research purposes. Among 32 only 25 patients (15 female and 10 male) records were selected for this research paper. Other 07 were excluded because they were Pregnant, lactating mothers and some of them having Diabetes mellitus, Hypertension, Asthma etc .The base line and the follow up symptoms were correlated with the global assessment of five point Likert scale. The evaluation made to observe the reduction of significant symptoms such as pain, numbness and tingling. The treatment given in OPD and advice guideline also was given to patients to follow strictly. The internal drug AMC1 gm three times daily with warm water was given , the PT oil and thokkanam (massage therapy) given to apply externally in the affected area for ninety days.

The diagnosis of the CTS is initially suspected based on symptoms supported by history and physical examination and also confirmed by following nerve conduction testing.

Tinel's sign test:-

It is performed by gently tapping skin over the flexor retinaculum to elicit a tingling sensation or "pins and needles".

Phalen's sign test:-

It is performed by flexing the wrist gently as far as possible, then holding this position for up to 60 sec, positive results is feeling of numbness along median nerve distribution.

Two point discrimination:-

Ask the patient to close the eye and then use small tips of opened paper clips, to touch two points nearly 0.5 cm apart on patient's hand or finger. The positive test is patient can't able to feel difference between the two touches in severe CTS, so it may feel as though only one place is being touched.

Results and Discussion:-

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Patient	13.00	25	7.360	1.472
	PainFirstVisit	3.72	25	.542	.108
Pair 2	Patient	13.00	25	7.360	1.472
	PainEightVisit	1.24	25	.523	.105
Pair 3	Patient	13.00	25	7.360	1.472
	NumbnessFirstVisit	4.12	25	.600	.120
Pair 4	Patient	13.00	25	7.360	1.472
	NumbnessEightVisit	1.40	25	.645	.129
Pair 5	Patient	13.00	25	7.360	1.472
	TinglingSensationFirstVisit	3.32	25	.627	.125
Pair 6	Patient	13.00	25	7.360	1.472
	TinglingSensationEightVisit	1.04	25	.200	.040

Point-Likert scale:-

1. Never
2. Rarely
3. Some times
4. 4.Often
5. Always

Frequency chart -- Base line & Eighth visit:-**Pain:-****Pain First Visit**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	8	32.0	32.0
	Often	16	64.0	96.0
	Always	1	4.0	100.0
	Total	25	100.0	

Pain Eight Visit

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	20	80.0	80.0
	Rarely	4	16.0	96.0
	Sometimes	1	4.0	100.0
	Total	25	100.0	

Numbness First Visit

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sometimes	3	12.0	12.0
	Often	16	64.0	76.0
	Always	6	24.0	100.0
	Total	25	100.0	

Numbness:-**Numbness Eight Visit**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	17	68.0	68.0
	Rarely	6	24.0	92.0
	Sometimes	2	8.0	100.0
	Total	25	100.0	

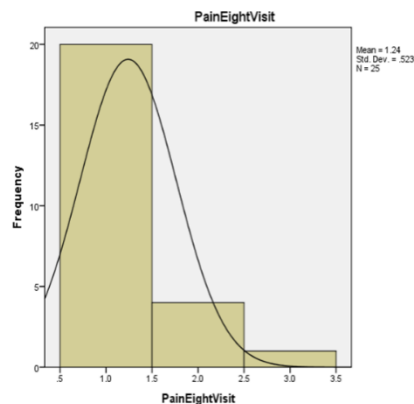
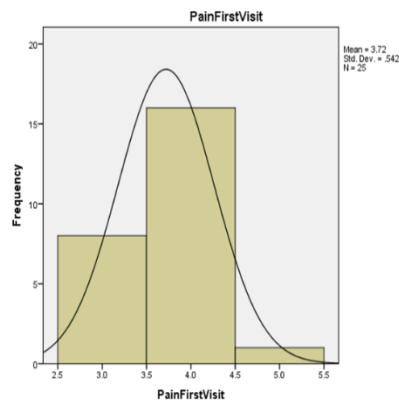
Tingling Sensation First Visit

