

ed significant improvement in pulmonary arterial pressure after the operation (5). We thought there is a need to the extensive studies for detailed evaluation of the subject.

**Eda Şimşek, Ziya Şimşek\*, M. Hakan Taş\*, Cüneyt Kucur, Ersin Günay<sup>1</sup>, Harun Üçüncü\*\***

**Clinic of Ear, Nose and Throat, Erzurum Region Education and Research Hospital; Erzurum-Turkey  
Departments of \*Cardiology and \*\*Ear, Nose and Throat, Faculty of Medicine, Atatürk University; Erzurum-Turkey**

**<sup>1</sup>Department of Thoracic Disease, Faculty of Medicine, Afyon Kocatepe University; Afyon-Turkey**

## References

1. Şimşek E, Şimşek Z, Taş M H, Kucur C, Günay E, Üçüncü H. Evaluation of right ventricular functions in patients with nasal polyposis: an observational study. *Anadolu Kardiyol Derg* 2013; 13: 251-6.
2. Koç C. Nazal Polip. In: Koç C (Ed.). *Kulak Burun Boğaz Hastalıkları ve Baş-Boyun Cerrahisi*. Ankara, Güneş Kitabevi, 2004.p.609-24.
3. Yorulmaz A, Erpek G. Nasal polyposis and hypertension, K.B.B. ve Baş Boyun Cerrahisi Dergisi 1996; 3: 235-59.
4. Yöndemli F, Kadakal R, Ünlü H. Septum deviasyonlu hastalarda postoperatif uygulanan bilateral anterior burun tamponunun kan gazlarına etkisi. *Türk ORL Arşivi* 1991; 29: 106-10.
5. Fidan V, Aksakal E. Effects of endoscopic sinus surgery on pulmonary artery pressure in patients with extensive nasal polyposis. *J Craniofac Surg* 2011; 22: 592-3. [CrossRef]

**Address for Correspondence:** Dr. Eda Şimşek,

Osman Gazi Mah. Gökdemir Sitesi A Blok, Kat: 6 Daire No: 29 25100; Erzurum-Türkiye  
Phone: +90 505 884 15 96

Fax: +90 442 316 63 40

E-mail: hekimeda@hotmail.com

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## Does bilirubin level have an effect on cardiac parameters?

To the Editor,

We read the article "The effect of Gilbert's syndrome on the dispersions of QT interval and P-wave" written by Cüre et al. (1) published in *The Anatolian Journal of Cardiology* with great interest.

The authors aimed to investigate the effects of bilirubin levels on noninvasive electrocardiographic parameters. They concluded that increased bilirubin levels are associated with decrease in HR, Pd and QTd in Gilbert's syndrome (1). Thanks to the authors for their contribution.

We know that P wave and QT dispersion are used for the prediction of atrial and ventricular arrhythmias (2). Increased P wave dispersion gives us information about intraatrial and interatrial conduction delaying (3). Several studies have shown that an increased QT dispersion and/or QTc dispersion could be a marker for arrhythmic events, myocardial infarction, and sudden death.

P-wave and P-wave dispersion measurement of distances must be very sensitive. While some centers can measure automatically measurements are usually made manually. Therefore, analysis of intraobserver and interobserver differences are important. Increase of P wave

duration resulting from the increase of interatrial and intraatrial conduction time due to atrial expansion causes a predisposition for arrhythmias. In a study, a mathematical formula has been developed associated with left atrial expansion and P wave duration as left atrial diameter (cm)= $2.47 \pm 0.29 \times p$  wave duration (mm) (4). So P and QT measurements would be supported by echocardiographic measurements of the left atrium and left ventricle.

It is also important to measure the QT duration and QT dispersion but the calculated QT corrected according to the heart rate is able to provide more accurate information. The authors should pay attention to these issues.

The cardioprotective effect of bilirubin is well known but the relationship between cardioprotection and bilirubin levels are unknown (5). It would be useful evaluating the correlation between bilirubin levels and Pd, HR and QTd in this study.

