



AN EXPERIMENTAL STUDY OF COLD ARM AND FOOT BATH ON HYPERHIDROSIS

DR. R. ANUSHA¹, DR.C.M. DHIVYA², S. SAKTHI³

1. Professor, Department of Department of Naturopathy, Sree Ramakrishna medical college of Naturopathy and yogic sciences and Hospital, Kulasekharam. (T.N.) India
2. Professor, Department of Hydrotherapy, Sree Ramakrishna medical college of Naturopathy and yogic sciences and Hospital, Kulasekharam. (T.N.) India
3. Medical Student, Sree Ramakrishna medical college of Naturopathy and yogic sciences and Hospital, Kulasekharam. (T.N.) India

ABSTRACT:

Aim of our study is to observe the effect of cold arm and foot bath on hyperhidrosis. The experimental study done among the 4-hyperhidrosis patient. Treatment includes cold arm and foot bath for 15 days. During the period of treatment, the symptoms of subject is relieved. It obtained results showed that all samples experienced that the sweating was reduced.

INTRODUCTION:

Hyperhidrosis is a habitual autonomic complaint characterized by inordinate sweating beyond the position physiologically needed for thermoregulation. maturity of the cases the cause of hyperhidrosis is unknown. It has two types that are, generalized and focal hyperhidrosis.

Generalized hyperhidrosis, affects the entire body and it's caused by infection, endocrine diseases, use of certain specifics, intoxication, neurological diseases etc.

Focal hyperhidrosis, affects the particular part of the body. It was farther divided into two, Primary focal hyperhidrosis & Secondary focal hyperhidrosis

Primary focal hyperhidrosis starts in nonage and affects 0.6- 1 of the population. The cause may be an abnormality of chromosome 14q (autosomal dominant heritage). the individual criteria include inordinate sweating that lasts at least 6 months without any egregious cause. impairs diurnal conditioning, a bilateral and fairly symmetric pattern of stressing being at least formerly per week, a time of assault youngish than 25, conclusion of focal sweating during sleep, or positive blood history. The most generally affected areas are crown, face, grasp, armpits and bases.

Secondary focal hyperhidrosis can be medicine convinced, poison convinced or by any systemic illness (endocrine, metabolic or neurological diseases, lump and spinal cord lesion).

PATHOPHYSIOLOGY:

Sweating beyond what the body uses for homeostatic temperature regulation. Hyperactivity of sympathetic nervous system inordinate release of acetylcholine. Hyperstimulation of the sweat glands Leads to inordinate sweating.

Advanced expression of alpha- 7 neuronal nicotinic receptor subunits in the sympathetic ganglia also leads to inordinate sweating. Advanced expression of aquaporin 5(AQP5) (water picky channel protein that will increase the water permeability in epithelial cells). Overexpression of activin A receptor type 1 will boost the expression of AQP5 and Na- K- Cl cotransporter 1. This will affect the sweat stashing by regulating water ion channels. Upregulation of cholinergic receptor nicotinic alpha – 1 subunit, which will regulate the binding and gating of Ach neurotransmitters, thereby adding sweat secretion.

ARM AND FOOT BATH:

In this remedy the case is made to sit with his/ her hands up to wrist joint and foots upto ankles immersed in cold water for 5-8 mins (dragged application). Cold water treatment goods It tends to prop heat loss. In prolonged cold application there will be a vasoconstriction of cutaneous vessel and vasodilation of the muscular vessels causing a re- distribution of blood inflow with a lesser proportion going to the working muscles. Establishment of a greater thermal gradient between core and shell of the body, allowing heat movement to the surface of the body to do by conduction.

A drop-in sweat rate, thereby suppressing the release of bradykinin (act as vasodilators)

PRECAUTION:

