Deep Vein Thrombosis and Diabetes Mellitus Type 2 as Complications of Psoriatic Arthritis: A Case Report

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Abstract

A woman, 45 years old, complained of low back pain that improves with activity or analgesic and reoccurs when resting. The patient also complained of swollen joints, fever, shortness of breath, flaky skin and fragile nails. Physical examination found multiple inflamed joints, thickened and fragile nails, fever, limited range of movement of knee and ankle and positive Homan sign. Workup found negative anti-rheumatoid factor, increased blood sugar level, increased erythrocyte sedimentation rate, increased C-reactive protein, bacteria in urine, increased D-dimer, and imaging of lumbar spondylosis and sacroiliitis, and deep vein thrombosis in the left inferior limb using Doppler ultrasonography. The patient was diagnosed as psoriatic arthritis, deep vein thrombosis, type 2 diabetes mellitus, and urinary tract infection. The patient was given sulfasalazin, fondaparinux, warfarin, insulin, and antibiotic. On the 15th day of treatment, the patient experienced sudden shortness of breath and chest pain. The patient died due to suspected cardiovascular event.

Keywords: *Cardiovascular Event, Deep Vein Thrombosis, Diabetes Mellitus, Major Adverse Cardiovascular Events, Psoriatic arthritis*

Introduction

The prevalence of psoriatic arthritis (PsA) ranges from 0.06 to 1%.(1) PsA has been associated with an increase (55%) in the incident of cardiovascular events and 43% due to cardiovascular disease.(2) The risk of venous thromboembolism (VTE) in PsA is 2.5% and type 2 diabetes mellitus (T2DM) is around 43%. The pathogenesis is based on inflammation mediated by the immune system, genetics, and environmental factors. Systemic inflammation occurring is a potential risk factor for VTE and T2DM.(3)(4)

This case is presented to improve aware of psoriatic arthritis and its comorbidities and understand the management of psoriatic arthritis and deep vein thrombosis (DVT) so that morbidity and mortality can be decreased.

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Case Report

History Taking

A woman, 45 years old, complained of pain in her left leg since 2 months ago accompanied with swelling, pain and redness. Both knees were painful resulting inability to walk so that she often stayed in bed. The joints in the fingers were swollen, painful, reddish. She also had fever, shortness of breathing, loss of appetite, decreased body weight 1 week before admission. White patches were found on abdominal and back skin 3 months before admission and dandruff

since 1 year before admission. The skin peeled off like wax when it was scratched. The toe nails were white and brittle. The patient also complained of low back pain, worsened with resting and waking up, improved with activity since 6 months before admission.

The patient previously was diagnosed as DM without taking any drugs.

The patient has past history of dermatitis since childhood. There was no history of autoimmune disease or similar complain in her family.

Patient visited alternative medicine to get her swollen joints massaged. Analgesic improve the complaints temporarily.

Physical Examination

Physical examination found tachycardia (105 beats per minute), tachypnea (28 times per minute), fever (38.2˚C), anemic conjunctiva, increase in jugular vein pressure (5+4 cm H_20), scaly skin, psoriatic plaque, thickened toes. The proximal digital interphalangeal II, III and IV, knee and pelvic joints were swollen, red and has limited flexion range of movement (ROM). The Homan sign was positive. Wells score was 6.

Workup

Laboratory examination found abnormal coagulation (APTT 27.2 (24) seconds, PPT 11.8 (10) seconds, abnormal renal function test (BUN 51 mg/dL; SK 1.41 mg/dL), hyperglycemia (426 mg/dL), hypoalbuminemia (2,9 g/dL), high ESR (25 mm/hour), high CRP (25 mm/L), and high D-dimer (2,6 µg/mL) were found.

Using compression ultrasound (CUS) found partial compressible in the left common femoral vein, left proximal femoral vein, left popliteal vein. Color coded partially fills in the left common femoral vein, left proximal femoral vein.

Lumbosacral plain radiography showed lipping on 1st to 5th lumbar spine and narrowing sacroiliac joint, indicating sacroilitis and lumbar spondylosis.

Diagnosis

The patient was diagnosed as PsA, DVT, acute kidney injury (AKI), anemia, hypoalbuminemia, T2DM and DVT in left leg.

