



Bradycardia: Cardiovascular Consequence of Anorexia Nervosa

Iris Li



Abstract

Eating disorders are health conditions that can have serious impacts on one's physical health. They affect individuals across various age groups and genders and represent a significant health concern that should not be taken lightly. This paper focuses on one specific eating disorder, anorexia nervosa, which is often accompanied by medical complications resulting from malnutrition. Among complications, cardiovascular issues, particularly bradycardia, are common and potentially life-threatening. This paper will review the relationship between anorexia nervosa and bradycardia, explore the methods used for diagnosing bradycardia, and explore approaches to treatment in patients with eating disorders.

Introduction

Around 9% of the U.S. population, approximately 30 million Americans, will experience an eating disorder at some point in their lives [1]. Despite common myths that eating disorders are “not serious” or that “people don’t die from them,” eating disorders are far from trivial. In fact, every 52 minutes, someone in the United States passes away as a result of an eating disorder [2]. These statistics highlight the severe nature of eating disorders. Among the various types of eating disorders that individuals may develop, this paper will focus specifically on anorexia nervosa. This paper explores the relationship between anorexia nervosa and one of its complications, bradycardia, as well as the manifestation of bradycardia, its diagnosis, and treatment.

What is Anorexia Nervosa?

One of the most common types of eating disorders, anorexia nervosa is a condition often characterized by low body weight and a low Body Mass Index (BMI). Symptoms of anorexia nervosa may include rapid or significant weight loss over several weeks or months, a BMI below 18.5, fixation on calories, body dysmorphia, and excessive exercise. In cases where food restriction has caused malnutrition, additional symptoms may appear, such as hair loss, irregular or absent menstrual cycles in females, persistent feelings of cold, physical fatigue, and dizziness [3].

Anorexia nervosa can be classified into three main types. Restrictive anorexia is characterized primarily by severe calorie restriction. Binge-purge anorexia, which should not be confused with bulimia nervosa, involves periods of calorie restriction along with episodes of bingeing and purging. Atypical anorexia occurs in individuals who may not be underweight but still exhibit the behaviors and symptoms of anorexia. Regardless of the type, malnutrition from anorexia nervosa can lead to serious complications. One complication is with cardiovascular health. Cardiovascular health complications can range from slowed heart rate to heart failure [3].

What is Bradycardia?

Bradycardia is an arrhythmia in which the heart beats fewer than 60 times per minute (bpm). While a slower heart rate can be normal in healthy athletes, such as Olympians—a condition known as athletic heart syndrome—bradycardia in individuals with anorexia nervosa is not healthy, despite them exercising excessively. The heart is a vital organ, responsible for pumping oxygenated blood throughout the body. When the heart rate slows abnormally, it can be dangerous, leading to fatigue, dizziness, fainting, and other complications. In anorexia, bradycardia is often a result of malnutrition and weakened heart muscle, making it a serious cardiovascular concern that requires monitoring and management [4].

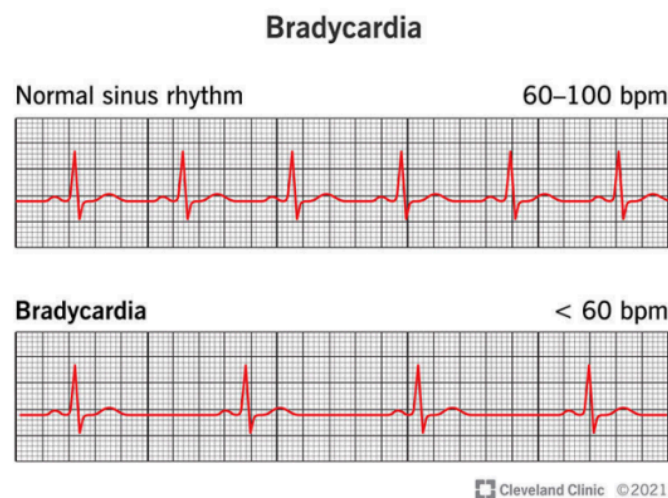
Manifestation of Bradycardia in Anorexia Nervosa