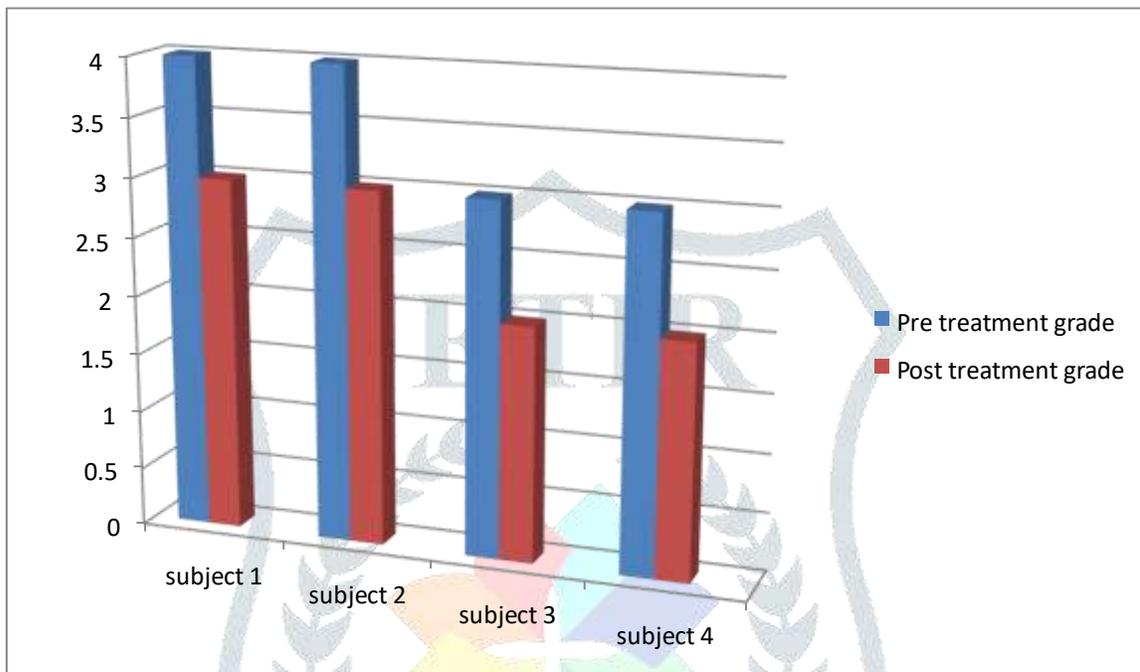
Avoid short cold operation in hyperhidrosis because in action phase cold wave will produce the vasoconstriction and in response phase it'll produce the vasodilation so it'll results in increase sweat stashing

ASSESSMENT:

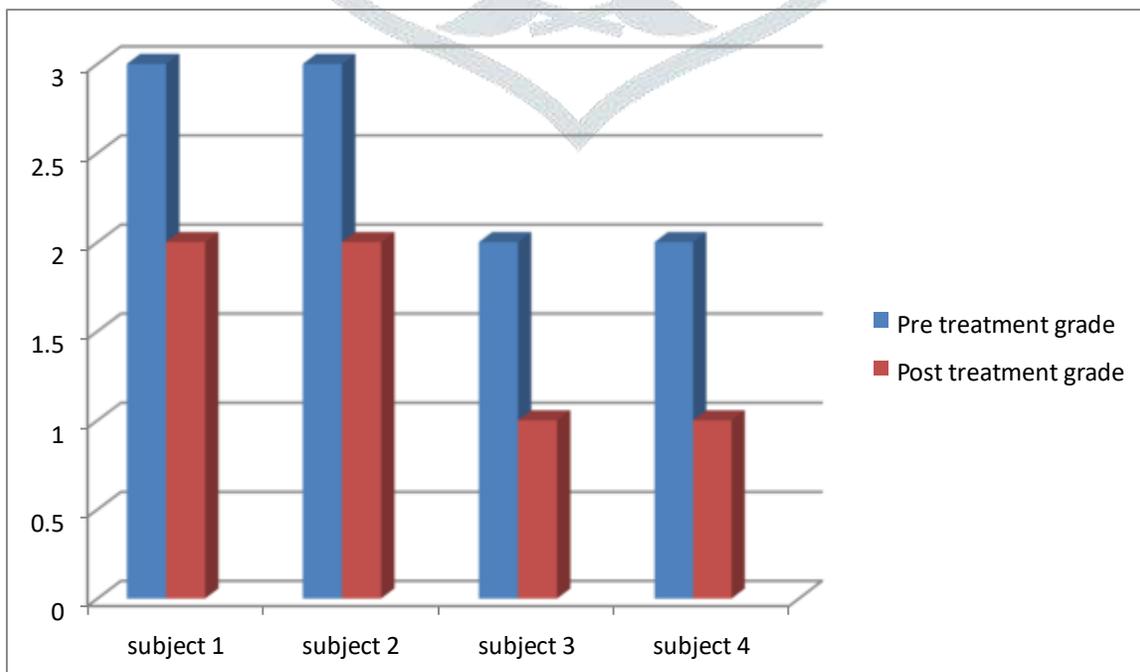
1. IODINE STARCH TEST
2. VISUAL SCALE
3. SEVERITY SCALE
4. HYPERHIDROSIS QUESTIONER.

