

Far Infrared Sauna for the Treatment of Congestive Heart failure

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Summary: Controlled trials suggest that sauna therapy is very effective at treating patients suffering from chronic heart failure.

Introduction:

A bit over half a million people are diagnosed with congestive heart failure (CHF) in the United States each year. Half of them will die in less than five years. Currently there are about 5 million Americans living with some stage of CHF. To put this into perspective only half that many cases of breast cancer are diagnosed and less than 40,000 deaths are blamed on breast cancer each year.

Any therapy that might have even minor utility in treating congestive heart failure has the potential of bringing a significant impact on morbidity and mortality. This article will review a novel treatment for CHF that is congruent with the tenets of naturopathic medicine. It is a specialized sauna-therapy using far infrared heat sources that has been developed in Japan and goes by the name "Waon Therapy."

Waon therapy strikes me as essentially naturopathic in nature and should hold particular appeal to the readers of NDNR. This article will review some of the published studies.

Waon therapy utilizes far infrared saunas and not the traditional 'hot saunas' heated by wood stoves, hot stones or electric elements. In those 'old fashioned saunas' only about 20% of the heat is transferred as infrared radiation. In contrast the far infrared heating elements transfer about 90% of their energy through infrared radiation. Tadashi Ishikawa invented these 'modern' infrared heaters in 1965. Infrared radiation penetrates deep into the body and this deep heating action probably accounts for the greater effect.

Studies on Waon therapy utilize similar protocols: The patient spends 15 minutes in the sauna at 60 degrees Celsius then rests supine for an additional period of time, often 30 minutes, outside of the sauna, usually covered with a blanket.

Research Review:

As of my writing this article in June 2012, a Pubmed search yields citations for six clinical trials relevant to this discussion.

The first published of these appeared in March 2002 in the Journal of the American College of Cardiology. Kihara et al reported on twenty patients with congestive heart failure who received two weeks of daily Waon therapy (15 minutes sauna and 30 minutes rest). No improvement was seen in a matched control group that was put through a similar, but no infrared exposure, protocol. Clinical symptoms improved in 17 of 20 patients after just two weeks.

Kihara's team had a second study published in the December 2004 issue of Circulation Journal. Following a similar protocol as in the first study (15 min sauna and 30 minutes bedrest), 30 patients, mean age 59 years-old, were recruited with New York Stated Heart Association (NYHA) class II or III CHF who were experiencing a minimum of 200 premature ventricular contractions (PVCs) a day. The group was randomized and 20 received Waon therapy five days a week for 2 weeks while 10 served

as a control group, receiving 45 minutes of bed rest in a 24 degree Celsius room. Total number of PVCs decreased, heart rate variability increased (a good thing) and plasma brain natriuretic peptide (BNP) concentrations decreased in the sauna treated group. These were not small improvements, for example, the number of PVCs per 24 hours in the sauna-treated group decreased to about 850 while the control group remained at approximately 3,100 per day. That's about a 75% decrease.[free text]

To this reader, these reported changes are not just promising, they are near astounding given the short duration of treatment and the seemingly mild procedure.

The Journal Cardiology published the results of a third controlled clinical trial in October 2008. In this considerably larger study, Miyata et al conducted a prospective multicenter case-controlled trial in order to confirm these earlier results. A total of 188 patients with CHF were treated with standard therapy for a minimum of one week and then randomized so that 112 received Waon therapy and 76 served as a control group. The Waon group received the same protocol as in earlier studies (15 minutes of sauna, 60 degrees C followed by bed rest for 30 minutes, five days per week for two weeks). Chest x-rays, echocardiography, and plasma BNP concentration were measured before and after the start of treatment and again 2 weeks after completion of treatment. Two weeks after treatment there was a significant improvements in all measures in the Waon therapy treated patients.

Jeffrey Basford and colleagues from the Mayo Clinic in Minnesota had the results of a small pilot trial published in January 2009 issue of the Archives of Physical Medicine and Rehabilitation looking at the safety and acceptance of sauna therapy in American patients. They divided a total of 9 patients, class III and IV CHF (NYHA) into two groups, putting one through a modified protocol of Waon therapy (15 min sauna **3 times/week** for **four weeks**, rather than two). While seemingly present, the improvements in quality of life scores did not reach statistical significance. There was a 24% decrease in noradrenalin in the sauna group.

If anything, this reader sees these results as an argument in favor of the more frequent treatment protocol employed in the Japanese studies.

Another paper from 2008 is worthy of mention. Mussivand et al from the University of Ottawa, writing in the July issue of the journal Congestive Heart Failure, reviewed and summarized the published literature up to that point looking at the impact, "...of thermal therapy (ie, warm water immersion, traditional sauna bathing, and dry infrared sauna) in patients with heart failure... Thermal therapy was found to have a positive impact on key heart failure-related parameters across multiple studies." They reported 'thermal therapy' produced benefit measured in a range of parameters related to heart failure, including:

"(1) endothelial function, (2) hemodynamics, (3) cardiac geometry, (4) neurohormonal markers, and (5) quality of life. Of special note, thermal therapy also conveyed a strong antiarrhythmic effect in heart failure patients. The clinical evidence highlights repeatable and compelling data showing that thermal therapy may provide an important and viable adjunct in the treatment of heart failure."