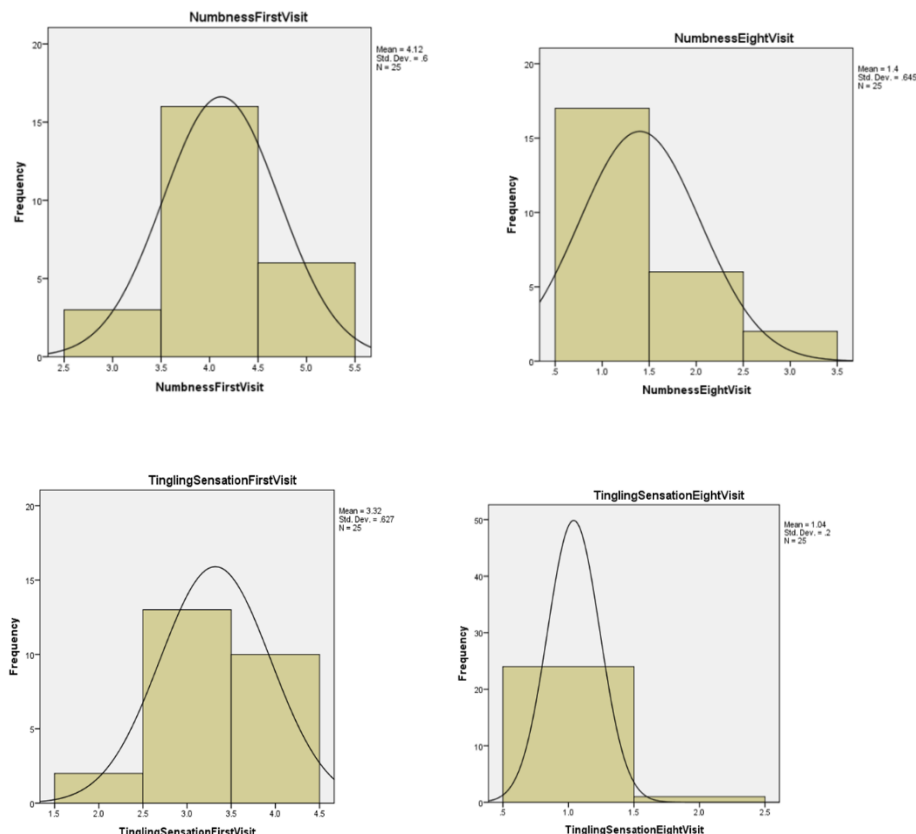
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Rarely	2	8.0	8.0	8.0
	Sometimes	13	52.0	52.0	60.0
	Often	10	40.0	40.0	100.0
	Total	25	100.0	100.0	

Tingling Sensation Eighth Visit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	24	96.0	96.0	96.0
	Rarely	1	4.0	4.0	100.0
	Total	25	100.0	100.0	

The results showed remarkable reduction of symptoms of pain , numbness and tingling sensation compared to base line symptoms, because mean value of pain in base line 3.72 ± 0.54 final visit 1.24 ± 0.52 ,mean value of numbness in base line 4.12 ± 0.6 final visit 1.4 ± 0.64 ,mean value of tingling sensation in base line 3.32 ± 0.62 , final visit 1.04 ± 0.2 with SPSS version 16, T Test paired sample statistics .





As per the siddha medical reputed literatures, the root of Amukira can be taken internally with warm water, honey, milk or ghee. It enhances the function of nervous system and improves memory and promotes the functions of reproductive system. Amukira root has been used as a Rejuvenator, tonic, and aphrodisiac, narcotic. Anti-inflammatory, analgesic, diuretic anthelmintic, astringent and stimulant. It is commonly used in children for emaciation; in adults for improve sexual function, in elders' debility, rheumatism, nerves damage, and insomnia. as well as the pinda oil also mentioned in siddha pharmacopeia and siddha pharmaceutical text for rheumatic or traumatic conditions as 'pain killer'. This present study shows positive results in the management of CTS since the Amukirachooram and Pinda oil having analgesic, anti-inflammatory and soothing effect.

The various phytochemicals isolated from *Withaniasomnifera*(Amukira/Aswakantha) such as Alkaloids-Isopelletierine, anaferrine, cuseohygrine, anahygrine, Steroidal lactone, thanolides, withaferins. Saponins-Sitaindosides and acylsterylglucosidesSitaindosides vii-x and The aerial part of withaniasomnifera yielded 5-dehydroxywithanolite -R, withasomniferin- A (Rahman et al 1991) (Mishra .et al 2000)

Withaferin A and 3-b- hydroxyl-2, 3-dihydro withanolide isolated from withaniasomnifera show antibacterial, antitumourimmune modulating and anti-inflammatory properties (Budhiraja and Sudhired al., 1987). Withaferine found to be effective in anti-stress activity (Bhattacharya et al., 1989) Many constituents show immune modulatory actions (Ghosal et al., 1989). *Withaniasomnifera*(Amukira) improves the body's defense against diseases by improving the cell mediated immunity and also possesses potent antioxidant properties that protect against cellular damage caused by free radicals.

