

Yet another explanation for Pheidippides' death?

Paulina Wejner-Mik, Mateusz Sajdok, Ewa Trzos, Piotr Lipiec, Jarosław D Kasprzak

1st Department of Cardiology, Medical University of Lodz, Bieganski Hospital, Łódź, Poland

Correspondence to:
Paulina Wejner-Mik, MD, PhD,
1st Department of Cardiology,
Medical University of Lodz,
Bieganski Hospital,
Kniaziewiczza 1/5, 91-347 Łódź,
Poland,
phone: + 49 42 251 62 16,
e-mail: mik@ptkardio.pl
Copyright by the Author(s), 2023
DOI: 10.33963/KPa.2023.0098
Received:
January 22, 2023
Accepted:
April 7, 2023
Early publication date:
May 2, 2023

According to a legend, about 2500 years ago, Pheidippides, a legendary Greek hemerodrome, or courier, died shortly after running from Marathon to Athens to bring the news about the Greek victory over the Persians. The very cause of his death remains undetermined [1].

We want to propose yet another explanation for Pheidippides' death based on the case of a 35-year-old man — an amateur ultramarathon runner who was admitted to the emergency department with severe fatigue and skeletal muscle pain lasting over

two days after a 210 km 24-hour run. His history was negative for anabolic steroids or other medication.

His Glasgow coma scale score on admission was 13 points. His electrocardiography (ECG) on admission (Figure 1) showed bradycardia with junctional rhythm 25/min. After administration of atropine 0.5 mg i.v., the rhythm accelerated to 45 BPM with no visible P waves. Elevations of J-point in the anterior leads and broad peaked T waves were observed. Echocardiography showed hypokinesia of the apical segments of the left

