



A COMPARATIVE STUDY ON ULTRASOUND AND YOGIC CLEANSING TECHNIQUE (NETI) ON SINUSITIS- A RANDOMIZED STUDY

Frinso Francis (BNYS)*, Shashikiran H.C.(BNYS, MD), Prashanth Shetty (BNYS, MSc, PhD) and Shivaprasad Shetty (BNYS, MSc)

India.

*Corresponding Author: Frinso Francis (BNYS)

India.

Article Received on 26/09/2019

Article Revised on 17/10/2019

Article Accepted on 07/11/2019

ABSTRACT

Background: Sinusitis can be caused by infection, allergies, air pollution, or structural problems in the nose. Most cases are caused by a viral infection. A bacterial infection may be present if symptoms lasts more than ten days or can worsen after initial improvement. Recurrent episodes are more likely in person with asthma, cystic fibrosis, and poor immune function. Sinusitis is a common condition where Women are more often affected than men.

Materials and methods: A total 60 subjects with the age of 18 – 45 years were required for the study. Subjects who fulfilled the inclusion criteria were appraised the purpose of the study and their rights as the research subjects. A visual analog scale and SNOT-20 will be administered for all the participants to evaluate the comparative study on ultrasound and yogic cleansing technique (neti) on sinusitis. The data was then tabulated; compared and relevant statistical analysis was done for the results. **Results:** The present study is conducted to evaluate the comparative study on ultrasound and yogic cleansing technique (neti) on sinusitis and its influence on the improvement of symptoms and pain management. In visual analog scale and SNOT-20 questionnaire the results after applying paired t test showed there is a significant decrease in total scores as well as by comparing both, ultrasound got maximum benefits of reducing sinusitis symptoms. The reduction in total scores as well as scores in all clusters of VAS scale and SNOT-20 questionnaire. **Conclusion:** The present study noted that after 10 days of treatment of ultrasound 5-8 minutes resulted in decrease in the symptoms of sinusitis and its influence on the pain management.

KEYWORDS: Ultrasound, Neti, Sinusitis.

INTRODUCTION

Sinusitis is a very common chronic illness with a substantial health care impact. This review focuses on factors contributing to sinusitis pathogenesis and chronicity, including anatomic factors, disturbances in mucociliary clearance, microbial pathogens, and inflammatory factors. A distinction is made between “infectious” and “noninfectious” types of inflammation in chronic sinusitis.^[1] The inflammatory characteristics of noninfectious inflammation are reviewed primarily in the context of chronic hyperplastic sinusitis with nasal polyposis. Key features of this type of inflammation include the presence of chronic inflammatory cells, large numbers of eosinophils and IL-5-producing T lymphocytes. Allergic fungal sinusitis is discussed as a special type of chronic sinusitis.^[2]

The clinician should recognize the subtle clinical presentation of acute bacterial sinusitis and initiate appropriate, aggressive treatment. Other upper respiratory tract disorders can confound the accurate diagnosis and appropriate treatment of sinusitis.^[3] Variable patterns of microbial resistance and antibiotic

susceptibility and the dissociation between in vitro findings and clinical efficacy are a treatment challenge. This report is a comprehensive review of the pathophysiology and diagnosis of acute sinusitis, infectious agents, treatment methods, antibiotic resistance patterns, and costs associated with the management of sinusitis. Treatment algorithms are presented for adult and pediatric sinusitis. One of the most formidable tasks of the symposium was to arrive at a consensus on the definitions of acute and chronic sinusitis. There is general agreement that sinusitis can be defined as inflammation of the Para nasal sinus mucosa. Acute sinusitis can be defined by certain major and minor criteria that exist for longer than the typical viral upper respiratory tract infection, greater than 7 days.^[4]

Each year, millions of children are diagnosed with sinusitis and prescribed an antimicrobial agent.^[5] It is estimated that most preschool and school children have three to eight acute viral upper respiratory tract illnesses (URIs) annually and that bacterial sinusitis complicates 0.5% to 5.0% of these. 2–4 Uncomplicated viral URIs produce congestion and inflammation of both the nasal

and the sinus mucosa; therefore, they should be viewed as viral rhino sinusitis infections.^[6,7] Because viral rhino sinusitis is at least 20 to 200 times more common than bacterial sinusitis, the use of appropriate diagnostic criteria to identify accurately the small subgroup of patients who may have a bacterial infection of the sinuses is a primary goal in promoting the judicious use of antimicrobial agents. Sinusitis is defined as inflammation of the sinus mucosa. It can be caused by either infectious or noninfectious processes. Episodes of sinusitis may be categorized on the basis of duration of symptoms as acute (symptoms lasting 10 to 30 days), sub-acute (symptoms lasting 30 days to 3 months), or chronic (symptoms lasting 3 months). The major causative agents differ according to these categories; the principles described here focus on acute sinusitis. The precipitating event in acute sinusitis is usually a viral upper respiratory tract infection that produces mucosal inflammation.^[8] The inflammation may result in obstruction of the sinus Ostia and trapping of fluid in the sinus cavities. Without proper drainage, bacteria that are part of the normal upper respiratory tract flora can be trapped and proliferate in this space. The pathophysiology of acute sinusitis is similar to that of acute otitis media; sinusitis and otitis media may coexist.^[9] In addition, as with acute otitis media ;60% of sinusitis episodes will resolve or improve spontaneously without antimicrobial therapy.^[10-12]

METHODOLOGY

Subjects: A total of 60 healthy subjects with an age range between 18-40 years have participated in the study. Subjects who fulfilled the inclusion criteria were appraised the purpose of the study and their rights as the research subjects.

