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Effectiveness of Naturopathic Interventions on Reducing the Erythrocyte Sedimentation Rate in Patients with Chronic Inflammatory Disorders

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Abstract:

Introduction

Chronic inflammation has proven to be the predecessor of all life threatening chronic diseases. Minimizing clinical as well as subclinical inflammation may result in prevention or reversal of such diseases. Naturopathic medicine (NM), a non pharmacological approach can be used to alleviate these inflammation and prevent related disorders. However, there is no adequate evidence available to prove the use of naturopathy in treating inflammation. This study is aimed at testing the efficacy of NM in reducing Erythrocyte Sedimentation rate (ESR) and C-reactive protein(CRP).

Materials & Methods

118 subjects with chronic inflammatory disorders (CID) were screened out of which 31 subjects (Male=13, female=18) were recruited for the study. They were provided with 2 weeks naturopathic interventions at National institute of Naturopathy out patient department. ESR and CRP were measured at the baseline and post intervention on the 14th day.

Results

23 subjects (Male=5, female=18) out of 31 completed the study. There was a significant reduction in the ESR level ($t= 1.54E-06$), where as CRP level remained the same.

Conclusion

Two weeks naturopathy interventions on CID has shown to reduce the ESR level, which indicates a possible role of NM in preventing and easing inflammatory disorders. However, there is no control group in this study. No attempts have been made to record the subjective changes and follow up also has been not done, which are the major limitations of this study.

Keywords: Naturopathic medicine, ESR, Inflammation, Hydrotherapy, chronic inflammatory disorders

1. Introduction

Chronic inflammation has been a risk factor implicated in the pathogenesis^{i,iii} as well as the development of complications^{iv,v} in chronic diseases. Minimizing clinical as well as subclinical inflammation may result in slowing down or reversal of diseases.^{vi} Besides this several studies suggest a patho-physiological role of inflammatory markers in the development of insulin resistance and cardiovascular diseases.^{vii} So significant reduction in these inflammatory markers can contribute in preventing such mortal diseases. Naturopathy is a system of medicine which uses body's innate capacity to cure diseases. Naturopathy treats the human body as a complete unit. The ultimate aim of naturopathic medicine is to promote the inherent power within the human body and to accelerate self-healing capacity.^{viii} Naturopathic medicine is not defined by the substances used but rather by the principles that underlie and determine its practice, which include supporting the healing power of nature, finding the root cause of ill health, first doing no harm, treating the whole person, prevention, and doctor as teacher.^{ix,x}

C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) are the most widely used assays for measuring acute phase response due to their reliability, reproducibility and cost effectiveness.^{xi} C-reactive protein (CRP) is an acute phase reactant that reflects different degree of inflammation in the human body is now even considered as important predictor of other systemic illness also.^{xii} The ESR is the most widely used laboratory measure of disease activity in clinical medicine and still remains a useful tool for

monitoring inflammatory diseases, in particular, rheumatoid arthritis.^{xiii} By noticing the changes in these markers help us to decide the chances of naturopathy being a drugless system of medicine to be used as a first line of management in case of chronic inflammatory diseases. . In general, there is not enough scientific evidence to prove that any complementary health approaches are beneficial for inflammatory diseases like RA, OA, Asthma, IBD etc and there are safety concerns about some of them. Epidemiological studies reports that there are huge gastrointestinal complications by the use of Non-steroidal anti-inflammatory drugs (NSAIDS), the most common intervention used for inflammatory diseases. Hence this study was aimed at studying the changes in inflammatory markers like ESR, CRP after naturopathy interventions for a period of 2 weeks.

2. Materials and Methods

118 subjects with chronic inflammatory disorders were screened for eligibility in the outpatient department of National institute of Naturopathy (NIN), Pune, India during the month of December, 2014. (Figure 1) All the subjects aged between 30 and 65 years and with history of chronic inflammatory disease were included. Those subjects who are under medications for chronic inflammatory diseases, systemic complications, mental instability, recent surgeries were excluded. 31 patients fulfilled the inclusion criteria and were enrolled for the study after obtaining written informed consent. All the subjects were provided with 2 weeks naturopathic interventions at NIN. 5 ml fasting venous blood samples were collected in heparinized vials at the baseline and on the 14th day after intervention. Erythrocyte Sedimentation Rate (Wintrobe Method) and C - reactive protein (Latex Card Method) were calculated for all the enrolled participants. The study was approved by the institutional ethics committee of NIN, Pune.

