Journal of
Cardio - Thoracic Medicine

http://jctm.mums.ac.ir

The Effects of Pantoprazole on the Treatment of Palpitation in Patients with Gastro esophageal Reflux Disease (GERD): A Case Series

Majid Jalalyazdi[1]*, Azadeh Mahmoudi Gharaee[2]

[1] *Cardiologist, Emam Reza Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*
[2] *Resident of Emergency Medicine, Emam Reza Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*

ARTICLE INFO

Article type:
Original Article

Article history:
Received: 27 Dec 2014
Revised: 15 March 2015
Accepted: 30 March 2015

Keywords:
Gastro Esophageal Reflux Disease
Palpitation
Pantoprazole

ABSTRACT

Introduction: Atrial arrhythmia is a common complication in patients with gastro esophageal reflux disease (GERD). The treatment of palpitation is relatively problematic in these patients, especially if there is not enough evidence of cardiovascular or systemic diseases. The esophagus is in close proximity to the left atrium posterior wall. Hypothetically, locally released cytokines from esophageal injuries could stimulate the left atrium and produce premature atrial contractions. In this study we aimed to evaluate the effects of pantoprazole on palpitation in patients with reflux palpitation.

Materials and Methods: This study was conducted on patients presented with palpitation and symptom of GERD from January 2014 to June 2014 in the General Clinic of Imam Reza Hospital. In order to establish the precise effects of pantoprazole on the treatment of palpitation in GERD patients, pantoprazole was added to the beta-blockers during treatment, and the patients were followed-up for one month.

Results: In total, 10 patients within the age range of 21-35 years with a history of palpitation were enrolled in this study. The mean age of the subjects was 25 years, and the study group consisted of 6 men and 4 women**.** After a one-month follow-up, a significant reduction was observed in the palpitation of these patients (P<0.001).

Conclusion: According to the results of this study, addition of pantoprazole to the treatment of palpitation was effective in patients with a history of GERD. Therefore, pantoprazole could be used as an effective adjunctive treatment for palpitation.

►*Please cite this paper as:*
Jalalyazdi M, Mahmoudi gharaee A. The Effects of Pantoprazole on the Treatment of Palpitation in Patients with Gastro esophageal Reflux Disease (GERD): A Case Series. J Cardiothorac Med. 2015; 3(2):309-312.

Introduction

Gastro esophageal reflux disease (GERD) and atrial arrhythmia are two prevalent disorders; GERD is known to occur in 7% of the population on a daily basis, 14% on a weekly basis and 44% at least once a month. Cardiac arrhythmia is also a prevalent disease with a common presentation of palpitations in general practice, which is a major reason for cardiology referrals associated with marked disability (1-5).

The treatment of palpitation is relatively complicated due to its etiological variety; for instance, anxiety, insomnia and excessive caffeine use are among the major risk factors for palpitation. However, many patients may appear normal in echocardiography and laboratory tests. According to several studies, esophageal reflux might play an etiological role (6-7).

In this study, we evaluated patients with palpitation refractory to treatment with beta-blockers by adding pantoprazole to their

**Corresponding author:* Majid Jalalyazdi, *Emam Reza Hospital*, Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran. Tel: 09155067246; Fax: 05138022748; E-mail: Jalalyazdim@mums.ac.ir

prescription.

Materials and Methods

This study was conducted on patients presented with palpitation in the General Clinic of Imam Reza Hospital from January 2014 to June 2014.

These patients had been receiving treatment with beta-blockers such as Metoprolol and Propranolol; however, they had complaints of frequent palpitation. Holter monitoring of the cardiac rhythm for 24 hours revealed brief episodes of atrial fibrillation (no more than 5 seconds) and occasional premature atrial contractions.

After a detailed survey of the patients' medical history, symptoms of GERD were detected. Therefore, pantoprazole 40 mg BID was added to the beta-blocker treatment, and the patients were followed-up for one month. Afterwards, all the patients were enquired about palpitation, and repeated Holter monitoring was performed as well.

Statistical Analysis

All Data of the patients and Holter monitoring were recorded in Sigmaplot software version 12. In addition, mean and standard deviation of data were calculated, and paired t-test was used to compare the patients before and after pantoprazole therapy.