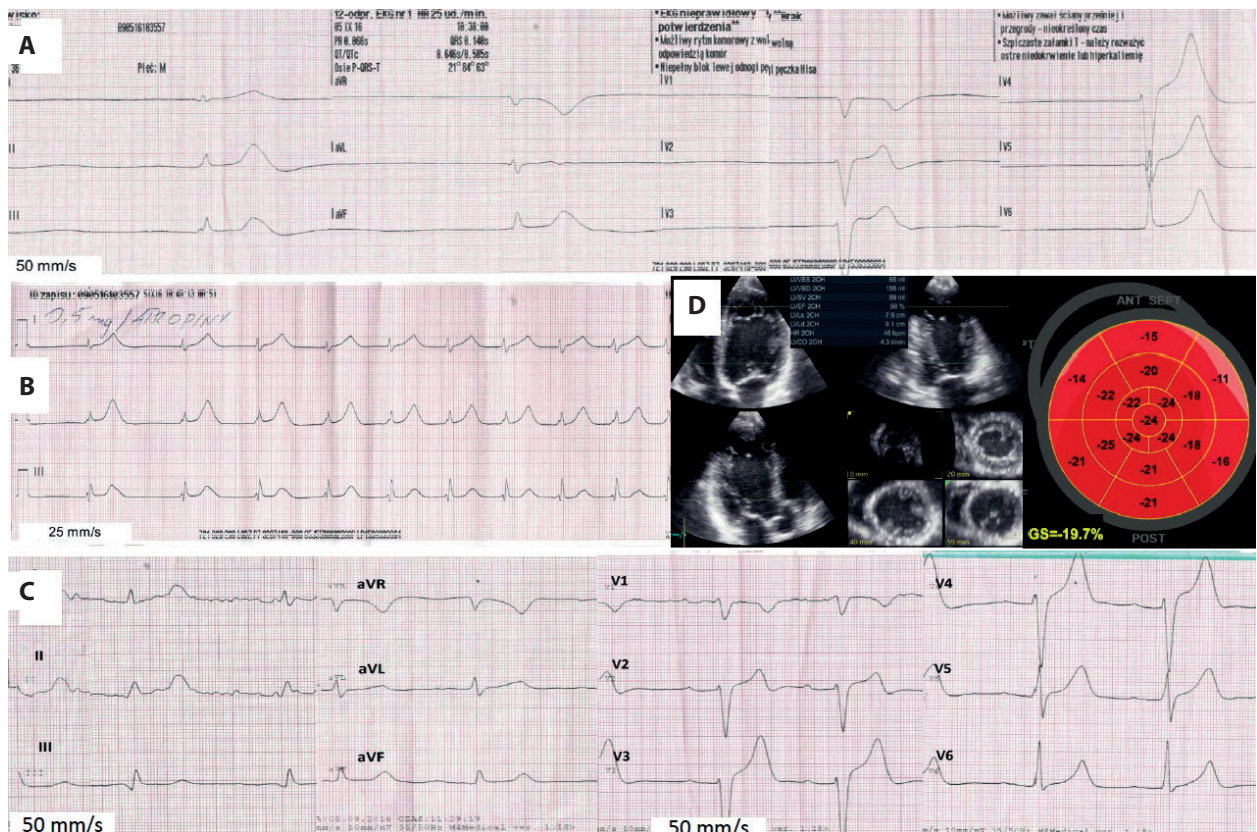


Figure 1. A. Electrocardiography (ECG) on admission shows bradycardia with junctional rhythm 25/min. B. After administration of atropine 0.5 mg i.v., the rhythm accelerated to 45 BPM with no visible P waves. Elevations of J-point in the anterior leads and broad peaked T waves were observed. C, D. ECG and transthoracic echocardiography on discharge showing restoration of normal ECG and normal left ventricular function (ejection fraction, 58%; global longitudinal strain, 19.7%)

ventricle with ejection fraction of 40%, with no significant valvular disease. After bladder catheterization, dark-colored brown urine was obtained.

Blood tests showed severe hyperkalemia (8.4 mmol/l) with a high creatinine level (6.18 mg/dl) and low estimated glomerular filtrated rate (eGFR, 11.05 ml/min/1.73 m²), along with extreme serum myoglobin concentration (>30 000 ng/ml), CK-MB mass (>300 ng/ml), and elevated troponin T (0.109 ng/ml), white blood cell count, and C-reactive protein. The patient was diagnosed with exercise-related rhabdomyolysis, which led to acute kidney injury with consecutive hyperkalemia, and hemodialysis in the intensive care unit was introduced. He recovered after 4 weeks, with normal electrocardiography and normal left ventricular function (ejection fraction [EF], 58%, global longitudinal strain [GLS], 19.7%) restored.

Rhabdomyolysis with renal failure may represent a possible explanation for Pheidippides' death [2] — especially while taking into account that the distances he covered were similar to those made by our patient. The Athenian runner had run from Athens to Sparta (212 km) in 4 days, and on the next day — again ran from Athens to

the battlefield near Marathon (40 km) and back to Athens to bring the news of victory. Both he and our patient were properly trained with previous experience in running similar distances.

Article information

Conflict of interest: None declared.

Funding: None.

Open access: This article is available in open access under Creative Commons Attribution-Non-Commercial-No Derivatives 4.0 International (CC BY-NC-ND 4.0) license, which allows downloading and sharing articles with others as long as they credit the authors and the publisher, but without permission to change them in any way or use them commercially. For commercial use, please contact the journal office at kardiologiapolska@ptkardio.pl.

REFERENCES

1. Oikonomou E, Chrysohoou C, Vlachopoulos C, et al. The aetiology of death for marathon runner Phidippides? *Eur Heart J.* 2019; 40(31): 2564–2565, doi: [10.1093/eurheartj/ehz560](https://doi.org/10.1093/eurheartj/ehz560), indexed in Pubmed: 31411721.
2. Zager RA. Rhabdomyolysis and myohemoglobinuric acute renal failure. *Kidney Int.* 1996; 49(2): 314–326, doi: [10.1038/ki.1996.48](https://doi.org/10.1038/ki.1996.48), indexed in Pubmed: 8821813.