Example EBC II Course Project

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Evidence-Based Chiropractic Project & Cardiovascular and Pulmonary Disorders

EBC Step 1: Create an answerable question/s (hypothesis) about the health care problem confronting you.

1. Is severe decrease in total caloric intake associated with sinus arrhythmia as seen in people with anorexia nervosa?
    - Patient or problem: patients with anorexia nervosa
    - Intervention, test, or perception: decrease in total caloric intake
    - Comparison (if relevant): people with normal weight and no anorexia nervosa
    - Outcome or result: sinus arrhythmia

2. Is decreased body mass index associated with a decreased hemodynamic workload in patients with anorexia nervosa?
    - Patient or problem: patients with anorexia nervosa
    - Intervention, test, o perception: decreased body mass index
    - Comparison (if relevant): people with normal weight and no anorexia nervosa
    - Outcome or result: decreased hemodynamic workload

EBC Step 2: Find the best evidence to answer the particular question.

1. Is severe decrease in total caloric intake associated with sinus arrhythmia as seen in people with anorexia nervosa?

Search terms: cachexia, sinus arrhythmia, anorexia nervosa
Indexing systems: Pub Med, EBSCOhost, eJournals

Abstract:

F. Galleta, et al. QT interval dispersion in young women with anorexia nervosa. Journal of Pediatrics and Adolescent Medicine. 2002 Apr;140(4):456-60.

<u>Objectives:</u> To evaluate the degree of QT dispersion in a group of young women in the starvation phase of anorexia nervosa (AN) and its relation to left ventricular (LV) mass. Study Design: Sixteen patients with self-induced starvation were matched with 16 women of normal weight and 16 constitutionally thin women (body mass index <20 kg/m2). Starving patients and control patients underwent an electrocardiogram and echocardiogram. QT intervals were measured from surface electrocardiograms and QT dispersion was defined as the difference between maximum QT and minimum QT

occurring in any of the 12 leads.
Results: LV-chamber mass was significantly less in women with AN than in thin and normal-weight women. QT dispersion was significantly greater in AN than in the thin and control groups (QT dispersion: 50 +/-14 vs 34 +/- 9 and 37 +/-11 ms, P <.001; QT interval dispersion corrected for heart rate: 49+12 vs 34 +/- 9 and 36 +/- 7 ms, P <.01, respectively). A significant relation between QT dispersion and LV-mass index (r = -0.726, P <.01), and between QTc dispersion and LV mass index (r = -0.693, P < 0.01) were found only in the patients with AN.
Conclusion: Starving patients show an increased QT dispersion related to reduced LV mass. This result could represent a useful indicator of arrhythmic risk and sudden death in AN.

2. Is decreased body mass index associated with a decreased hemodynamic workload in patients with anorexia nervosa?

Search terms: body mass index, hemodynamic workload, anorexia nervosa
Indexing sytems: Pub Med, EBSCOhost, eJournals

Abstract:

C. Romano, et al. Reduced hemodynamic load and cardiac hypotrophy in patients with anorexia nervosa. American Journal of Clinical Nutrition 2003; 77: 308-12.

Background: Anorexia nervosa is associated with lower left ventricular mass (LVM) andsystolic dysfunction. Whether these abnormalities reflect chronic protein-energy malnutrition or are primarily related to lower cardiac workload is unclear.
Objective: The objective of the study was to verify whether low LVM in anorexia nervosa is explained by low hemodynamic load.
Design: Ninety-one women with anorexia nervosa [*X*-?SD age: 20.5 ?6.1 y; body mass index (in kg/m2): 15.6 ?1.9; group 1] and 62 normal-weight female control subjects (age: 22.5 ?5.5 y; body mass index: 20.9 ?1.2; group 2) underwent Doppler echocardiography. LVM was evaluated as the percentage predicted by body height, sex, and stroke work (systolic blood pressure _ stroke volume).
Results: The left ventricular chamber dimension was smaller and the chamber walls were thinner in group 1 than in group 2, which resulted in significantly lower LVM and LVM indexes (P < 0.0001). Ejection fraction, heart rate, stroke volume, and cardiac output were significantly (P < 0.007) lower in group 1, but peripheral resistance was substantially higher (P < 0.0001). The deviation of LVM from predicted values was lower and the proportion of subjects with inadequate LVM was significantly higher in group 1 than in group 2 (P < 0.0001). This difference was attenuated after adjustment for body weight and heart rate. There were no relations between LVM and laboratory tests in group 1.
Conclusions: Anorexia nervosa is a condition of low hemodynamic load that leads to low LVM. Even with adjustment for stroke work, however, LVM is lower than would be predicted by height, because of the effect of body weight reduction (ie, wasting of lean body mass). Am J din Nutr 2003;77:308-12.