Inclusion Criteria

- Age ranging from 18-45 years
- Both male and female
- Subjects with written consent form

Exclusion criteria

The subjects will be excluded who is having:

- Psychological disorder
- Nasal polyps
- Skin allergy

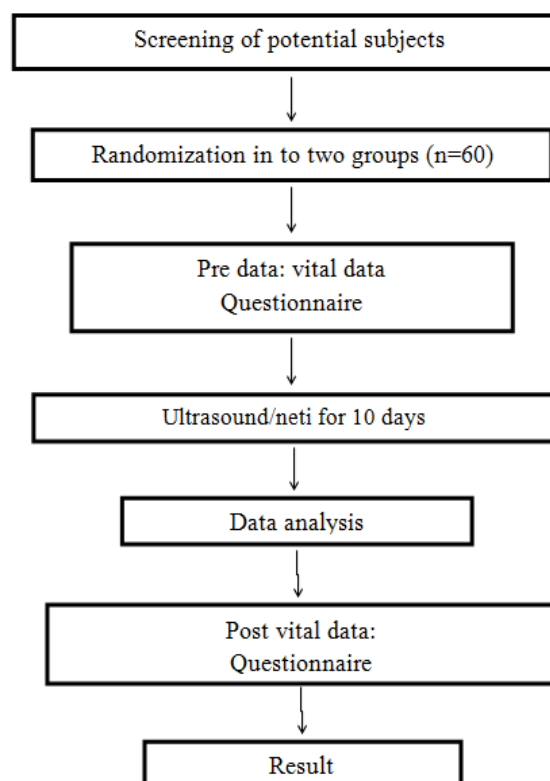
Paired Samples Test on Ultra sound treatment

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	SNOT_20pre - SNOT_20post	26.800	12.036	2.197	22.306	31.294	12.196	29	.000
Pair 2	VAS_pre - VAS_post	6.233	1.223	.223	5.777	6.690	27.919	29	.000

From the above table 1, we observe that the pre and post-measurement of the variable is under consideration are significant at the 5 percent level of significance as P

- Any other comorbidity conditions

Illustration of study plan



RESULT

The paired t-test was done using the SPSS version 20.0 by normality and mann – whitney u test. In head ache intensity scale and vas scale the results after applying paired t test showed that there is a significant decrease in total quality of life scores in post compared to pre in the intervention group with %, (p=0.000).

Values are Mean $\pm$ Standard Deviation (n=60)

value is less than 0.05. We conclude that treatment is effective.

Paired Sample test on NETI treatment

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	SNOT_20pre1 - SNOT_20post1	22.300	7.003	1.279	19.685	24.915	17.441	29	.000
Pair 2	VAS_pre1 - VAS_post1	5.167	1.234	.225	4.706	5.627	22.931	29	.000

From the above table 2, we observe that the pre and post-measurement of the variable is under consideration are significant at the 5 percent level of significance as P value is less than 0.05. We conclude that treatment is effective.

DISCUSSION

In this study Neti Kriyā was taken as an Independent Variable & the latency level of Optic Nerve Conduction Velocity has been taken as dependent variable.^[91] We found no specific difference between the means of the pretest data taken of both Control & Experimental Group as the means were approximately equal. After the experimentation period the post test data taken for both Control & Experimental were found significantly different as the Statistical Analysis Shown. We can now easily accept that the Teachings of Ancient Yogic texts that Neti Kriyā as a purification or cleansing technique of Shatkarmā Came from Saptasādhana cleans the fused matter of ENT system as well as the Eye & its Post retinal Optic Nerves. This experiment also shows the effect of the independent Variable “The Neti Kriyā” as it Changes the values of Conduction Velocity of the Impulses of Optic Nerves.^[13]

In chronic rhinosinusitis saline irrigation is one of the keystones of treatment. Patients, who practiced daily nasal irrigation, had improvement in symptoms of chronic sinusitis up to 70% after 2 weeks of treatment. In these patients the use of medication had decreased considerably. Evidence supports that there was a significant improvement in nasal symptoms and health status of patients with sinonasal disease who had undergone treatment twice daily for 6 weeks. In a one month study of chronic sinusitis in children aged 3–16 years, it was found that the use of hypertonic saline reduced cough and nasal secretion.^[14] Main clinical features of chronic sinusitis are purulent nasal discharge, foul smelling discharge, local pain, headache, nasal stuffiness and anosmia, which may be compared with dusta pratisyaya in which major symptoms are slesma sruthi (discharge of fluid resembling pus), mukha dourghandhya (foul-smelling of mouth), ura-parswa vedana (pain in chest and flanks), nasa rodham (blockage of nasal passage)^[15] and gandha na vethi^[16] (anosmia). Analyzing these it is advisable to use neti in dusta pratisyaya. Most studies consider saline nasal irrigation effective in the management of sinusitis. We may infer that neti can be adopted as a first-line treatment. Studies need to be done on jala neti so as to prove its efficacy in the management of sinusitis. Standardized protocol needs to be developed regarding the procedure.