Therapy

Therapies given were intravenous insulin 3 times 4 IV until blood sugar level (BSL) < 250 mg/dL, tramadol 100 mg tid and paracetamol 500 mg tid, subcutaneous levemir 12 IU qd, sulfasalazin 500 mg bid, rivaroxaban 15 mg bid, warfarin 4 mg, and albumin 20% 100ml. Stocking was applied to the left leg.

Disease Progression

On the 15th day of treatment, the patient underwent sudden shortness of breath and chest pain, leading to dead due to a cardiovascular event

Discussion

Spondyloarthropathy (SpA) is a group of chronic inflammatory arthritis diseases associated with HLA-B27 with clinical features, inflammatory back pain due to sacroiliitis, enthesitis, tendinitis, oligoarthritis, and extrarticular manifestations.[5]

In patients with complaints of low back pain more than 3 months and the onset of the patient's age less than 45 years, the diagnosis of axial SpA is confirmed if the complaint is accompanied by signs of sacroiliitis on imaging and 1 or more SpA features. The diagnosis can also be made if the patient is accompanied by a positive HLA-B27 and more than 2 features of SpA. Those features of SpA are inflammatory back pain, arthritis, uveitis, enthesitis, dactylitis, psoriasis, inflammatory bowel disease, good response to nonsteroidal anti-inflammatory drugs (NSAIDs), family history of SpA, HLA-B27 or elevated CRP.[6]

According to ASAS 2009, typical low back pain is sufficient to determine the diagnosis of SpA. Typical low back pain in SpA are more than 3 months with a minimum of 4 of those following 5 criteria: onset

before 45 years, slow progressive pain, improved with physical activity, not improved with rest, and worsened at night. These criteria have a sensitivity of 77% and a specificity of 91.7%.[7]

In patients with peripheral symptoms, including arthritis, ethesitis, or dactylitis, the diagnosis is made when accompanied by uveitis, psoriasis, inflammatory bowel disease, preceding infection, HLA-B27, or sacroillitis on imaging. Other than that, peripheral SpA can be diagnosed if at least 2 findings of arthritis, enthesitis, dactylitis, history of low back pain, or family history of SpA are found.[6]

The patient had complaints of low back pain since 6 months before admission, worsened after waking up and resting, improved with activity and analgesic. Physical examination revealed swelling of the fingers of the right and left hands. Laboratory test showed an increase in CRP and ESR. Sacroiliitis was found on radiological imaging. Therefore, it met the axial SpA criteria.

Psoriatic arthritis (PsA) is inflammatory arthropathy related to psoriasis. The typical efflorescence of psoriasis vulgaris is reddish plaques and silver-like scales on the extensor surfaces of the elbows, knees, scalp, ears, and presacral area. Nails affected by psoriasis becomes pitting, ridging, cracking, brownish color, and rough surface and overcomes onycholysis and subungual keratosis.[8] The diagnosis criteria according The Classification for Psoriatic Arthritis (CASPAR) in 2006 had a sensitivity of 91.4% and a specificity of 98.7%. The criteria include joint, lumbago, enthesitis accompanied by 3 of the following 5 criteria: evidence of psoriasis, psoriatic nail dystrophy, negative rheumatoid factor, dactylitis, and radiological juxta-articular image of new bone formation or ossification.[9] No laboratory test can diagnose PsA. Several studies reported an increase in inflammatory markers, such as leukocytes, CRP, LED, P-selectin in PsA.[10] Radiological examination showed asymmetric joint involvement, enthesis with spurs formation, and asymmetrical spinal involvement that was lighter than Ankylosing spondylitis.[11]

This patient met the CASPAR criteria with a total score of 5 due to inflammatory back pain since 6 months before admission, psoriatic plaque in the inferior extremities, thickened toenails, swelling of the joints, and negative anti-rheumatoid factors.