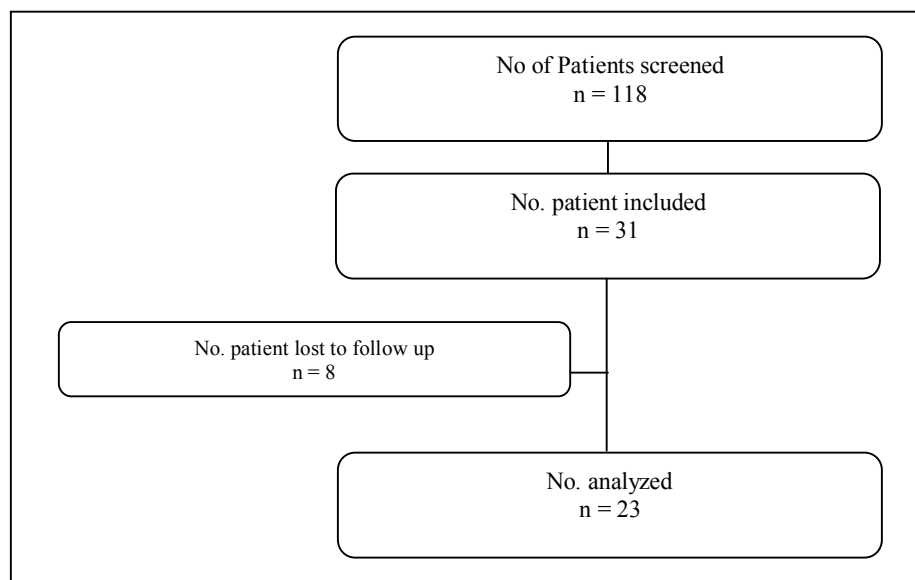


Figure 1: Trial Profile

2.1. Interventions

All the enrolled participants were given an initial counseling about the naturopathy interventions which they will undergo for two weeks.

The following interventions was provided to the enrolled participants

2.2. Hydrotherapy

It can be defined as a naturopathic modality that involves the use of water at different temperatures, pressures, states and modes of application for the treatment of various disorders.^{xiv} It includes different techniques like Hip baths, enemas, hot and cold fomentation, hot foot baths, spinal baths, steam baths, immersion baths, application of hot and cold packs as well as advanced modalities like whirlpool baths, sprays and jets.^{xvii} Hydrotherapy has shown to improve the immunological status,^{xv} reduction in pain^{xvi} in inflammatory conditions. Hydrotherapy also induces endorphin secretion and also helps in faster healing and reducing inflammation.^{xvii}

Hip Bath: The sitz bath/Hip bath (partial immersion bath of the pelvic region) is given in a specially constructed tub. The tub or basin was filled with enough water to cover the buttocks and hips so that the water reaches the level of the navel.^{xviii} Patients will be asked to sit in the tub for 20 minutes.

Spinal bath: Neutral spinal bath (34-35 degree Celsius) is given for 15 minutes in a spinal bath tub, which is designed in such a way that the entire length of the spine from the nape of the neck to the lowest portion of the spine is immersed inside the water. The applications of water to the spine can influence all the spinal ganglia⁷ which are related to the sensory, heat, vasomotor and secretory centers^{xix} which may act by reflex action on the body organs to maintain the homeostasis.

Hot foot bath: It is given in small tub in which hot water (40-45 degree Celsius) where the patient has to dip the legs up to the calf muscle in water and the patient is covered with a blanket to prevent the heat loss. This is given for 20 minutes once in a day before sleep.^{xx} Warm foot bath has shown significant effects in relieving fatigue and insomnia symptoms^{xxi}, hence this will help in relieving stress and ensure good sleep.