Therapeutic ultrasound refers generally to any type of ultrasonic procedure that uses ultrasound for therapeutic benefit. This includes HIFU, lithotripsy, targeted ultrasound drug delivery, trans-dermal ultrasound drug delivery, ultrasound hemostasis, cancer therapy, and ultrasound assisted thrombolysis. It may use focused ultrasound (FUS) or unfocused ultrasound^[17]

The application of ultrasound during the inflammatory, proliferative and repair phases is not of value because it changes the normal sequence of events, but because it has the capacity to stimulate or enhance these normal events and thus increase the efficiency of the repair phases. It would appear that if a tissue is repairing in a compromised or inhibited fashion, the application of therapeutic ultrasound at an appropriate dose will enhance this activity. If the tissue is healing ‘normally’, the application will, it would appear, speed the process and thus enable the tissue to reach its endpoint faster than would otherwise be the case. The effective application of ultrasound to achieve these aims is dose dependent.

REFERENCE

1. Hamilos, D.L., Chronic sinusitis. *Journal of Allergy and Clinical Immunology*, 2000; 106(2): 213-227.
2. Brooks, I., Jenkins, S.G., Pichichero, M.E., Reiner, S.A., Sher, L. and Yamauchi, T., Medical management of acute bacterial sinusitis. Recommendations of a clinical advisory committee on pediatric and adult sinusitis. *The Annals of otology, rhinology & laryngology*. Supplement, 2000; 182: 2-20.
3. Hamory, B.H., Sande, M.A., Sydnor Jr, A., Seale, D.L. and Gwaltney Jr, J.M., Etiology and antimicrobial therapy of acute maxillary sinusitis. *Journal of Infectious Diseases*, 1979; 139(2): 197-202.
4. Shapiro, G.G. and Rachelefsky, G.S., Introduction and definition of sinusitis. *Journal of Allergy and Clinical Immunology*, 1992; 90(3): 417-418.
5. McCaig LF, Hughes JM. Trends in antimicrobial drug prescribing among office-based physicians in the United States. *JAMA*, 1995; 273: 214-219.
6. Monto AS, Ullman BM. Acute respiratory illness in an American community. *JAMA*, 1974; 227: 164-169.

7. Badger GF, Dingle JH, Feller AE, Hodges RG, Jordan WS, Rammelkamp CH. A study of illness in a group of Cleveland families. *Am J Hyg*, 1953; 58: 31–40.
8. Wald E, Guerra N, Byers C. Upper respiratory tract infections in young children: duration of and frequency of complications. *Pediatrics*, 1991; 87: 129–133.
9. Gwaltney J, Phillips C, Miller R, Riker D. Computed tomographic study of the common cold. *N Engl J Med.*, 1994; 330: 25–30.
10. Wald E, Chiponis D, Ledesma-Medina J. Comparative effectiveness of amoxicillin and amoxicillin-clavulanate potassium in acute paranasal sinus infections in children: a double-blind, placebo-controlled trial. *Pediatrics*, 1986; 77: 795–800.
11. Lindbaek M, Hjortdahl P, Johnsen UL. Randomised, double blind, placebo controlled trial of penicillin V and amoxycillin in treatment of acute sinus infections in adults. *Br Med J.*, 1996; 313: 325–329.
12. Axelsson A, Chidekel N, Grebelius N, Jensen C. Treatment of acute maxillary sinusitis. *Acta Otolaryngol*, 1970; 70: 71–76.
13. L.T. Tomooka, C. Murphy, T.M. Davidson Clinical study and literature review of nasal irrigation. *Laryngoscope*, 2000; 110: 1189–1193.
14. D. Shoseyov, H. Bibi, P. Shai, N. Shoseyov, G. Shazberg, H. Hurvitz. Treatment with hypertonic saline versus normal saline nasal wash of pediatric chronic sinusitis. *J Allergy Clin Immunol*, 1998; 101: 602–605.
15. Rudmik L1, Soler ZM. Medical Therapies for Adult Chronic Sinusitis: A Systematic Review.
16. A Systematic Review of the Treatment of Chronic Rhinosinusitis in Adults with Primary Ciliary Dyskinesia.
17. P.L. Dhingra, S. Dhingra Chronic sinusitis. *Dis. Ear, nose throat* (5th ed.), Elsevier, a division of Reed Elsevier India Private Limited, New Delhi, 2011; 208.