the pump with aorto-bicaval cannulation. After the aortotomy, a pannus-organized thrombus was seen on the mechanical valve. A Medtronic–Pivot supra-annular mechanical valve (number 22) was implanted with individual pleated sutures instead of an old valve. The postoperative clinical course was uneventful. The patient, whose operation was uneventful, was discharged on the 4th postoperative day with the administration of warfarin.

Valve thrombosis and systemic embolism are lethal complications after the use of mechanical heart valves, and to prevent these, anticoagulation therapy is necessary and vital; however, it can also cause fatal bleeding.

Thromboembolism and bleeding with the use of anticoagulants account for 75% of all mechanical valve complications. These complications most frequently occur during the first 6 months after surgery (1). A prosthetic aortic valve is associated with much better survival rates without embolic episodes than a mitral valve (2).

In their study, Andersen et al. (2) reported that after 10 years, there was a 41% incidence of thromboembolism and 17% mortality in 43 patients who discontinued anticoagulation mechanical aortic valve replacement and were followed for a mean period of 7.2 years without anticoagulation.

In the literature, there are some cases without anticoagulation for over 30 years without significant embolic events; such cases have been reviewed in the study by Salmane et al. (3). They have also reported on the longest survey of 37 years (3). Aman (4) has reported another case that has survived for 33 years without anticoagulation.

How these valves were protected for so long remains unknown. Gül et al. (5) first demonstrated a genetic mutation in the coagulation cascade, which can explain long-term survival without anticoagulation.

Although the use of warfarin is an absolute requirement in the current treatment after mechanical valve implantation, the patient has been able to live for 31 years without using warfarin. The use of acetylsalicylic acid may have contributed to the favorable outcome in our patient.

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Issues related to reliability of HRV analysis and effect of spontaneous saliva swallowing on HRV

To the Editor,

The aim of this letter is to emphasize some of the most important factors that may affect the reliability of heart rate variability (HRV) analysis and to share the initial findings of our recent study on the effects of spontaneous saliva swallowing on HRV and the reliability of HRV analysis.

The reliability of HRV analysis is controversial (1). Despite this, more than 28,000 papers related to HRV have been published in SCI. Some of these have been written on the methodology and usage fields of HRV analyses, while some have been examined possible clinical applications. Comprehensive studies have shown that diminished HRV causes mortality and morbidity, and these studies have increased the clinical importance of HRV analysis. However, a significant number of studies have not considered the factors that could affect the reliability of their studies.

It has been shown that short-term HRV changes with many factors such as respiratory parameters, speech, prandial state, surrounding sounds, postural stress or physical activities, and emotional state. The reliability of HRV analysis can be increased by various measures. Signal recording should be performed in a quiet and calm environment in the resting position, and the subjects should not be speaking. Records should be taken 3–4 h after the last meal of the subjects. It will be useful to ensure that subjects do not breathe quickly or slowly during recording; if possible, paced breathing can be used.

During our previous studies, we have observed that HRV mostly follows respiratory movements with a small phase difference (2, 3). However, in some signal regions on the taco-

gram, we encountered sudden changes such as tachycardia that do not conform to this general finding. After realizing that these changes are caused by swallowing, we began to investigate the effects of swallowing on HRV. We came across only a few studies on the effects of swallowing on HRV, most of which were case studies. Recently, it has been reported that voluntary swallowing changes some HRV parameters (stdRRI, LF, and HF power) significantly even in healthy people (4) and effortful swallowing increases LF power and the LF/HF ratio (5).

In our recent research, we have seen that spontaneous saliva swallowing changes some short-term HRV parameters significantly in even healthy people. Our study has also shown that the saliva swallowing rate can vary greatly from person to person (0.4–2.2 swallows/min). Using in-class correlation analysis, we have also shown that spontaneous saliva swallowing reduces the reliability of HRV analysis.

Through detailed research, we have found only two studies in the literature have excluded the signal region affected by swallowing from their analysis. Therefore, it can be said that the effect of swallowing on HRV analysis has been largely ignored in the literature. In our opinion, swallowing-affected signal parts should not be included in HRV analysis. Alternatively, a signal processing method for elimination of the effect of swallowing on HRV analysis can be used.

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