Results

In total, 10 patients (6 men and 4 women) within the age range of 21-35 years (mean=25) with a history of palpitation were enrolled in this study. Physical examinations, laboratory tests and thyroid function tests were normal in all the patients. The subjects were informed on the adverse effects of excessive caffeine use and other illicit drugs in advance. In addition, Echocardiography was normal in all the studied patients.

The patients had been receiving treatment with beta-blockers such as Metoprolol and Propranolol; nevertheless, they had complaints of frequent palpitation. Holter monitoring of the cardiac rhythm for 24 hours revealed multiple brief episodes of atrial fibrillation (no more than 5 seconds) and occasional premature atrial contractions.

After a detailed survey of the patients' medical history, symptoms of GERD were detected; therefore, pantoprazole was added to the beta-blocker treatment. After one-month of follow-up, all the patients reported a significant improvement in their palpitation, and repeated Holter monitoring revealed no episodes of atrial fibrillation or rare premature atrial contractions. The frequency of premature atrial contraction in Holter monitoring before treatment was 417.80 (58.99) and it reduced to 50.40 (19.82) per day after the treatment ($P<0.001$). Moreover, the frequency of atrial fibrillation rhythm episodes in Holter monitoring before treatment was 2.50 (0.70) and it declined to 0.1 (0.31) per day after the treatment ($P<0.001$). This statistic analysis indicated that pantoprazole was effective in the treatment of palpitation in GERD patient.

Discussion

The present study aimed to evaluate the effects of pantoprazole on the reduction of atrial fibrillation episodes and treatment of palpitation in GERD patients. These therapeutic effects are indicative of a direct correlation between the incidence of GERD and atrial arrhythmia.

In all the studied patients, the frequency of the reflux and arrhythmic events, as well as the associated symptoms, decreased subjectively after pantoprazole therapy, which was documented by repeated Holter monitoring of the cardiac rhythm (8-12). Furthermore, a significant reduction was observed in palpitation episodes after pantoprazole treatment.

A study conducted in 2003 evaluated the effects of proton-pump inhibitor (PPI) therapy on the symptoms of GERD in patients with paroxysmal (lone) atrial fibrillation (PAF), investigating whether this therapy could lead to a reduction in the associated symptoms of paroxysmal atrial fibrillation. The study was performed on 18 patients with reflux esophagitis (documented by upper endoscopic examination) and evidence of PAF (at least 2 episodes of atrial fibrillation alternating with sinus rhythm documented by electrocardiography during 3 months before upper endoscopy). After 2 months of PPI therapy, reduction or disappearance of at least one PAF-related symptom occurred in 14 patients (78%). Moreover, antiarrhythmic medications were discontinued in 5 cases (28%) (8). In the current study, the frequency of atrial fibrillation episodes (PA) was 2.50 (0.70) before treatment, which declined to 0.1 (0.31) per day after the treatment ($P<0.001$).

Another retrospective study was conducted in this regard using a database containing all the health care encounters of patients receiving ambulatory care in the National Capital Area Military Health Care System from January 1st 2001 to October 28th 2007 (3).

The study population consisted of all the patients of at least 18 years of age (N=163,627), out of which 7992 cases (5%) were found to have atrial fibrillation, and 47845 cases (29%) had GERD. The presence of GERD was observed to increase the relative risk (RR) of atrial fibrillation

diagnosis (RR: 1.39, 95%, Confidence Interval [CI]: 1.33-1.45). In sensitivity analyses, this association persisted after adjustment for cardiovascular risk factors (RR: 1.19, 95%, CI: 1.13-1.25), and the diagnoses were found to be significantly correlated with atrial fibrillation (RR: 1.08, 95%, CI: 1.02-1.13) (3).

Furthermore, increased vagal tone, which might precipitate the onset of tachycardia, has been associated with the postprandial state, cough, nausea and ingestion of cold drinks. In patients who experience both arrhythmia and acid reflux, it is possible that the same event, such as the postprandial state, triggers simultaneous symptoms via the parasympathetic pathway (2).

In a prospective matched case-control study on patients with atrial fibrillation (AF), GERD and/or irritable bowel syndrome (IBS) who underwent radiofrequency catheter ablation (RFA) for AF in two centers in North America, it was observed that the majority of AF patients with GERD and/or IBS had developed AF and a positive vagal response during RFA (4).