Bradycardia is common among individuals with anorexia nervosa, occurring in up to 95% of patients [5]. It can manifest in several ways. First, cachexia, or muscle wasting, often develops as a result of severe malnutrition. Because the body is deprived of adequate nutrients, it begins breaking down muscle tissue for energy, including the cardiac muscle. As the heart becomes smaller and weaker, it pumps more slowly to conserve energy. Additionally, malnutrition can lead to electrolyte imbalances due to insufficient intake of essential micronutrients. An imbalance of key minerals such as potassium, sodium, calcium, and magnesium weakens the heart and

disrupts its electrical signaling system, interfering with the normal rhythm of the heartbeat. Together, these physiological effects make bradycardia a significant complication of anorexia nervosa [6]

Diagnosis

There are several ways in which bradycardia can be diagnosed in an individual. Diagnosis often begins with a physical examination, during which a healthcare provider listens to the heart using a stethoscope, checks the pulse, and asks about symptoms such as dizziness or fainting. The primary diagnostic method is an electrocardiogram (EKG) test. During this test, a healthcare professional places small sticky patches with sensors on various parts of the chest. Wires connect the electrodes to a computer, allowing the EKG to record the heart's electrical activity. The data from the test are then analyzed by medical professionals to determine whether any abnormalities or heart conditions are present. Additional diagnostic methods may include laboratory tests, such as blood work to assess electrolyte levels and other indicators of heart health [4]. To differentiate athletic bradycardia from bradycardia caused by anorexia nervosa, healthcare providers may ask patients to stand up or walk briefly after laying down while monitoring their heart rate. In individuals with malnutrition, the heart rate typically becomes abnormally elevated with minimal activity, whereas in athletes, the heart rate does not significantly increase [5]. The image below shows a comparison between a normal heartbeat and bradycardia as displayed on an EKG



Treatment

In the context of anorexia, the treatment of bradycardia depends on its severity as well as other evaluations of the eating disorder to determine the most appropriate approach. Individuals with eating disorders who have a heart rate below 40 bpm or 50 bpm typically require intensive inpatient treatment for medical stabilization. During this stage, treatment focuses on nutritional rehabilitation, weight restoration, and addressing the underlying eating disorder. After inpatient care, patients usually continue working with a team outpatient to develop a long-term recovery and maintenance plan [5].

Conclusion

In conclusion, anorexia nervosa and bradycardia are serious medical conditions that require prompt and appropriate treatment. Bradycardia, characterized by an abnormally low heart rate,



often arises as a result of malnutrition in individuals with eating disorders such as anorexia nervosa. These conditions pose significant risks to heart health and overall well-being. By addressing them through proper medical care and not dismissing them as minor concerns, patients can achieve safer recovery outcomes and improved long-term health.



References

- [1] National Eating Disorders Association. (2025, September 15). Eating Disorder Statistics.
<https://www.nationaleatingdisorders.org/statistics/#general-eating-disorder-statistics>
- [2] Williamson, L. (2024, February 26). How eating disorders can damage the heart. American Heart Association.
<https://www.heart.org/en/news/2024/02/26/how-eating-disorders-can-damage-the-heart>
- [3] Cleveland Clinic. (2024, August 9). Eating disorders: Anorexia.
<https://my.clevelandclinic.org/health/diseases/9794-anorexia-nervosa>
- [4] Cleveland Clinic. (2022, June 23). Bradycardia: Symptoms, Causes, Treatments.
<https://my.clevelandclinic.org/health/diseases/17841-bradycardia>
- [5] Gibson, D. (2025, September 4). Bradycardia: The Most Common Complication of Eating Disorders. ACUTE. Center for Eating Disorders & Severe Malnutrition.
<https://www.acute.org/resources/bradycardia-eating-disorders>
- [6] Northwestern Medicine. (2025, May). Eating Disorders and Your Heart.
<https://www.nm.org/healthbeat/healthy-tips/anorexia-and-your-heart>