

Multivessel coronary disease in a young patient with sarcoidosis: A case report

Rafał Januszek^{1,2}, Aleksandra Figas¹, Jarosław D Kasprzak¹

¹1st Department of Cardiology, Bieganski Specialty Hospital, Medical University of Lodz, Łódź, Poland

²Faculty of Medicine and Health Sciences, Andrzej Frycz Modrzewski Cracow University, Kraków, Poland

Correspondence to:

Rafał Januszek, MD, PhD,
Faculty of Medicine and Health
Sciences,
Andrzej Frycz Modrzewski Cracow
University, Kraków, Poland.
Gustawa Herlinga-Grudzińskiego
1, 30–705 Kraków,
phone +48 12 252 44 63
e-mail: jaanraf@interia.pl

Copyright by the Author(s), 2024

DOI: 10.33963/v.phj.102982

Received:

September 4, 2024

Accepted:

October 4, 2024

Early publication date:

October 21, 2024

A 43-year-old angina-free, physically inactive male with a one-year history of heart failure (New York Heart Association class II/III) was admitted to the Department of Cardiology for a diagnostic workup. His history included 8 years of type 2 diabetes treatment, hypercholesterolemia, and earlier nicotine addiction (15 pack-years), without a family history of premature atherosclerosis. He had never been treated for pulmonary sarcoidosis without confirmed extracardiac involvement, which had been diagnosed 12 years earlier. His current medication included sacubitril/valsartan 97/103 mg twice daily; bisoprolol 10 mg once daily; eplerenone 25 mg once daily; empagliflozin 10 mg once daily; rosuvastatin 10 mg once daily; ezetimibe 10 mg once daily; gliclazide 60 mg once daily; insulin Gensulin N 10 u. subcutaneous. Cardiac magnetic resonance performed 3 months earlier revealed general left ventricular (LV) hypokinesis with apical akinesis and decreased left ventricular ejection fraction (LVEF) — 31%. Late gadolinium enhancement was found in the middle and apical segments of the LV — which might have indicated non-ischemic foci of endocardial fibrosis and a spotty focus that may correspond to granulomas (Figure 1A–B).

There were no signs of sarcoidosis in the chest X-ray (Figure 1C). An electrocardiogram demonstrated sinus rhythm with a rate of 75/min, with no patterns of myocardial ischemia. Laboratory findings showed low-density lipoprotein cholesterol — 76 mg/dl, lipoprotein(a) — 3.2 mg/dl, HbA1c — 5.6%, and N-terminal pro B-type natriuretic peptide — 2030 pg/ml. Transthoracic echocardiography confirmed LVEF of 33% and moderate mitral regurgitation. Coronary angiography revealed an occluded anterior descending branch (LAD), 75% stenosis in the circum-

flex branch, and 70% stenosis in the right coronary artery (RCA) (Figure 1D and E). The cardio-group council recommended coronary artery bypass grafting.

During successful coronary artery bypass grafting (left interior mammary artery – LAD and the saphenous vein graft-marginal branch and RCA), the tissue surrounding the occluded LAD was sampled. Biopsy demonstrated fatty and fibrous tissue with small, scattered lymphoid infiltrates without signs of inflammatory lesions in the walls of small vessels (Figure 1F). Right after surgery, a slight improvement in LV contractility was observed (36% vs. 33%). Also, a three-month follow-up revealed no exertional chest pain or dyspnea.

In this patient with heart failure, sarcoidosis did not express extensive granulomatous disease of the myocardium. Premature atherosclerosis in the presence of several moderate classic risk factors could be related, at least to a significant extent, to longstanding sarcoidosis causing long-term inflammatory systemic stimulation. Although the incidence of myocardial involvement in sarcoidosis is estimated at 76%, epicardial coronary artery infiltration is exceedingly rare, including biopsy-confirmed cases [1, 2]. Few analyses conducted on large populations have shown the association of sarcoidosis with increased risk of cardiovascular diseases [3]. These analyses mainly come from studies on patient populations with connective tissue diseases [4].

Further investigation of our patient's records revealed an incident of septic shock in 2019 and a severe course of COVID-19 infection one year later. Recently published papers confirmed the association between COVID-19 infection and morbidity due to peripheral atherosclerosis [5]. Sarcoidosis was proposed as a risk factor for atherosclerotic