In a recent cohort study, GERD was independently associated with an increased risk of AF (hazard ratio, 1.31; 95%, CI: 1.06–1.61, P=0.013) (5)

The precise mechanism of the potential relationship between acid reflux and atrial arrhythmia has not been previously investigated. Apparently, the main mechanism of acid reflux in GERD patients involves an increasing frequency of transient lower esophageal sphincter relaxation, which results from a vagally mediated reflex with sensory signals originating from the esophagus and gastric cardia (12).

In the present study, both vagal and sympathetic factors were presumed to contribute to the onset of arrhythmia in patients with cardiac arrhythmia and cardiovascular diseases. However, in the absence of cardiovascular diseases, vagal factors were more likely to be responsible for the onset of arrhythmia (13).

Conclusion

Our case series is suggestive of a potential relationship between atrial arrhythmia and acid reflux events, which are substantiated by the 24-hour Holter monitoring. Until further prospective where large-scale studies confirm such association, clinicians need to inquire about this constellation of cardiac and esophageal symptoms and take them into consideration while evaluating a patient with palpitations and symptomatic GERD.

Moreover, patients with documentation of both atrial arrhythmia and reflux require a trial of aggressive acid suppressive therapy. In this regard, future studies need to assess whether maximal acid suppression is able to improve atrial arrhythmia.

Conflict of Interest

The authors declare no conflict of interest.

References

1. Roman C, Bruley des Varannes S, Muresan L, Picos A, Dumitrascu DL. Atrial fibrillation in patients with gastroesophageal reflux disease: a comprehensive review. World J Gastroenterol. 2014; 20:9592-9.
2. Gerson LB, Friday K, Triadafilopoulos G. Potential relationship between gastroesophageal reflux disease and atrial arrhythmias. J Clin Gastroenterol. 2006;40:828-32.
3. Kunz JS, Hemann B, Edwin Atwood J, Jackson J, Wu T, Hamm C. Is there a link between gastroesophageal reflux disease and atrial fibrillation?. ClinCardiol. 2009; 32:584-7.
4. Reddy YM, Singh D, Nagarajan D, Pillarisetti J, Biria M, Boolani H, et al. Atrial fibrillation ablation in patients with gastroesophageal reflux disease or irritable bowel syndrome-the heart to gut connection!. J Interv Card Electrophysiol. 2013; 37:259-65.
5. Huang CC, Chan WL, Luo JC, Chen YC, Chen TJ, Chung CM, et al. Gastroesophageal Reflux Disease and Atrial Fibrillation: A Nationwide Population-BasedStudy. PLoS One.2012; 7: e47575
6. Nakamura H, Nakaji G, Shimazu H, Yasuda S, Odashiro K, Maruyama T, et al. Case of paroxysmal atrial fibrillation improved after the administration of proton pump inhibitor for associated reflux esophagitis. Fukuoka Igaku Zasshi. 2007; 98: 270–276.
7. Stollberger C, Finsterer J. Treatment of esophagitis/vagitisinduced paroxysmal atrial fibrillation by proton-pump inhibitors. J Gastroenterol. 2003; 38:1109.
8. Weigl M, Gschwantler M, Gatterer E, Finsterer J, Stollberger C. Reflux esophagitis in the pathogenesis of paroxysmal atrial fibrillation: results of a pilot study. South Med J. 2003; 96: 1128–32.
9. Bunch TJ, Packer DL, Jahangir A, Locke GR, Talley NJ, Gersh BJ, et al. Long-term risk of atrial fibrillation with symptomatic gastroesophageal reflux disease and esophagitis. Am J Cardiol. 2008; 102:1207–11.
10. Floria M, Drug VL. Atrial fibrillation and gastroesophageal reflux disease: From the cardiologist perspective. World J Gastroenterol. 2015;21:3154-6.
11. Lioni L, Letsas KP, Efremidis M, Vlachos K, Karlis D, Asvestas D, et al. Gastroesophageal reflux disease is a predictor of atrial fibrillation recurrence following left atrial ablation. Int J Cardiol. 2015; 183:211-3.
12. Schauerte P, Scherlag BJ, Pitha J, Scherlag MA, Reynolds D, Lazzara R, et al. Catheter ablation of cardiac autonomic nerves for prevention of vagal atrial fibrillation. Circulation. 2000;102:74–80.

13. Chen PS, Tan AY. Autonomic nerve activity and atrial fibrillation. Heart Rhythm. 2007;4(3 Suppl):61–4