EBC Step 3: Critically appraise the evidence for quality.
I appraised the article by C. Romano, et al. Reduced hemodynamic load and cardiac hypotrophy in patients with anorexia nervosa. American Journal of Clinical Nutrition 2003;77:308-12.

Benefits:

- The study had a large sample size
- The subjects were clinically defined as being anorexic or not by medical doctors
- The control and the experimental groups were defined
- Scientific methods were used such as echocardiography and blood test to gather data. This provides hard evidence for the study.
- The results of the study will be helpful in therapy and convincing the anorexic patients against the danger of the diseases.

Drawbacks

- The subjects were collected consecutively and therefore were not randomized
- Age was a limiting factor since the subjects were done on young anorexics only
- Sex was a limiting factor since the subjects were all females
- The study is not practical in the clinical setting because of the methodical
- inclusions of blood tests and echocardiography
- The study could not be generalized to non-anorexia nervosa conditions of decreased body mass index as seen in obese people who went under drastic weight loss (gastric by-pass, liposuction, etc)

EBC Step 4: Use critical thinking to integrate critical appraisal with clinical expertise, the patient's unique health care status, values, and circumstances, and apply the outcome of this integration to the patient's case.

The benefits of this study outweigh the flaws, but as a chiropractor in practice, duplicating the study in a clinical setting will not be practical. The study merely answers the relationship of low body mass index of patients with anorexia nervosa to the decreased hemodynamic workload. Treating anorexia nervosa is outside the scope of the chiropractic practice. However, this is not to say that a chiropractor should not treat a person with anorexia nervosa. There are numerous benefits to a chiropractic treatment that will be very useful to the anorexic patient.

Anorexia nervosa is a complicated biological and psychological disorder. The conjunction of psychotherapy and biotherapy should be stressed in confronting the patient with anorexia nervosa. A chiropractic clinical approach to the effects of anorexia nervosa to the patient should involve co-management of the condition with the expert in the field such as the psychotherapist and the nutritionist who should be involved in the case. The chiropractor can take part by furthermore stressing the importance of proper nutritional regimen as already stressed by the other doctors involved. The chiropractor must be very careful in any adjustment to the anorexic patient. The chiropractor should be aware of the contraindications involved such as osteoporosis in the anorexic patient. A

high velocity and low amplitude thrust (maybe with a drop combination) can be administered should a non-activator technique be used. The chiropractor will not be able to reverse the decreased hemodynamic workload brought upon by the decreased body mass index of the anorexic patient, through chiropractic, but emotional support is one way of co-managing condition, alongside chiropractic adjustments to the secondary conditions brought upon by the complexity of anorexia nervosa.

EBC Step 5: Evaluate the effectiveness of your decision and look for ways to improve your methods.

Relative to the clinical and practical setting, one improvement that I will look for is to find a study that focuses more on the effects of chiropractic on people with anorexia nervosa and its complications such as decreased hemodynamic workload. There is little data focusing on this area because chiropractic is not the usual treatment of choice or method of co-management. As for the question I posted on the EBC step 1, a better way to provide evidence is to find more information or research regarding the effects of the decreased body mass index in anorexia nervosa to the hemodynamic workload. In addition, I can look at different areas and not just anorexia nervosa. Generalizing the body mass index effects to the hemodynamic workload is a better approach because not all people with a decreased body mass index have anorexia nervosa. These people might have been obese people who lost weight dramatically, and looking at the effect of the weight loss would be a way to generalize the relationship. In short, looking at a bigger body of evidence for the question posted and then obtaining an external validity would be a better method in confronting the specific question here.