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Case Report
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Psoriasis Complicated with Acute Myocardial Infarction: A Case Report and Literature Review

*Yan Jiang[1#], Peipei Xi[2#] and Haiyan Pan[1]**

[1]Department of Cardiology, Affiliated Hospital of Nantong University, China

[2]Department of Emergency, Affiliated Hospital of Nantong University, China

[#]These authors have contributed equally to this work

Abstract

Background: Psoriasis is a common chronic inflammatory cytokine mediated skin disease characterized by extensive scaly, erythema and pruritus. Psoriasis is a systemic disease. In recent years, the incidence of metabolic disorders has increased significantly. A large number of studies have shown that the increased prevalence of psoriasis combined with metabolic syndrome increases the risk of MI, especially in younger patients with more severe disease.

Case Report: A 32-year-old men initially came to our hospital with chest pain for 6 h. He was diagnosed with psoriasis 8 months ago. The patient show swelling and enlargement of the distal interphalangeal joints of his hands and feet and marked flexion deformity of these joints. Onychomycosis and scaly, silvery erythema with well-defined edges were also seen on his forearms, wrists, fingers, toes and legs. The patient was diagnosed acute non-ST-segment elevation myocardial infarction, Killip grade I; High blood pressure, Psoriasis. Emergency coronary angiography shows 90% stenosis in the middle part of the right coronary artery. So, Stent implantation was performed in the right coronary artery.

Conclusion: This case reports the treatment of a young patient with psoriasis complicated with acute myocardial infarction, aiming to improve the understanding of complications, control metabolic disorders, and reduce the incidence of cardiovascular diseases.

Keywords: Psoriasis; Coronary Heart Disease (CHD); Myocardial infarction; Inflammation

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Correspondence:
Haiyan Pan, Department of Cardiology, Affiliated Hospital of Nantong University, No. 20, Xisi Road, Chongchuan District, Nantong, Jiangsu, China, E-mail: dr.phy@qq.com

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Introduction

Psoriasis is a chronic inflammatory skin disease characterized by extensive scaly, erythema and itchy skin. Prevalence ranges from 0.09% to 11.4%, affecting men and women of all ages and ethnicities [1]. Psoriasis not only affects the skin, but is considered to be a systemic inflammatory disease that affects multiple systems [2]. Thus, psoriasis is similar to other systemic inflammatory diseases such as Systemic Lupus Erythematosus (SLE) and Rheumatoid Arthritis (RA), with clear data supporting its association with a high risk of cardiovascular disease [3-8]. Psoriasis leads to a dose-dependent risk of metabolic syndrome and its components (including obesity, dyslipidemia, insulin resistance, and hypertension) and is closely associated with cardiovascular events [9,10]. Interestingly, only a few cases of psoriasis associated with MI have been reported in the literature. In this case report, we describe a young male patient who presented with severe Psoriasis and acute myocardial infarction, aimed to advice actively managing metabolic syndrome and alert predictive examination and preventive treatment of coronary heart disease in patients with psoriasis.

Case Presentation

32-year-old men initially came to the emergency department of our hospital with chest pain for 6 h. He developed chest pain located in the precardiac region, which was crushing and radiating to the back and back, when he finished his night shift at 6 a.m. He was diagnosed with psoriasis 8 months ago, and was treated with long-term topical hydrocortisone cream, subcutaneous injection of thymopentide (1 mg twice a week), narrow-spectrum ultraviolet (uv), etc. The drug was discontinued in July due to a COVID-19 vaccine injection. Deny hypertension, hyperlipidemia, diabetes, etc., no addiction to alcohol and tobacco. Denying a family history of genetic disease. Physical examination on admission: T 36.5°C, HR 77/min, BP 141/93 mmHg (1 mmHg = 0.133 kPa), BRTH 19/min, BMI 24.2. Clear mind, poor spirit, scattered red rash, accompanied by

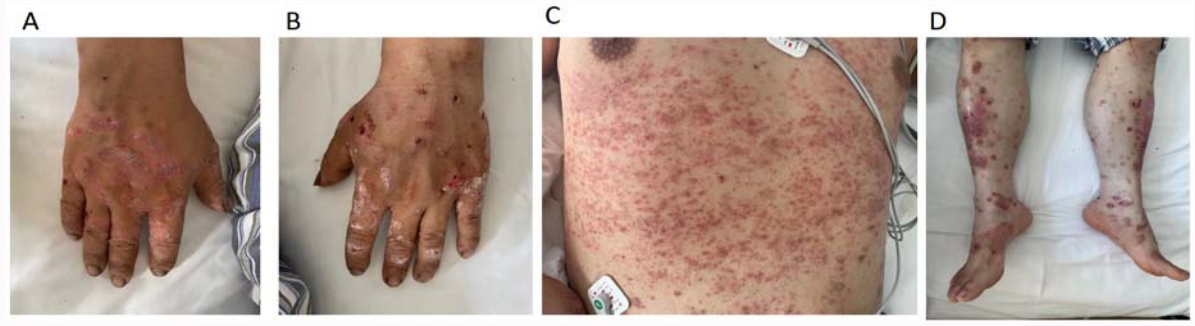

Figure 1: These images of the patient show swelling and enlargement of the distal interphalangeal joints of his hands and feet and marked flexion deformity of these joints. Onychomycosis and scaly, silvery erythema with well-defined edges were also seen on his forearms, wrists, fingers, toes and legs.

