Beta-Blockers and Cryogenic Therapy

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Beta-Blockers

There have been multiple studies done recently testing the effectiveness of beta-blockers and statins. These two types of drugs are often prescribed together in an effort to combat heart disease. Beta-blockers work to lower blood pressure while statins can be used to reduce cholesterol levels, since both high blood pressure and increased cholesterol levels are warning signs of heart disease. In a 2009 study (Hernandez et al.), researchers examined the association between the initiation of beta-blocker therapy and the resulting outcomes among elderly patients hospitalized for heart failure. Although beta-blockers are a guideline-recommended therapy for heart failure, their clinical effectiveness is not well understood. The study concluded that incident beta-blocker use was **clinically effective** and independently associated with lower risks of death and rehospitalization in elderly patients hospitalized with heart failure and **left ventricular systolic dysfunction (LVSD)**. LVSD occurs when the heart fails to pump sufficiently well to send blood around the body. While patients experiencing LVSD had lower risks of death and rehospitalization, those with preserved systolic function (not experiencing LVSD), did not see any significant influence on their mortality.

Another study done in 2010 (Ram, 2010) investigated whether beta-blockers were still an appropriate therapy option for the treatment of cardiovascular conditions. This study was conducted in response to unfavorable outcomes reached by previous studies. However, the previous studies focused primarily on non-vasodilating, traditional beta-blockers. While this type of beta-blocker was deemed ineffective, **vasodilatory beta-blockers** were still found to reduce blood pressure, even in patients with hypertension and diabetes. The main difference between

these two types of beta-blockers is that non-vasodilating, traditional beta-blockers reduce blood pressure by decreasing cardiac output while vasodilatory beta-blockers work by reducing systemic vascular resistance. The overall conclusion of this study was that although the time has come for a **reexamination of the clinical evidence for the use of beta blockers in hypertension**, industry professionals must recognize that beta-blockers with vasodilatory actions may be an appropriate treatment option for some. The review of the evidence confirms that there are valid reasons to question the utility of certain beta blockers in treating hypertension. However, there are intrinsic differences among member of the beta blocker class that must be considered. Vasodilatory beta blockers (which have generally not been included in comparative meta-analyses) lower blood pressure and may provide better central aortic pressure reductions than traditional beta blockers. Additionally, the reality of modern hypertension treatment is that most patients will require multiple drugs to achieve this goal. **When addressing the question of beta blockers' effectiveness, the answer does not lie in global generalizations**, but in assessing individual patients and specific beta blocking agents.

Cryogenic Therapy

Cryogenic therapy includes any form of treatment that requires freezing or non-freezing temperatures. There are three main types: cryosurgery, cryotherapy facials, and whole-body cryotherapy (WBC). Cryosurgery, or cryoablation, is used to treat abnormal cells, like tumorous or cancerous cells, by applying liquid nitrogen locally. Cryotherapy facials are thought to shrink pores, freeze off dead skin cells, rejuvenate skin, and reduce redness, although none of these benefits have been observed in any formal study. Lastly, whole-body cryotherapy involves sitting or standing in a 'cryochamber; for two to five minutes while the whole body is exposed to

liquid nitrogen in subzero temperatures. The supposed health benefits of WBC include reduced inflammation, pain relief, muscle recovery, weight loss, and short term alleviation of depression/anxiety symptoms. Most research, however, has found that almost **all benefits are currently theoretical** and based solely on anecdotal claims/experiences rather than scientific evidence. Cryotherapy is currently not regulated by the FDA nor has it been approved or cleared by the FDA as a safe or effective treatment option for any medical conditions, an organization that has an entire webpage dedicated to informing readers that there is little evidence supporting the safety or effectiveness of WBC.

Considering the benefits of cryotherapy more critically, here are some hypothesized reasonings for why these benefits are experienced. One benefit users cite quite often is a reduction of migraine symptoms and a short-term alleviation of mood disorder symptoms associated with depression and anxiety. It is thought that the freezing temperatures may cool the blood passing though intracranial vessels, shifting physiological hormone responses. These changes result in the reduction of migraine symptoms and positive, short-term effects on mood disorders. Other benefits, like the reduction of arthritic pain, the preventative measure against dementia, the treatment of atopic dermatitis, and the numbing of nerve irritation, can all be linked to cryotherapy's ability to reduce inflammation. However, it must be noted that although there is plenty of anecdotal evidence supporting these claims, there is little scientific research backing them up.

Since there is limited research supporting the use of cryotherapy as an effective treatment option, always speak with your doctor before trying cryotherapy. Do not try cryotherapy if you have a pacemaker, a history of high blood pressure, stroke, severe hypertension, seizures, claustrophobia, or are pregnant. Additionally, undergoing a cryotherapy treatment for longer than

the recommended time can be fatal (via hypothermia). WBC has ben cited to cause cases of cold panniculitis (rash caused by the cold injuring fatty tissue) and frostbite. Although cryotherapy has been deemed safe and effective for certain medical treatments (like wart or cancer cell removal), there is no concrete evidence to support the many claims made by the WBC or cryofacial centers.

Resources

1. Hernandez et al., 2009
    a. https://www.jacc.org/doi/full/10.1016/j.jacc.2008.09.031
2. Ram, 2010
    a. https://www.sciencedirect.com/science/article/pii/S0002914910016310?casa_token=nHoIAseapmgAAAAA:5aeKvJTtEc3E3E1SeINZNW1T6rDohX15sCzmGlf5VCePIA8tc5snwdjUXcK675lm3bW80-jZnqM
3. Cryogenic Therapy Articles
    a. https://integrisok.com/resources/on-your-health/2019/february/what-is-cryotherapy
    b. https://www.healthline.com/health/cryotherapy-benefits
    c. https://www.sciencedirect.com/science/article/pii/S0531556521000127?casa_token=Sm9rWUWmYlsAAAAA:mdqAqF1U7W-jkDSuMq3gYDhVSQguURwyngQtHSiToInqG86kyZ73C_JiuiRaEAQ2v1rGs-2n81Y
    d. https://www.sciencedirect.com/science/article/pii/S1360859219303961?casa_token=c1imh7HinoUAAAAA:_CvdrP8J2fZWj28BqoLxkevoxtRCfthLri6HhWzMwgq1WdM2G84UjsM9sbCCgcxFooc9-vyVtjM