RESULT:

HYPERHIDROSIS VISUAL SCALE SCORE:



HYPERHIDROSIS SEVERITY SCALE SCORE:

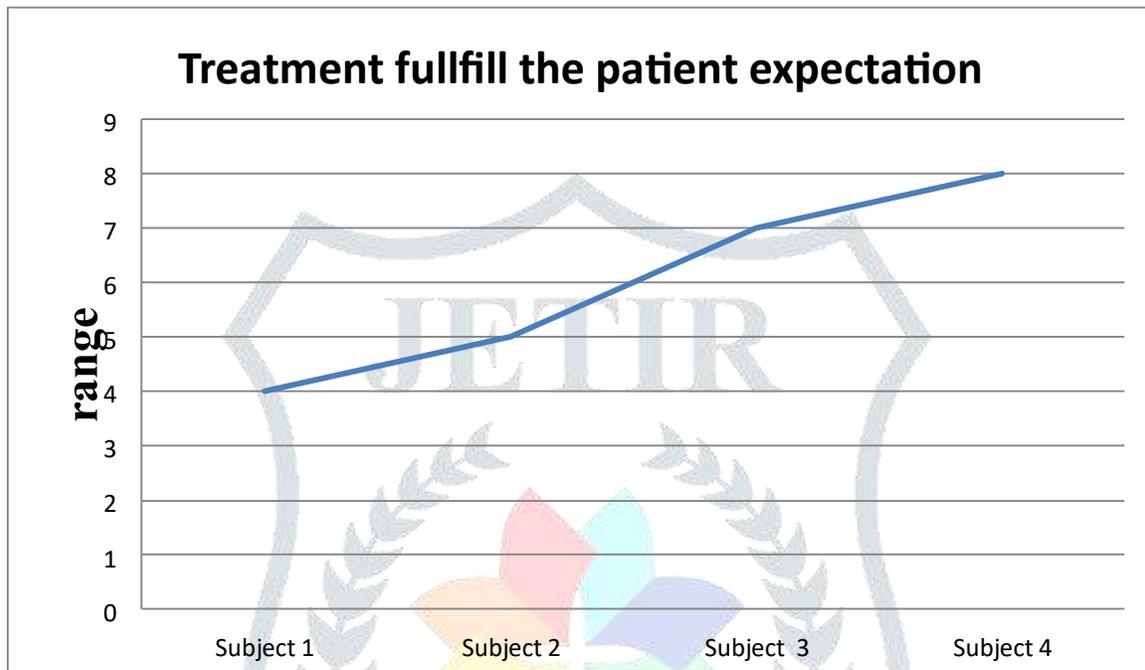


HYPERHIDROSIS QUESTIONNAIRE:**PRE TREATMENT ASSESMENT RESULT:**

QUESTIONS	RESULT	
	YES	NO
SWEATING CREATES PROBLEM WITH HOLDING HANDS	100%	0%
SWEATING CREATES THE PROBLEM WITH WRITING ON A PAPER	100%	0%
SWEATING PROBLEM DISTURB THE WORK/STUDY	100%	0%
SWEATING AFFECT THE DAILY ACTIVITIES	100%	0%
SWEATING SYMPTOMS MAY MADE FEEL STRESS/DEPRESSED	75%	25%
FEEL EMBARRASSED	100%	0%
WORRY ABOUT FUTURE HEALTH	100%	0%
WORRY ABOUT OTHER PEOPLE REACTIONS	100%	0%
CHOICE OF CLOTHING IS AFFECTED	0%	100%

POST TREATMENT ASSESMENT RESULT:

QUESTIONS	RESULTS	
	YES	NO
TREATMENT REDUCE THE SWEATING PROBLEM	100%	0%
TREATMENT FULL FILL YOUR EXPECTATIONS	100%	0%
TREATMENT MAY PRODUCE ANY SIDE EFFECTS	0%	100%
WOULD YOU RECOMMENDED THE TREATMENT YOU RECEIVED TO OTHERS	100%	0%

TREATMENT FULLFILL THE PATIENT EXPECTATION RANGE:**DISCUSSION:**

Sweat stashing is controlled by the transduction from the CNS to Peripheral ANS. Hypothalamus will regulates the body temperature. Afferent pathway, Temperature information from sensitive afferents that innervate the skin and viscera is transmitted to the preoptic area. Signals from thermoreceptor in the skin and viscera reaches the spinal cord through rearward root ganglia and it'll crosses the side parabrachial nexus in pons and eventually it'll reaches the preoptic area and the temperature sense is analysed in primary somatosensory cortex.

Efferent pathway, starts from the cortex to the preoptic area of hypothalamus and reaches the medulla oblongata (rostral ventromedial medulla) and filaments crossing the medulla oblongata and travelling to the side cornucopia of the spinal cord (sympathetic ganglia) from it reaches the sweat Gland (eccrine gland) as postganglionic c filaments, which will stimulate the receptors in the eccrine gland.

