

Szanowni Państwo,

ostatnia publikacja polskiej wersji kwestionariusza oceny jakości życia SF-36 wywołała duże zainteresowanie. Otrzymaliśmy dużo pytań, na które prof. Jan Tylka odpowie w następnym numerze *Kardiologii Polskiej*.

Sport wyczynowy a choroby serca – to problem ciągle aktualny. Poniżej prezentujemy opis przypadku nadestany przez dr hab. n. med. Ewę Straburzyńską-Migaj. Jest to ciekawy głos w dyskusji na temat wpływu sportu wyczynowego na zdrowie człowieka oraz zasad kwalifikacji osób z chorobą wieńcową do uprawiania ekstremalnych wysiłków.

Ryszard Piotrowicz

Coronary artery disease in a competitive athlete. Is running always healthy?

Choroba wieńcowa u sportowca. Czy bieganie jest zawsze korzystne dla zdrowia?

Ewa Straburzyńska-Migaj, Adrian Gwizdała, Stefan Grajek

1st Department of Cardiology, Chair of Cardiology, Medical University, Poznan, Poland

Abstract

This case report presents a marathon runner who was diagnosed with coronary artery disease. We discuss the issue of evaluation of such patients with respect to continuation of competitive physical activity. The reported case shows that continued training involving above class IA-IIA sports is possible (however, long-distance running as well?) if a subject with single vessel disease after an effective PCI maintains close contact with his/her doctor and obeys the rules of safe training. On the other hand, it supports the thesis that regular working out, even in professional athletes, does not guarantee 'healthy' coronary arteries.

Key words: competitive athlete, coronary artery disease, long-distance running

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Case report

A male patient aged 50 years visited a cardiologist due to chest discomfort during running upon exceeding the pulse of 180 bpm. For about 5 years he has been training long-distance running as a member of an informal training group (partially consisting of former professional competitors). He runs 40-50 km weekly. He participates in sport contests, i.e. marathons and half marathons, a few times a year. He has noticed faster acceleration of heart rate when running and unspecific discomfort in the chest upon exceeding a heart rate > 180 bpm. He reported to the Athletes' Health Outpatient Clinic, where among other things he underwent an exercise test involving several dozen squats.

Physical examination revealed slim body constitution: weight – 63 kg, height – 164 cm, BMI – 23.3. No significant abnormalities were found. In the ECG, regular sinus rhythm at 70 bpm was noted. Laboratory tests showed the following abnormalities: total cholesterol level – 6.0 mmol/l, LDL cholesterol – 4.2 mmol/l; HDL cholesterol and triglycerides were normal (1.4 and 0.9 mmol/l, respectively). The patient is a non-smoker with negative family history. In addition, medical history included blood pressure of 200/120 mmHg in one isolated measurement 7 years ago. Normal blood pressure was found in the follow-up measurements; the monitoring was not continued. He has not been treated so far. Exercise treadmill test was performed using a protocol with initial treadmill rate of 6 km/h increased in 3-minute increments by 2 km/h. The

Address for correspondence:

Ewa Straburzyńska-Migaj MD, PhD, I Klinika i Katedra Kardiologii, Uniwersytet Medyczny w Poznaniu, ul. Długa 1/2, 61-848 Poznań, tel.: +48 61 854 91 46, fax: +48 61 854 90 94, e-mail: ewa.migaj-straburzynska@sk1.am.poznan.pl

