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## Intermittent fasting and laboratory findings in patients with prosthetic valves

### *Protez kapaklı hastalarda aralıklı açlık ve laboratuvar bulguları*

Prosthetic valve thrombosis (PVT) is an uncommon, but dreadful complication of valve replacement, far more frequently associated with mechanical prosthetic valves. During the lunar month of Ramadan, the majority of adult practicing Muslims refrain from eating, drinking, and sexual intercourse during the daylight hours (from dawn to sunset) throughout the lunar month. In summer time, this period of abstinence may extend for as long as 14 hours; and in quite hot weather (1). The inevitable ensuing dehydration may portend a particular risk of PVT in patients with mechanical prosthetic valves. We explored whether day-time fasting during the month of Ramadan reduces the efficacy of oral anticoagulation in patients with mitral mechanical prosthetic valves.

Prospectively, we enrolled 70 consecutive patients, who underwent prior surgical mitral valve replacement for symptomatic severe mitral regurgitation in all patients, with or without mitral stenosis. All patients received a mechanical bileaflet prosthesis; either St. Jude prosthesis (St. Jude Medical Inc, USA), or CarboMedics valve (CarboMedics Inc, USA). All patients had been prescribed warfarin sodium at discharge; the dose was subsequently adjusted with the aim to keep the international normalized ratio (INR) between 2.5 and 3. All patients fasted for 30 days during the calendar month of Ramadan, with complete abstinence from food and fluids continuously for at least 15 hours of daylight, at which time the local temperature averaged 38° Celsius. Patients underwent lab assessment of INR, serum sodium and potassium, at day 21 of fasting; all were repeated one month later in the non-fasting state. Clinical follow-up was performed at day 21 of fasting and monthly thereafter for 3 months in the non-fasting state. Assessment of the prosthetic valves by trans-thoracic echocardiography was performed at day 21 of fasting, as well as 3 months later in the non-fasting state. Venous samples were taken at day 21 of fasting between 11 and 12 AM (on average after 8 hours of starting the fasting state), as well as one month later in the non-fasting state; samples were taken at almost the same timing.

**Table 1. Mean laboratory values for the coagulation profile, serum electrolytes and plasma osmolality in the fasting and non-fasting states**

Variables	Fasting state (n=70)	Non-fasting state (n=70)	Laboratory control value	*p
Prothrombin time, sec	34.2±7	34.7±13	10.5-12	0.7
INR	2.7±0.5	2.7±0.9		0.6
Serum potassium, meq/L	4.17±0.3	3.9±0.3	3.4-5.2	0.83
Serum sodium, meq/L	147±4.3	145±6.0	134-148	0.74
Plasma osmolality, mosm/Kg	315±4.3	314±5.9	275-295	0.81

All variables are presented as mean±SD  
\*t-test for independent samples  
INR - international normalized ratio

A total of 70 patients with prior surgical mitral valve replacement were enrolled in the current study. The mean age of the study cohort was 31.2±5.1 years; 37 (52.9%) were males, 33 (47.1%) females. Sixty-four patients (91.4%) were in sinus rhythm. Three patients (4.3%) were diabetic, and none was hypertensive. No significant difference was found between the INR value or serum electrolytes in the fasting state and that in the non-fasting state (p>0.05 for all) (Table 1). No patient developed any symptoms suggestive of PVT. Assessment by echocardiography revealed well-functioning prosthetic valves, with no evidence of PVT in any patient at the two time points of follow-up.

Recent reports showed no increase in the incidence of acute myocardial infarction, unstable angina, or cerebrovascular stroke during Ramadan fasting (2, 3). Another study concluded that Ramadan fasting does not increase coronary events (4). This argues in favor of the notion that the effects of Ramadan fasting on stable patients prone to thrombotic events are quite minimal (5).

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