Autonomic nervous system receives signal from the central nervous system and secretes neurotransmitters and peptides.

Peptide catecholamines (nor adrenaline) will regulates eccrine and apocrine glands thereby regulating the emotional sweating.

In another way Emotional sweating is regulated by the limbic system including amygdale, cingulated cortex & hypothalamus via efferent filaments that connects to preganglionic sympathetic neurons in the nexus intermedio lateralis. And the neurotransmitter Acetyl choline will regulate the eccrine gland and thereby regulate the thermal sweating.

Thermoregulation and blood perfusion

Vasomotor control of skin blood perfusion through vasoconstriction and vasodilation. Heat is distributed to the skin through the blood inflow.

The warm blood is transported to the dermis through blood vessels(arterial network) and it'll directly transmitted to the venous supersystem present in the subcutaneous towel through arteriovenous anastomosis.

This AVA's are girdled by smooth muscles, which will regulate the body temperature through blood inflow (compression & dilation). The anastomosis vessels are open when the body needs to lose heat and are closed when the body needs to gain heat. In warm are thermo neutral temperature the skin especially in the acral corridor (hand, feet, nose, observance helix etc.) of the body, is over perfused or perused above the nutritional need of the skin. The purpose of over perfusion is substantially connected to thermoregulation by increased radiative and convective heat loss.

In cold absorption, when the core temperature reaches 37.1 degree C (in normal) and (in post exercise) 37.5 degree C result in vasoconstriction of supplemental blood vessels.

Blood inflow to the extremities of hands and bases respond fleetly upon the exposure to cold wave. So, when the extremities are immersed in cold water, the supplemental blood vessels alternate between vasoconstriction and vasodilation.

original response is a vasoconstriction to reduce heat loss and reduce the temperature of the extremities (sympathetically intermediated vasoconstriction which will drop the blood inflow to the fringe and pooling of blood to the deep body core. So that the skin temperature of the fingers and toes get diminishments).

Hormonal middleman with cold exposure is endothelin1, which is a vasoconstrictor peptide. Dragged cold operation will results in elevated situations of endothelin-1, which will lead to the vasoconstriction of blood vessels thereby reduce the sweat stashing.

CONCLUSION:

On the due course of treatment, the patient felt betterment of the symptoms. Thus, I concluded that hydrotherapy will be an effective treatment alternative to any other medication in reliving the symptoms of HYPERHIDROSIS.

REFERENCES:

- 1.**Hyperhidrosis:** prevalence and impact on quality of life.
2. EN Hasimoto, DC Cataneo, TA Reis... - Jornal Brasileiro de ..., 2018 - SciELO Brasil
- 2.**Hyperhidrosis:** anatomy, pathophysiology and treatment with emphasis on the role of botulinum toxins AAD Lakraj, N Moghimi, B Jabbari - Toxins, 2013 - mdpi.com
- 3.**Hyperhidrosis: Pathophysiology and Treatment**
N Elgharably, H Shoeir, A Elgharably... - International Journal of ..., 2024 - klok.uclan.ac.uk

4. **Hyperhidrosis**—causes and treatment of enhanced sweating

T Schlereth, M Dieterich... - Deutsches Ärzteblatt ..., 2009 - pmc.ncbi.nlm.nih.gov

5. Regulation of Body Temperature by the Nervous System

Chan Lek Tan¹ · Zachary A. Knight

6. Hyperhidrosis: A central nervous dysfunction of sweat secretion J Wohlrab, FG Bechara, C Schick, M Naumann Dermatology and therapy, 2023•Springer

7. Effects of rest, abdominal ice packs and ice water **foot baths** in improving the recovery process JMK Booher - 1969 - openprairie.sdstate.edu

8. **Role of bradykinin type 2 receptors in human sweat secretion**: translational evidence does not support a functional relationship

TE Wilson, S Narra, K Metzler-Wilson, A Schneider, KA Bullens, IS Holt

Skin pharmacology and physiology, 2021•karger.com

9. Hyperhidrosis: What is it and why does it occur? Thoracic surgery clinics volume 18 , issue 2, may 2008(science direct)

10. Hyperhidrosis : Management options Jhon R.MCCONAGHY, MD.

11. An epidemiological study of hyperhidrosis Dermatologic surgery volume 33, issue s1, jan 2007 William lear BSC,MD.

12. Health effects of voluntary exposure to cold water – a continuing subject of debate.

13. Responses of the hands and feet to cold exposure Stephen S Cheung.

14. Rational hydrotherapy – by Dr,J.H. Kellong.