The results of a third clinical trial by Kihara et al were published in the April 2009 issue of the Journal of cardiology. These same data appear to also have been presented by Yoshiyuki Ikeda, in April 2008, at the 57th Annual Conference of the American College of Cardiology.

In this study of 129 people with congestive heart failure (NYHA functional class III or IV), about half (n=64) received Waon therapy daily for 5 days during admission, and then at least twice a week after discharge. The control group (n=65) was matched for age, gender, and NYHA functional class and were treated only with standard CHF therapy. Outcome data were compiled after five years and analyzed. Twelve patients died in the control group while only 8 patients died in the Waon group.

Over the five years, 31% of those given Waon therapy were re-hospitalized for heart failure or died of heart disease compared to 69% in the non-treated group.

In other words the simple incorporation of Waon therapy into this incredibly high-risk patient population cut high death rate by half.

A randomized controlled trial, published in *Circulation Journal* in 2011 by Fujita et al, reports improvements in oxidative stress in patients who underwent Waon therapy. Forty patients with CHF were divided into control (n=20) and Waon therapy (n=20) groups. After 4 weeks of daily therapy, the Waon group's hydrogen peroxide concentrations and brain natriuretic peptide (BNP) decreased significantly while the nitric oxide metabolites increased. None of these changes occurred in the control group.

Of course this is intriguing as we can all think of other patient groups that might benefit if levels of oxidative damage decreased and nitric oxide increased. In fact a 2008 study published in *Internal Medicine* suggests Waon Therapy is effective for the treatment fibromyalgia. In a group of thirteen female fibromyalgia patients, who received daily Waon therapy 2 or 5 times per week, "All patients experienced a significant reduction in pain by about half after the first session of Waon therapy and the effect of Waon therapy became stable after 10 treatments." That the improvements continued after therapy was discontinued should certainly get our attention.

An earlier paper, June 2007, reported improvements with chronic fatigue syndrome. Both fibromyalgia and chronic fatigue are typically difficult to treat. To see consistent responses in such a short period of time may be as striking as the heart failure studies. Other papers suggest benefit from Waon therapy in patients with both rheumatoid arthritis and ankylosing spondylitis and Sjögren syndrome. [11]

The *Journal of Cardiology* reported in April 2008 that daily Waon therapy was beneficial in treating chronic pulmonary hypertension (COPD). After four weeks of daily 13 patients with COPD had improved right ventricular positive dP/dt, pulmonary hypertension during exercise, exercise tolerance and the quality of life. This study appeared in the April 2008 issue of the *Journal of Cardiology*.

Two additional papers of interest and worthy of mention on CHF were published in January 2012.

Sobajima et al writing in the *International Journal of Cardiology* report that, "Repeated sauna therapy improves myocardial perfusion in patients with chronically occluded coronary artery-related ischemia." The twenty-four patients had the severity of their cardiac ischemia measured by radioactive scintigraphy. The 16 patients treated with Waon therapy for three weeks showed improved summed stress score (SSS) and summed difference score (SDS) [I assume that is a good thing to happen] of myocardial scintigraphy and the worse the scores were at baseline, the better the improvement. Those patients who underwent Waon therapy experienced extended treadmill exercise times, on average from 430 seconds to 511 seconds.

A second January 2012 paper, this one by Ohori et al in the *American Journal of Cardiology*, reported that Waon therapy improved, "...exercise tolerance and endothelial function in patients with chronic heart failure....Waon therapy increased the left ventricular ejection fraction ... and reduced plasma levels of norepinephrine ... and brain natriuretic peptide Increased the 6-minute walk distance [and]... significantly increased peak Vo(2), ..."

In September 2011, The Japanese Circulation Society (JCS) added Waon therapy to their published guidelines for the treatment of chronic heart failure.

As of 2008, The American Heart Association (AHA) had no official position, but a spokesman, Russell Luepker, is quoted on Web-MD as saying he's not convinced the warm treatments helped the patients. "They were being seen twice weekly for the treatment, and everyone feels better when they get more attention."

[This comment should give me pause. If seeing a health care provider twice a week for some attention can cut death rates from heart failure by half, one would think the AHA would encourage more frequent visits.]

Clinical Implications:

At this point in time the evidence that Waon therapy has a positive impact on congestive heart failure is compelling. The therapy appears in all of these reports to be safe and does not provoke disease events. Nevertheless this population of patients is always at risk and should be treated with caution.

Far infrared sauna units are relatively inexpensive and patients might even consider home installation and self-treatment.

Many of these studies looked at patients with advanced disease. There is no reason to think that the treatment would also not offer benefit to those with only mild or moderate disease.

All of these studies to date have only looked at combining Waon therapies with standard of care drug treatment. It is intriguing to contemplate what increases in benefit might be possible if used in combination with the supplements that naturopathic physicians might consider for treating CHF.

That such a simple therapy, that is fully congruent with naturopathic principles and philosophy, could offer such hope and benefit to so many patients is one of the most exciting possibilities that have come our way in a long while.

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WEBMD Warm Sauna May Help Treat Heart Failure

Study Shows Waon Therapy Helps Heart Failure Patients Live Longer

<http://www.webmd.com/heart-disease/heart-failure/news/20080402/warm-sauna-may-help-treat-heart-failure>

<http://www.denvernaturopathic.com/WaontherapyandCHF.htm>