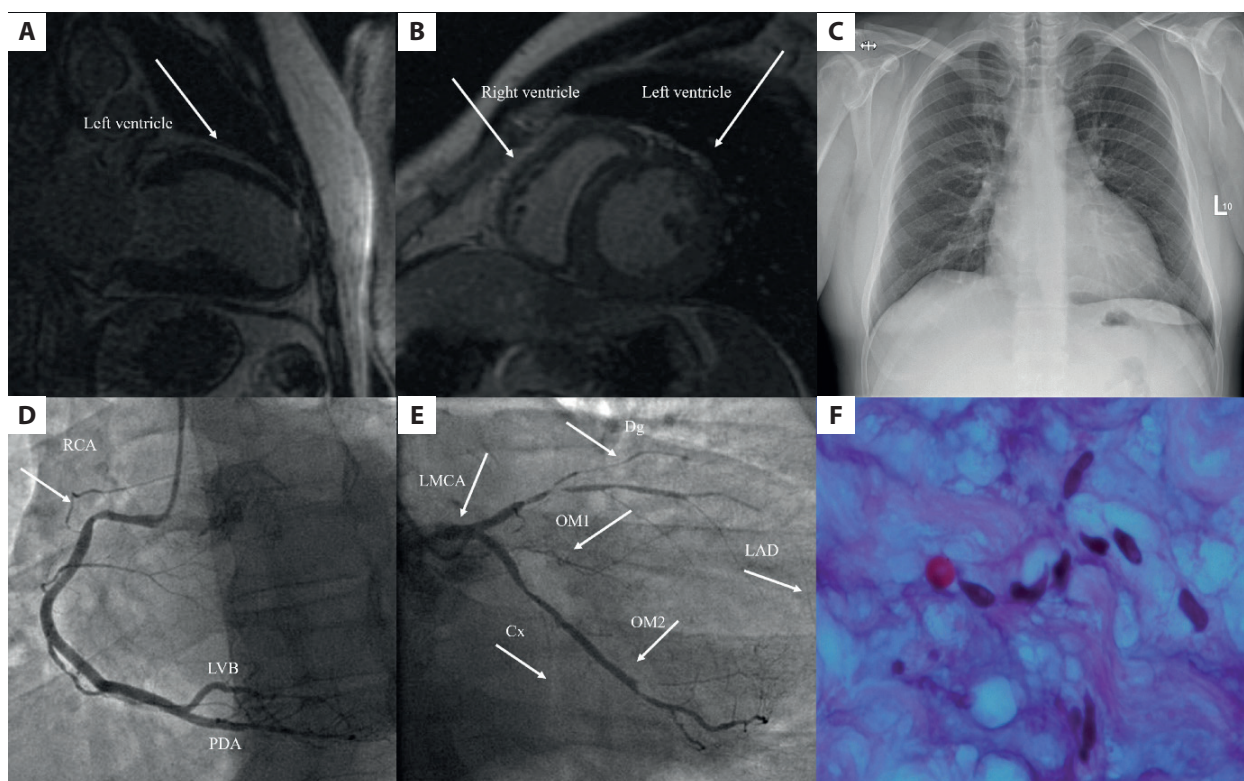


Figure 1. Coronary angiography findings. **A.** Cardiac magnetic resonance — longitudinal view. **B.** Cardiac magnetic resonance — transverse view. **C.** Chest X-ray, posterior-anterior view. **D.** Left anterior oblique (LAO) caudal view: RCA — white arrows show significant stenosis in segment 1. **E.** Right anterior oblique (RAO) caudal view: left main coronary artery (LMCA) — with no significant stenoses; LAD and diagonal branch — white arrows indicate significant stenoses in segments 6 and 7 and total occlusion in segments 8 and 9; circumflex branch (Cx) — white arrows indicate significant stenoses in segments 11 and 14 and total occlusion in segments 12 and 15. **F.** Histopathological examination — lymphocytic infiltrates in the perivascular adipose tissue

Abbreviations: Cx, circumflex coronary artery; LAD, left anterior descending artery; LMCA, left main coronary artery; LVB, left ventricular branch; Mg, marginal branch; OM1/2, obtuse marginal artery; PDA, posterior descending artery; RCA, right coronary artery

coronary disease, which should raise awareness of resulting accelerated coronary disease leading to ischemic LV dysfunction. At the time of writing, the patient remained under constant pulmonary monitoring and was not on immunosuppressive treatment.

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 polishheartjournal@ptkardio.pl

REFERENCES

1. Kysperska K, Kuchynka P, Slovakova A, et al. Role of magnetic resonance in the detection of cardiac involvement in patients with newly diagnosed extracardiac sarcoidosis: Single center experience. *Kardiol Pol.* 2022; 80(9): 897–901, doi: [10.33963/KP.a2022.0163](https://doi.org/10.33963/KP.a2022.0163), indexed in Pubmed: [35775447](https://pubmed.ncbi.nlm.nih.gov/35775447/).
2. Kouranos V, Sharma R, Wells A, et al. Advances in imaging of cardiopulmonary involvement in sarcoidosis. *Curr Opin Pulm Med.* 2015; 21(5): 538–545, doi: [10.1097/MCP.000000000000195](https://doi.org/10.1097/MCP.000000000000195), indexed in Pubmed: [26176968](https://pubmed.ncbi.nlm.nih.gov/26176968/).
3. Zöller B, Li X, Sundquist J, et al. Risk of subsequent coronary heart disease in patients hospitalized for immune-mediated diseases: a nationwide follow-up study from Sweden. *PLoS One.* 2012; 7(3): e33442, doi: [10.1371/journal.pone.0033442](https://doi.org/10.1371/journal.pone.0033442), indexed in Pubmed: [22438933](https://pubmed.ncbi.nlm.nih.gov/22438933/).
4. Bessant R, Hingorani A, Patel L, et al. Risk of coronary heart disease and stroke in a large British cohort of patients with systemic lupus erythematosus. *Rheumatology.* 2004; 43(7): 924–929, doi: <https://doi.org/10.1093/rheumatology/keh213>.
5. Yeh LT, Chan CH, Wang YH, et al. Exploring the incidence of peripheral arterial occlusive disease following COVID-19 infection: a retrospective cohort study. *J Med Virol.* 2024; 96(3): e29519, doi: [10.1002/jmv.29519](https://doi.org/10.1002/jmv.29519), indexed in Pubmed: [38465773](https://pubmed.ncbi.nlm.nih.gov/38465773/).