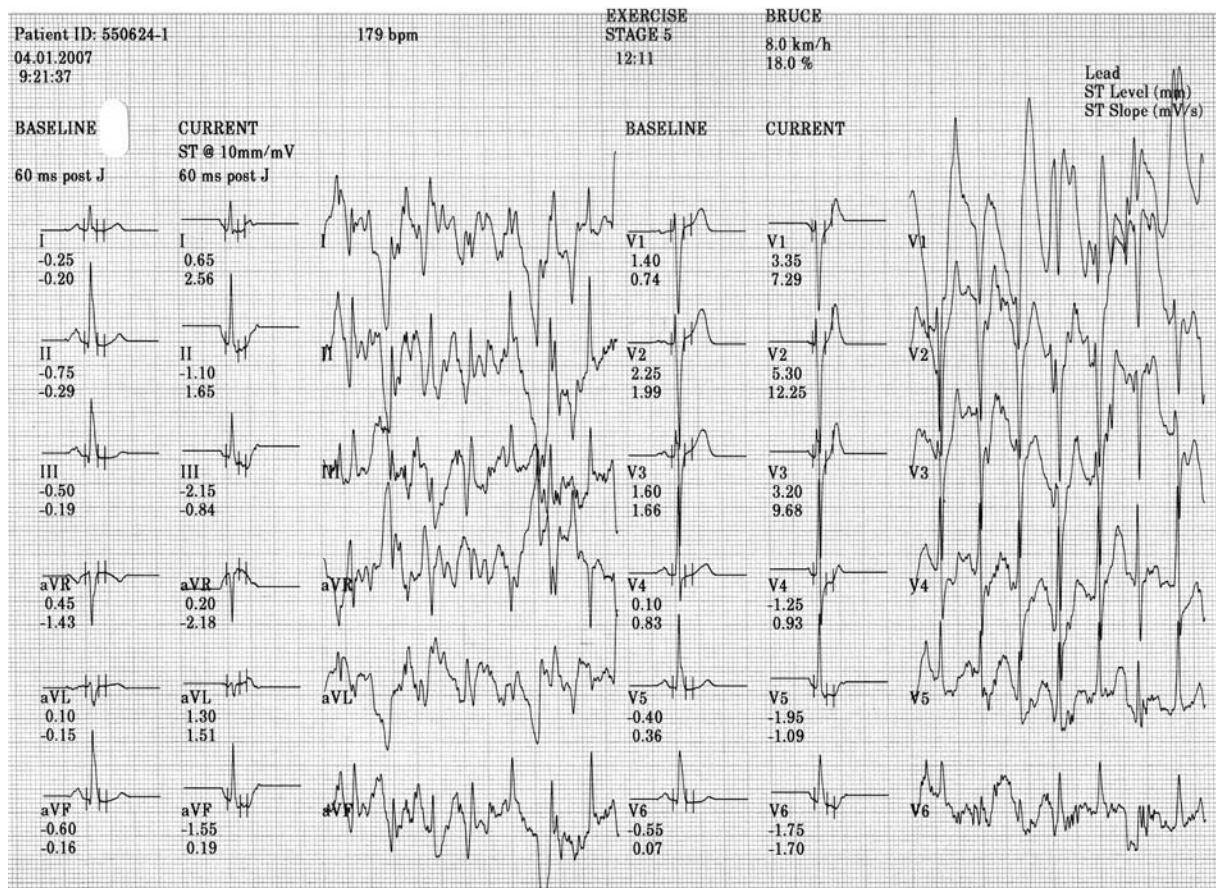


Figure 1. Exercise test summary report

test was discontinued after 10:46 min at 12 km/h treadmill speed due to fatigue and chest discomfort. In the ECG, regular sinus rhythm at 180 bpm was noted, with difficult evaluation of ST segment (Figure 1). The echocardiography showed no significant pathology. The patient was referred for coronary angiography. The procedure was performed on 1 December 2005, revealing critical stenosis of the bifurcation between the left anterior descending coronary artery and the 1st diagonal branch (Figure 2). Ad hoc PCI was performed with insertion of a Braun Coroflex Blue stent. Medical treatment included aspirin, ticlopidine, simvastatin and cilazapril. In the screening eye fundus examination grade I hypertensive changes were documented. Further course was free of complications.

According to applicable guidelines on continuation of athletic activity it was recommended that the patient with coronary artery disease despite optimal PCI effect (no symptoms, negative exercise test result) should refrain from professional running (marathon – IC category according to sport disciplines classification – involving high dynamic component). The patient was inconsolable. He still continues training on his own. He has indeed decreased his training workload (20 km weekly), but he is still participating in contests – including half marathons (no medical permission is required).

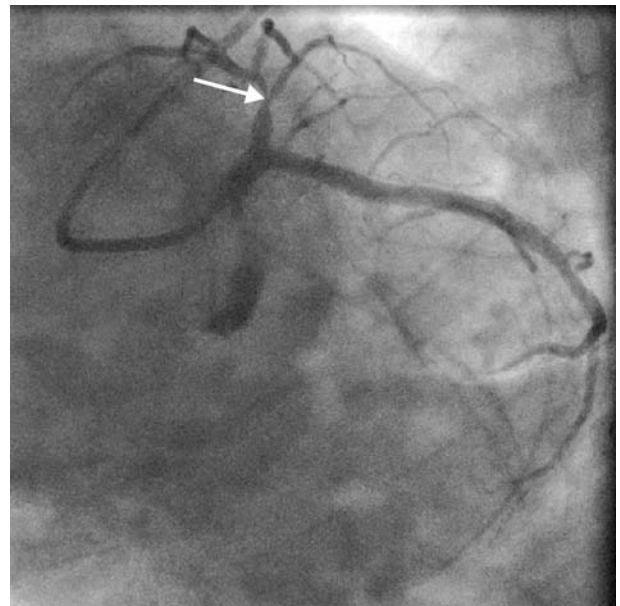


Figure 2. Significant stenosis (arrow) of the left anterior descending coronary artery at bifurcation with DIA 1