**Cengiz Öztürk, Şevket Balta**

**Department of Cardiology, Eskişehir Military Hospital; Eskişehir-Turkey**

## References

1. Cüre E, Yüce S, Çiçek Y, Cüre MC. The effect of Gilbert's syndrome on the dispersions of QT interval and P-wave: an observational study. *Anadolu Kardiyol Derg* 2013; 13: 559-65.
2. Enar S, Özkan AA, Pehlivanoglu S, Enar R. The relationship between QT dispersion and left and right ventricular diastolic dysfunction in patients with myocardial infarction. *Anadolu Kardiyol Derg* 2001; 1: 266-71.
3. Amasyalı B, Köse S, Aytemir K, Kılıç A, Turhan H, Çelik T, et al. P wave dispersion predicts recurrence of paroxysmal atrial fibrillation in patients with atrioventricular nodal reentrant tachycardia treated with radiofrequency catheter ablation. *Ann Noninvasive Electrocardiol* 2006; 11: 263-70. [CrossRef]
4. Ariyarahaj V, Mercado K, Apiyasawat S, Puri P, Spodick DH. Correlation of left atrial size with p-wave duration in interatrial block. *Chest* 2005; 128: 2615-8. [CrossRef]
5. Bulmer AC, Blanchfield JT, Toth I, Fassett RG, Coombes JS. Improved resistance to serum oxidation in Gilbert's syndrome: a mechanism for cardiovascular protection. *Atherosclerosis* 2008; 199: 390-6. [CrossRef]

**Address for Correspondence:** Dr. Cengiz Öztürk,

Eskişehir Askeri Hastanesi, Kardiyoloji Kliniği; Eskişehir-Türkiye  
Phone: +90 222 220 45 30

Fax: +90 222 230 34 33

E-mail: drcengizozturk@yahoo.com.tr

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## Author's Reply

To the Editor,

We thank Authors for the interest they have shown in our article published in *The Anatolian Journal of Cardiology* (1).

Firstly, all electrocardiographic measurements were performed by a cardiologist and an internist who were not aware of the diagnosis of the patients. Clearly, the measured values of the QT interval were based on the shape of the descending part of the T wave. T wave offset determined by manual method is very unreliable. Unfortunately, available automatic methods have not been shown to have any advantage (2). In our study, echocardiography (echo) was not performed in the patients. So we can not make a comparison between P wave dispersion (Pd) and QT dispersion (QTd) with echo findings. In fact, echo findings might have enriched the study. Our study was performed as a pilot study.

Secondly, several studies failed to find correlation between heart rate and the dispersion of ventricular recovery times measured with QTd. The precise relation between the heart rate and the dispersion of recovery times is still an unresolved issue. However, QTd measured in the standard 12-lead ECG is not based on (and thus should not be corrected for) the heart period in the same way as the QT interval (2). Also, a previous study showed that QTd remains unchanged during atrial pacing at heart rates up to 120 beats/min in individuals without structural heart disease and in patients with a history of sustained ventricular tachycardia (3). In our study, corrected QTd was not calculated since the previous studies have shown that rate correction of parameters of repolarization dispersion is probably unnecessary and may even distort the values and predictive usefulness of QTd.

Thirdly, in the current study, correlation analysis was not performed. According to the author's suggestion, Pearson correlation analysis was performed for indirect (I) bilirubin (B). IB had a negative correlation with QTd ( $r^2=0.047$ ,  $p=0.003$ ) and Pd ( $r^2=0.090$ ,  $p=0.001$ ), but had no correlation with heart rate. B may decrease the risk of arrhythmias with unknown mechanism. However, the mechanism is still not fully understood.

B is a well-known antioxidant. Small dense low density lipoprotein and oxidative stress markers have been found to be low in patients with Gilbert's syndrome (GS). Additionally, in a previous study, it has been reported that B decreases the release of large and active thrombocytes to peripheral blood stream by decreasing proinflammatory cytokines so may prevent arterial and venous occlusive cardiac diseases such as myocardial infarction (4). Also, in another study, high B level has been found to be negatively correlated with epicardial adipose tissue thickness (EAT) and elevated adiponectin levels which has anti-atherosclerotic effect (5). Decreased EAT may lead to lower release of proinflammatory cytokines and lower atherosclerotic heart disease. Another study has displayed the anti-atherosclerotic effect of mild elevation of B due to lower pulse wave velocity in GS patients (6). There is a need for further studies investigating the mechanisms of cardioprotective effects of B.

We, sincerely thank the authors for their contribution to our work.