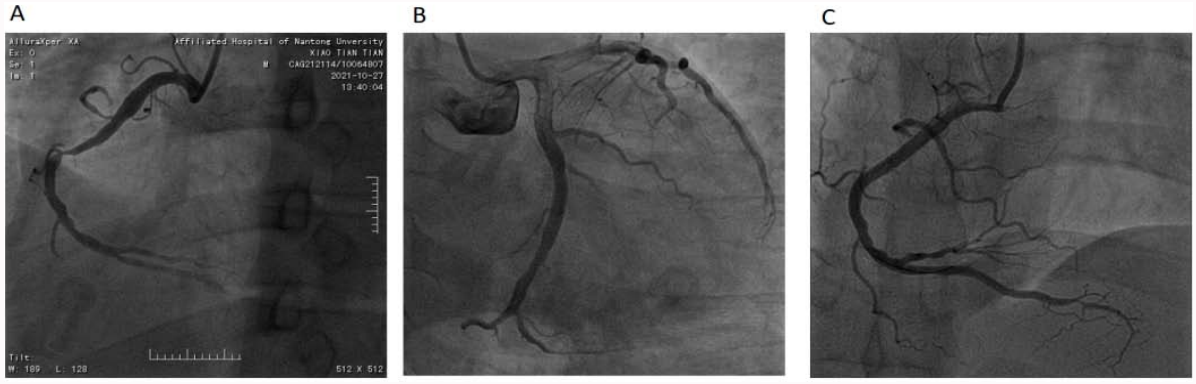

Figure 2: Angiographic results before and after intracoronary intervention (1A and 1B are angiographic results before interventional therapy, 1A shows no obvious lesion in the left coronary artery, 1B shows 90% stenosis in the middle part of the right coronary artery; 1C is the angiography result after intracoronary balloon dilatation plus coronary stent implantation, showing no significant lumen stenosis in the whole segment of the right coronary artery, and the blood flow reached Thrombolysis in Myocardial Infraction test (TIMI) grade 3.

desquamation [Figure 1], no cyanosis in the lips, clear breath sounds in both lungs, no rales; The heart boundary was not large, the rhythm was uniform, and no murmur was heard in the heart valve area. The abdomen was soft, without tenderness, and the liver and spleen were not palpable. There was no edema in both lower limbs. Auxiliary inspection: After admission, emergency blood routine examination showed that red blood cells were 11.3×10^{12}/L [normal (4.0-10.0) $\times 10^{12}$/L], hemoglobin was 141 g/L (normal 120 g/L to 160 g/L), platelet was 363×10^{9}/L [normal (100-300) $\times 10^{9}$/L]. Hematocrit 0.42 (normal 0.40-0.54). Admitted 18-lead ECG showed sinus rhythm. Myocardial injury markers: Troponin I 4.09 μg/L (normal 0-0.030 μg/L), myoglobin 54.8 μg/L (normal 0-121.0 μg/L), creatine kinase isoenzyme 31.5 μg/L (normal 0-3.7 μg/L). Admission diagnosis: Acute non-ST-segment elevation myocardial infarction, Killip grade I; High blood pressure. Psoriasis. After intravenous nitroglycerin administration, the patient's chest pain persisted, and emergency Percutaneous Coronary Intervention (PCI) was planned. The patient had a CRUSADE bleeding risk score of 8 (very low risk) and a Global Registry of Acute Coronary Events (GRACE) risk score of 72 (low risk). Before operation, he was given a loading dose of 300 mg aspirin enteric-coated tablets, 180 mg ticagrelor tablets and 20 mg atorvastatin calcium tablets. Procedure: The right radial artery approach was used, and 3000 U of common heparin was injected intrathecally. Coronary angiography showed 90% stenosis in the middle section of the Right Coronary Artery (RCA), TIMI flow grade 2 to 3, plaque in the rest of the vessels, and no meaningful stenosis (Figure 1A, 1B). The middle part of RCA was determined to be the culprit vessel, and ordinary heparin was added to 5,500 U during the operation. The JR 3.5 guide catheter was sent to the right coronary artery orifice, and the Sion guide wire was successfully sent to the distal end of RCA through the stenosis, and the Pioneer 2.5 mm × 20.0 mm balloon was sent to predilate the RCA stenosis segment. A Promus PREMER 4.0 mm × 38 mm drug stent was implanted in the middle part of RCA, and the Quantum Maverick 4.0 mm × 12 mm balloon stent was then dilated. Reexamination of angiography showed that the stent was well dilated with no residual local stenosis, and the distal TIMI blood flow was grade 3 (Figure 1C). At this time, the patient's chest pain was relieved, heart rate and blood pressure were normal, and the operation was ended. After the operation, he returned to the CCU and reexamined the electrocardiogram showing sinus rhythm. The patient was given maintenance doses of aspirin enteric-coated tablets (100 mg, once daily), ticagrelor capsules (90 mg, twice daily), atorvastatin calcium tablets (20 mg, once daily), and metoprolol succinate sustained-release tablets (23.75 mg, once daily). The patient had no chest pain and his vital signs were stable. Total cholesterol 5.4 mmol/L (normal 3.0 mmol/L to 5.7 mmol/L), triglyceride 2.26 mmol/L (normal 0 mmol/L to 1.7 mmol/L), low-density lipoprotein cholesterol 3.83 mmol/L (normal: Low-moderate cardiovascular risk ≤ 2.60 mmol/L, high risk ≤ 1.80 mmol/L). Glucose 6.9 mmol/L (normal 3.9 mmol/L to 6.0 mmol/L). Glycosylated hemoglobin 6.3% (normal 4.0% to 6.2%). High sensitivity C-reactive protein 13.4 mg/L (normal 0 mg/L to 8.0 mg/L). ESR 16.0 mg/L (normal 0 mg/L to 10.0 mg/L). Coagulation function, liver and kidney function, electrolytes, immunofixation electrophoresis, light chain, ANCA were normal. On the second day after operation, echocardiography showed EF0.63, no abnormalities in cardiac structure, normal left ventricular diastolic function and