Steam Bath: A steam bath is a steam-filled room for the purpose of relaxation and cleansing. Patient is asked to be in the room until profuse perspiration takes place. Generally given for 10-12 minutes, helps in case of treating arthritis, obesity etc.^{xx,xxii}

Immersion bath: Immersion bath is also known as full bath. Taken for a duration of 15 minutes, patient have to be immersed till neck level in a bath tub, indicated in case of rheumatism, arthritis and all types of chronic diseases etc.^{xx}

Evidences suggest that the whole body warm water immersion increases the circulation to deep muscle structures thus improve oxygen flow to the tissue and potentially facilitate healing of muscles, bones and joint injuries.^{xxiii,xxiv}

Local packs: Packs are applied with cotton clothes covered with flannel clothes dipped in either hot or cold water in different parts of the body like chest, legs, and arms. It is usually given for 30 minutes. It is indicated in relieving congestion, improving circular functions, treating chronic inflammation.^{xx}

Enema: Enema is injection of water in to the rectum, normally given in a lithotomy position. Usually 500 ml to 1 liter of water is administered; it is helpful in relieving inflammatory conditions of colon, ulcerative colitis etc.^{xx}

Mud therapy: Mud is applied either locally, as packs or full body application. It is applied for 30-45 minutes and then washed with cold water. Mud bath is generally indicated in all kind of skin diseases and allergic conditions.^{xx} Mud bath improves inflammatory conditions by influencing the nitric oxide, myeloperoxidases and glutathione peroxidase levels.^{xxv}

Oil massage: Swedish massage is given to the local parts for 10 minutes or full body massage for 45 minutes . Usually Till (Sesamum indicum) oil used for massage. Sesame (Sesamum indicum) oil supposedly penetrates the skin easily and is used in India for oil massage. Infant massage with sesame oil has shown benefits at a statistically more favorable rate than all other oils tested.^{xxvi}

3. Results

Analysis was done through Microsoft Excel software. There were 31 patients screened for the study out of which 23 (Male=5, female=18) successfully completed the study. The patient characteristics are shown in Table 1.

Data	Values
Sample size	n= 23
Male	5
Female	18
Age	Mean- 51.09, SD* ± 11.665
BMI	Mean- 31.273, SD* ± 6.36
Inflammatory condition	Osteoarthritis (OA) : 7 Obesity: 6 Obesity and OA : 4 Sero negative arthritis:1 Pelvic Inflammatory Disease:1 Gouty Arthritis:1 Rheumatoid arthritis:1 Chronic Sinusitis :1 Polyarthritis:1

Table 1: Summary of patient characteristics

Mean of ESR was significantly reduced after the treatment than the base line data, and a paired sample t test has also shown clinically significant change, while the changes in CRP values remained the same. (Table 2)

Data	Base line	Post intervention
Mean	29.26086957	22.69565217
Standard deviation (SD)	10.69501749	9.411959426
t- value		1.54E-06

Table 2: Comparison of baseline and post intervention data

4. Discussion

Complementary and alternative medicine has increasingly becoming popular among consumers of healthcare. Naturopathic medicine, an Indian system of medicine approaches the body as a whole and treats the body by using natural elements which is known as five great elements (Panchmahaboothas) according to traditional Indian Philosophy.^{xxvii} Two weeks naturopathy intervention in patients suffering from chronic inflammatory disorders have shown significant reduction in their ESR level. This suggests naturopathy interventions may have a role to play in preventing the incidence of chronic diseases and associated morbidities. Moreover being a drugless system of medicine there is no side effects associated with these interventions. However there is no control group in this study and no effort have been taken to record subjective changes or follow up which is a weakness of this study. Large scale studies have to be routed in this direction with more intensive inflammatory markers like circulatory cytokines to draw conclusive results.

5. Conclusion

The significant reduction in levels of ESR suggests that naturopathic interventions being a non-pharmacological intervention can play a vital role in management and prevention of chronic inflammatory disorders which are the predecessors of cardiovascular and other morbid disorders.

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