



# International Journal of Case Reports (ISSN:2572-8776)



## Celiac disease presenting as abnormal atrial rhythm resolving after gluten-free diet

Moshe Rav-Acha<sup>1,3</sup> MD, Eyal Shteyer<sup>2,3\*</sup> MD

<sup>1</sup>Cardiology, Shaare Zedek Hospital, Hebrew University, Jerusalem;

<sup>2</sup>Pediatric Gastroenterology, Shaare Zedek Hospital, Hebrew University, Jerusalem;

<sup>3</sup>Faculty of Medicine, Hebrew University of Jerusalem, Israel.

**Disclosure:** All of the authors have nothing to disclose.

**Funding:** this study was not supported by any grant.

### ABSTRACT

#### Introduction

We describe a case of a teenager who presented with palpitations and abnormal low atrial rhythm. Celiac Disease (CD) serology, sent due to low ferritin, was positive and gastroscopy confirmed CD diagnosis. Both palpitations and abnormal rhythm resolved after gluten-free diet with normalization of CD serology.

**Keywords:** celiac disease, arrhythmia, gluten-free diet

**Abbreviations:** Celiac Disease-CD; heart rate-HR; bpm-beat per minute;

#### \*Correspondence to Author:

Eyal Shteyer, MD

The Juliet Keidan Institute of Pediatric Gastroenterology, Pediatric Gastroenterology Institute, Shaare Zedek Medical Center, Jerusalem, Israel

#### How to cite this article:

Moshe Rav-Acha, Eyal Shteyer. Celiac disease presenting as abnormal atrial rhythm resolving after gluten-free diet. International Journal of Case Reports, 2021, 5:249.

 eSciPub  
eSciPub LLC, Houston, TX USA.  
Website: <http://escipub.com/>

A 16-year-old healthy teenager presented to cardiology clinic due to new onset palpitations. He had neither chest pain nor shortness of breath at rest or during regular exercise but did describe a decrease in exercise capacity. He denied alcohol, drug abuse, and family history of sudden cardiac death. His physical examination was normal. ECG revealed an abnormal low atrial or junctional rhythm (negative P waves in inferior ECG leads), with normal QRS configuration (**Figure 1A**). His exercise test was normal without ischemic ECG changes or arrhythmia up to heart rate (HR) of 200 bpm (beat per minute, 98% of target HR). A 24 hour 12-lead Holter revealed continuous abnormal low atrial rhythm with a mean ventricular rate of 110 bpm without other arrhythmias (**Figure 2B**). A month external loop recorder showed the same atrial rhythm corresponding to the patient palpitations. A trans-thoracic echo showed normal ventricular and valvular function and no pericardial effusion.

Blood test including complete blood count, electrolytes, Creatinine, liver enzymes, TSH, C-reactive protein, and Troponin-T were all within normal range. Blood ferritin was low (13.8ng/ml, normal range 22-32 ng/ml). Urine toxic screen was negative. Due to the low ferritin level, CD serology was done and showed tTG 213 U/ml (normal range 0-14 U/ml) and positive anti Endomysial antibody (1:40). This prompted gastroscopy which showed duodenitis and scalloping in the second part of the duodenum. Duodenal histology showed MARSCH 3 CD. Therefore, gluten-free diet was initiated. On clinic follow-up 6 months later, the patient described no further palpitations with normalization of his exercise capacity. ECG revealed a normal sinus rhythm (**figure 3B**) with continuous sinus rhythm at mean heart rate of 80 bpm on repeat 24-hour ECG Holter. Notably, CD serology normalized at that stage although blood ferritin was still low (15 ng/ml).



Figure 1: Initial abnormal low atrial or a junctional rhythm as seen by negative P waves in inferior leads of an initial ECG (A) with continuous abnormal atrial rhythm on 24-hour Holter monitor as seen by negative P in inferior lead II (B) prior to celiac disease diagnosis, with resumption of normal sinus rhythm as seen by positive P waves in inferior leads ECG (C) upon resolution of celiac disease symptoms and normalization of celiac blood serology.

## Discussion

During recent decade growing number of publications describe an association of various cardiovascular diseases with CD, including increased vascular thrombosis, cardiomyopathy, myocarditis, pericardial effusion, accelerated atherosclerosis, and rhythm disturbances [1-4]. Moreover, cardiovascular disease was suggested to be the leading cause of death of CD patients [3]. These studies were population-based studies that showed association of the cardiac abnormalities with CD. However, the current case report depicts a temporal improvement of abnormal atrial rhythm upon initiating gluten-free diet, suggesting the arrhythmia was due to CD. Accordingly, we suggest that CD should be tested in otherwise healthy children presenting with abnormal atrial rhythms.

## Conclusion

Although CD was previously shown to be associated with various rhythm abnormalities only few suggested them to result directly from CD. In the unusual case we present abnormal atrial rhythm leading to CD diagnosis and resolving with gluten-free diet, suggesting direct relation to CD.

## References

- [1] Hidalgo DF, Boonpheng B, Nasr L, et al. Celiac Disease and Risk of Atrial Fibrillation: A Meta-analysis and Systematic Review. *Cureus* 2020; 12(2):e6997.
- [2] Ciaccio EJ, Lewis SK, Bhagat G, et al. Coeliac disease and the videocapsule: what have we learned till now. *Ann Transl Med* 2017;5(9):197.
- [3] Emilsson L, Smith JG, West J, et al. Increased risk of atrial fibrillation in patients with coeliac disease: a nationwide cohort study. *Eur Heart J* 2011;32(19):2430-7.
- [4] Efe TH, Ertem AG, Coskun Y, et al. Atrial Electromechanical Properties in Coeliac Disease. *Heart Lung Circ* 2016;25(2):160-5.