systolic function, mild mitral and tricuspid valve regurgitation. Please consult dermatology department. Biologics and topical hormone cream are recommended. During the follow-up after discharge, the patient did not have chest pain or chest tightness again, and the reexamination of electrocardiogram showed sinus rhythm, and the echocardiogram showed no obvious abnormalities. One month after operation, the serum lipids showed TG 3.56 mmol/L, TC 1.22 mmol/L and LDL-C 1.40 mmol/L. The general condition of the patient was good, with normal blood routine, liver function, renal function, coagulation function, CRP and erythrocyte sedimentation rate.

Discussion

Compared with controls matched for age, sex, and CV risk factors, patients with severe psoriasis have an approximately 7-fold increased risk of MI and a 57% increased risk of CV death [4]. The mechanism behind these associations is unclear. Traditional cardiovascular risk factors: Hypertension, dyslipidemia, and diabetes. For patients with psoriasis, in addition to the increased prevalence of traditional cardiovascular risk factors [11,12], inflammation may be another reason for the high incidence of CV events [13]. Inflammatory cells, including Th1 and Th17, release a variety of cytokines, including IFN-γ and TNF-α [14,15]. Inflammation plays a crucial role in the initiation, progression and rupture of atherosclerotic plaques [16-19]. The patient was characterized by a sudden onset of chest pain for 6 h, which was located in the precardiac region and appeared to be pressing. The pain radiated to the back and continued to be unrelieved. Troponin I was positive on examination. She had a history of psoriasis for 8 months, without formal treatment, and had a scattered rash with desquamation on physical examination. She was also complicated with metabolic syndrome, including hypertension, hyperlipidemia, diabetes, and obesity. The patient was a young male, and acute myocardial infarction was considered to be associated with cardiovascular risk factors associated with severe psoriasis. Whether psoriasis is an independent risk factor for CAD, cardiovascular events and mortality remains controversial [20]. A Danish registry of 46,000 CT angiography examinations in 1,500 patients with psoriasis again showed that psoriasis was associated with the prevalence and extent of CT-revealed coronary artery calcification, but that the increased cardiovascular events and associated mortality were explained by traditional risk factors rather than psoriasis itself [4]. The relative risk of coronary artery disease associated with severe psoriasis is highest in relatively young patients [3]. Another multicenter cohort study of 46,022 patients with psoriasis and psoriatic arthritis in Denmark showed that although subsequent studies found a crude increased risk of cardiovascular events and death in patients with psoriasis, this was mainly explained by traditional cardiovascular risk factors [8]. A cross-sectional study by Charles N. Ellis showed that men with severe psoriasis had a greater volume of EAT-V (Epicardial Adipose Tissue), which implies an increased risk of cardiovascular disease [21].

Conclusion

This patient is a young patient with severe psoriasis who has been shown to be at high risk for cardiovascular events. However, this patient did not receive regular psoriasis-related treatment, nor did he receive screening and treatment of cardiovascular risk factors to predict and prevent the occurrence of cardiovascular events. For psoriasis patients' serum c-reactive protein and proinflammatory cytokines released, including Interleukin (IL) - 17, interferon alpha and tumor necrosis factor levels of detection, and related auxiliary examination, including EAT-v, CTA, etc., for predicting those people in the risk of serious cardiovascular events for psoriasis patients have clinical evaluation value. Because elevated levels can identify patients who require the greatest attention to the primary preventive management of CVD (e.g., the use of diet, exercise, and appropriate medications), consider systemic therapy for psoriasis that may reduce coronary risk, or both. Although the data collected to date suggest that psoriasis is indeed associated with an increased risk of CAD, the extent of its effect on CVD and the extent of Coronary Artery Disease (CAD) remains unclear. Larger prospective studies are needed to determine whether anti-psoriasis drugs are effective in preventing coronary events in these patients.

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