Discussion

The presented case of a middle aged man performing regular intensive training, participating in contests, is an example of a masters athlete (over 40-years-old) [1]. More and more people take up regular physical activity in order to, according to their physicians' directions, care for their health. It has been documented that regular physical activity is beneficial. Its protective influence on the heart is undisputable (modification of risk factors, reduction of morbidity and mortality rates for ischaemic heart disease, and anti-arrhythmic effects). Moreover, exercise is beneficial in prophylaxis of osteoporosis, diabetes, obesity, depression and cancer [2]. Quite often working out, initially as recreation, becomes more intensive, including participation in contests. Physical activity performed improperly and/or by an unhealthy person may however be associated with a risk of adverse events, reported as the risks to benefits paradox. It involves a temporary risk of sudden cardiac death or myocardial infarction during intensive exercise, particularly in subjects with a sedentary lifestyle or poorly trained [3, 4]. This risk is lower in individuals undertaking regular physical activities. In most cases those serious complications are caused by an unknown underlying cardiovascular disease. In middle-aged and older persons it is most commonly coronary artery disease. According to the literature the sudden cardiac risk ranges from 1 : 15 000 joggers per year to 1 : 50 000 marathon runners, with male preponderance and from 1 : 200 000 to 1 : 300 000 per year in young athletes [1]. In recently performed studies involving the general French population, the exercise-related cardiovascular events rate was 6.5/100 000 competitors yearly [5]. Therefore, the decision on starting training should include professional specialist assessment of health condition, and not self-assessment of the athlete. The training should also be planned under specialist supervision (cardiologist, specialist in medical rehabilitation, physiotherapist), preferably based on the exercise test result [6]. The benefits of regular physical exercise overcome the risk of cardiovascular events during training sessions. Because neither high physical fitness nor regular training or lack of risk factors guarantees protection against exercise-related death, each athlete should be aware of the general rules of safe training [7]. They include adding warm-up and recovery phases to main exercises, seeing a doctor in the event of unusual symptoms appearing during exercise (chest pain, dizziness, dyspnoea, palpitations), discontinuation of exercise in case of unusual weakness, fever or infection, maintaining adequate hydration before, during and after exercise, adjustment after exercise intensity to ambient conditions (temperature, humidity and height), avoiding a hot shower within 15 min of exercise, and not using any narcotics, doping and/or stimulants of uncertain composition.

The reported case raises one more issue. What about patients with coronary artery disease who want to continue physical activity? The recommendations for

participation in leisure-time physical activity and competitive sports for patients with ischaemic heart disease were published in 2006 [7]. Patients with high cardiovascular risk are considered unable to do any competitive sports. Leisure-time physical activity should be individually adjusted. Patients at low risk of cardiovascular events (asymptomatic, EF > 50%, no ischaemic symptoms on exercise, no significant arrhythmia, no significant [> 50%] coronary artery stenosis) may undertake disciplines of class IA-IIA, i.e. low dynamic and low-moderate static sports (e.g., bowling, archery, golf, cricket, sailing, car racing).

Occasionally, patients with single vessel disease after PCI at low cardiovascular risk and without added risk factors (e.g., dehydration) are most likely at lower risk [7]. It is hard to make a decision on competitive sport activities, especially as there are no reports regarding this issue. The above-mentioned guidelines are maintained (IA-IIA); however, more intensive exercise may be considered on an individual basis. Periodic follow-up is recommended at least once a year. Medium- and long-distance running and marathons are classified as high dynamic sports (IC class) [7].

A recently published paper on coronary atherosclerosis and its importance in marathon runners encourages discussion whether running is always healthy [8, 9]. This research showed that the coronary risk profile of marathon runners aged > 50 years is better than age-matched average males; however, they often present with severe coronary artery disease and signs of myocardial scars in the MRI. In the authors' opinion, often participation in marathons may not provide protection against coronary events. The question whether marathon running contributes to development of atherosclerosis is still open. Extreme physical burdens in subjects with previous coronary artery disease risk factors, epithelial dysfunction and coronary atherosclerosis may accelerate the progress of the disease.

The described patient is still training. He has indeed decreased his training workload (20 km weekly), but he is still participating in contests – including half marathons (no medical permission is required). He stated that not the result but the participation matters. He tries not to exceed 180 bpm pulse during exercise. He reported no symptoms that brought him to a cardiologist previously.

On the one hand, the reported case showed that continued training involving above class IA-IIA sports is possible (however, long-distance running as well?) if a subject with single vessel disease after an effective PCI maintains close contact with his/her doctor and obeys the rules of safe training. On the other hand, it supports the thesis that regular working out, even in professional athletes, does not guarantee 'healthy' coronary arteries [8, 10].

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