The scientific researchers were reported the findings of the ingredients of this trial drugs as follows; Amukra 1000 mg/kg oral produced significant analgesic activity for a rat experiencing heat analgesia induced by hot plate method. (Mazen et al., 1990). Amukira is an analgesic that soothing nervous system from pain response (Twair et al., 1989). The powerful anti-arthritis properties of Amukira are now widely accepted and documented by several researchers. Ethanolic extract of *Withaniasomnifera* elicited significant dose dependent acute anti-inflammatory activity in

carrageen an induced paw edema comparable to hydrocortisone and also elicited significant chronic anti-inflammatory activity is found adjuvant induced arthritis conferrable to hydrocortisone. (KiranGiri et al., 2015). Withaferin has remarkable analgesic and antipyretic properties accompanied with absence of significant gastric damage. (Sabina et al 2008)

The external medicine Pinder oil consist of Commiphoramukul (Guggul), Hemidesmusindicus (Nanari or Indian sarsaparilla), Rubiacordifolia (manjisti), beeswax, Sesamumindicum (Gingelly oil). Pider oil known as Sivappukkukilennai endorsed in siddha literature for pain reliever and anti-rheumatic healer as external application.

Guggul plant consists of number of phytochemicals such as terpenoids, steroids, flavanoids, guggultertols, lignans, and aminoacids. Guggulsterones are chief constituents. It has anti-inflammatory and analgesic activity, and also has hypoglycemic and hypolipidaemic effect on type II diabetic patients. (PrernaSarup et al 2015). Commiphora .mukul showed significant decrease in volume thickness in paw edema in rats, and also produces significant analgesic activity as measured by hot plate and writhing test in mice; moreover the thermal hot plate method was more sensitive than chemical writhing. (Shalaby, Hammouda et al., 2014)

Root of Indian sarsaparilla has various phytoconstituents like essential oil, glycosides, resins saponin steroids and tannins which all endowed with many pharmacological activities. Root of the plant exhibits significant anti-inflammatory activity in both acute and sub-acute condition in experimental rats.

The *Rubiocordifolia* showed significant Neuroprotective activity and reduce memory dysfunction. (Joy, Nair CKF et al 2008.) Anthroquinones rich fraction of ethanol extract and aqueous root extract showed significant anti-inflammatory activity in edema inhibition induced arthritic model in experimental rat (Jaijesh et al; Sirinivasan et al., 2008)..

Sesame oil used as food supplement and also in medicinal preparations. It is highly nutritious oil and enriching with protein, essential vitamin like, E, D K, B, and Niacin complex and mineral such calcium, phosphorus, Manganese, Magnesium etc. This oil has high viscosity, lubricating and penetrating power. Thus, helps in quick penetration, thereby regulating and enhancing blood circulation of affected area. Sesame oil is rich in essential fatty acids like linoleic acid and palmitic acids. Linoleic acid shows anti-bacterial and anti-inflammatory properties. The oil also rich in anti-oxidants, hence they nourish the deep tissues and improve the blood circulation. Beeswax used as surface protector of the skin and glazing agent. The previous research findings indicated the typical pharmacological activity such as anti-inflammatory, analgesic, Neuro-protective and soothing activity present in the research drugs AMC and PT oil. The thokkanam (massage) therapy enhance further quick relieve from Carpal tunnel syndrome. This study shows the trial drugs have reducing effect in pain, numbness and tingling sensation from “always”(5) and “often”(4), sometimes(3) rarely(2) to “never”(1) as per 5 point Likert scale concordance with statistical analysis.

Conclusion:-

It is concluded that statistical analysis with SPSS Version 16, T-test paired sample showed significant reduction of symptoms like pain, tingling and numbness of CTS, trial combined drug showed significant reduction of symptoms of pain and numbness and tingling sensation compared to base line symptoms, because mean value of pain in base line 3.72 ± 0.54 , final visit 1.24 ± 0.52 ; mean value of numbness in base line 4.12 ± 0.6 final visit 1.4 ± 0.64 , mean value of tingling sensation in base line 3.32 ± 0.62 , final visit 1.04 ± 0.2 . The therapeutic strategy of this combination of tested drugs along with thokkanam is effective in the management of Carpal tunnel syndrome with Amuukirachooram (AMC) as internal and Pinder oil (PT) as external application along with thokkanam as enhancer.

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