**Erkan Cüre**

**Department of Internal Medicine, Faculty of Medicine, Recep Tayyip Erdoğan University; Rize-Turkey**

## References

1. Cüre E, Yüce S, Çiçek Y, Cüre MC. The effect of Gilbert's syndrome on the dispersions of QT interval and P-wave: an observational study. *Anadolu Kardiyol Derg* 2013; 13: 559-65.
2. Malik M, Batchvarov VN. Measurement, interpretation and clinical potential of QT dispersion. *J Am Coll Cardiol* 2000; 36: 1749-66. [\[CrossRef\]](#)
3. Vassilikos VP, Karagounis LA, Psychogios A, Maounis T, Iakovou J, Manolis AS, et al. Correction for heart rate is not necessary for QT dispersion in individuals without structural heart disease and patients with ventricular tachycardia. *Ann Noninvasive Electrocardiol* 2002; 7: 47-52. [\[CrossRef\]](#)
4. Cüre MC, Cüre E, Kirbaş A, Çiçek AC, Yüce S. The effects of Gilbert's syndrome on the mean platelet volume and other hematological parameters. *Blood Coagul Fibrinolysis* 2013; 24: 484-8. [\[CrossRef\]](#)
5. Cüre E, Çiçek Y, Cumhuriyet Cüre M, Yüce S, Kirbaş A, Yılmaz A. The evaluation of relationship between adiponectin levels and epicardial adipose tissue thickness with low cardiac risk in Gilbert's syndrome: an observational study. *Anadolu Kardiyol Derg* 2013; 13: 791-6.
6. Arslan E, Çakar M, Şarlak H, Kılınc A, Demirbaş S, Ay SA, et al. Investigation of the aortic pulse wave velocity in patients with Gilbert's syndrome. *Clin Exp Hypertens* 2013; 35: 512-5. [\[CrossRef\]](#)

**Address for Correspondence:** Dr. Erkan Cüre,

Recep Tayyip Erdoğan Üniversitesi Tıp Fakültesi, İç Hastalıkları Anabilim Dalı, Rize-Türkiye

Phone: +90 464 213 04 91

E-mail: erkancure@yahoo.com

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## Real-time three dimensional transesophageal echocardiography has an incremental value in delineation of paravalvular leakages

To the Editor,

We have read with great interest the article entitled "The relation between location of paravalvular leakage and time to reoperation after mitral valve replacement: an observational study" published in *Anadolu Kardiyol Derg* 2013 Sep 10. (1). The authors aimed to evaluate any potential link between location of paravalvular leakage (PVL) and time to reoperation in patients undergoing redo mitral valve surgery. Thanks to the authors for their contribution of the present study. On the other hand, we want to make essential criticisms about this study from different aspects.

First of all, there is major concern regarding the methodology of the study. The study group was divided into 2 groups; Group 1 (Leaflet) and Group 2 (Commissural). This classification is vague and to the best of our knowledge this has not been described and reported in the literature previously. Recently, most authors (both cardiologists and cardiovascular surgeons) have used clock-wise format to describe the localizations of PVLs (2-4). It would have been much better if the authors had taken into consideration the terminology of PVL localizations in an understandable manner.

In discussion and conclusion sections, the authors concluded that echocardiographic evaluation should include location of the paravalvular leakage during follow-up of patients with PVL after mitral valve replacement. However, due to methodology of the study only transthoracic echocardiography (TTE) was performed for assessment of PVLs preoperatively and during follow-up and transesophageal echocardiography (TEE) was only performed at the end of the surgery for assessment of residual PVL (TEE was not performed neither preoperatively nor during the follow-up). TTE is certainly the initial choice of evaluation of prosthetic valves and complications but is unable to delineate localization of PVLs. Use of both 2D TEE and particularly real time three dimensional transesophageal echocardiography (RT-3D TEE) is mandatory for defining location and size of the paravalvular leakage during follow-up. Recently, RT-3D TEE has been introduced into clinical practice which has permitted assessment of PVLs precisely by 'en face view' from atrial (surgical) side of view (4, 5). Since the authors did not perform any TEE examination during follow-up of PVLs which may stand for a major limitation, it causes a conflict with the authors' conclusions. Furthermore, the authors did not consider this as a major limitation of the study.

Another noteworthy issue is the mortality rates for reoperation in Group 2 (Commissural PVL) which is reported as 0%. In current literature the mortality rates for reoperation of paravalvular leaks is much higher