According to the Group for Research and Assessment of Psoriatic and Psoriatic Arthritis (GRAPPA), the treatment for PsA is decided based on the symptoms and severity of PsA. Phototherapy psoralen and ultraviolet, disease-modifying conventional antirheumatic drugs (DMARD) are given to local PsA. Peripheral arthritis was administered NSAIDs, conventional DMARD or biological agents. PsA with dactylitis, enthesitis, and spinal involvement are performed by physiotherapy, NSAIDs or biological agents. Systemic steroids should be used carefully because it may cause flare-ups of the skin lesions while tapering off.[12]

PsA according to Wright and Moll has 5 forms: arthritis in the distal interphalanx joint (DIP), asymmetric oligoarthritis, symmetric polyarthritis resembles RA, spinal and sacroiliac joint involvement, and arthritis mutilans. Those forms may change during the disease. The simpler forms currently used are oligoarthritis, polyarthritis, and axial arthritis.[13]

The patient complained of symmetrical swelling of the joints of the fingers, psoriatic skin, thickened toenails, radiological features of lumbar spondylosis and sacroiliitis. The therapy given is paracetamol, tramadol as analgesic and sulfasalazine as DMARD.

Deep Vein Thrombosis (DVT) is a subtype of VTE. DVT in PsA is caused by systemic inflammation facilitating molecular adhesion and infiltration of activated monocytes resulting in vascular damage. In addition, inflammation increases the circulation of microparticles from endothelial cells and platelets triggering a prothrombotic pathway resulting in systemic hypercoagulation and inflammation.[4]

Cardinal signs of DVT include asymmetric swelling, warmth, and pain in the extremities. The Wells criteria has a sensitivity of 77-98% and a specificity of 38-58%. The criteria includes active cancer, current immobilization of the lower limb, recently bedridden for ≥ 3 days, or major surgery in the previous 12 weeks requiring general or regional anesthesia, stiffness localized along the distribution of the deep venous system, swelling of whole leg, swelling of the calf at least 3 cm larger compared to the healthy calf measured 10 cm below the tibial tuberosity, pitting edema confined to the symptomatic side of the leg, collateral superficial non-varicose veins, history of DVT, alternative diagnosis less likely than PE. The score is classified into low probability (-2-0), medium probability (1-2), high probability (3-8).[14]

The D-dimer aims to assess fibrin degradation products as fibrinolytic responses to the thrombus formation. This test has high sensitivity (75-100%) but low specificity (26-83%) for DVT. Duplex ultrasound is the first-line diagnostic test for proximal DVT. DVT is classified into acute (<14 days), subacute (14-28 days), and chronic (>28 days). Duplex ultrasound in acute DVT shows a thrombus floating in a blood vessel, thrombus formed by red blood cells and fibrin, low level of ecogenicity, homogeneous, thrombus extending the vein diameter, no collateral vein, non-compressible vein, and no recanalization in the vessels. In opposite, chronic DVT shows a thrombus adhering to the vessel wall, is formed by fibrin, covered by the endothelium, high level of ecogenicity, heterogeneous, shrinking vein diameter, collateral vein, partially compressible, and recanalization in blood vessels.[15] Contrast venography is the gold standard. However, it is not always available, contraindicated to allergy or impaired renal function, causes patient discomfort, and has inadequate visualization.[16]

In this case, the patient has immobilization of both legs, stiffness, swelling of the entire left leg, swelling of the calf 3 cm greater than the right side, pitting edema of the left leg, and increased D-dimer leading to the Wells score of 6 (high probability). Duplex ultrasound results showed the characteristic of chronic DVT.

The American College of Chest Physicians recommends direct oral anticoagulants (DOAC). Alternatively, vitamin K antagonist (VKA), low molecular weight heparin (LMWH) or unfractionated heparin (UFH) is given.[17] DOAC or VKA is recommended for at least 3 months.[16][18] DOAC have long half-lives making them less suitable for inpatient care and is contraindicated in patients with impaired liver or kidney function. DOAC is not recommended in cases of active malignancy, thrombocythemia, or a high risk of bleeding due to lack of research.[16]

DVT therapy given to this patient was rivaroxaban 15 mg bid for 7 days, then fondaparinux 7.5 mg sc for 5 days accompanied by warfarin 4 mg until INR ranged between 2 and 3.

DM is a group of metabolic diseases characterized by hyperglycemia that occurs due to abnormalities in insulin secretion. Inflammation in PsA results in insulin resistance by inhibiting insulin substrate receptors, causing DM.[10]

The criteria for diagnosis of DM are examination of fasting BSL >126mg/dL, BSL of > 200mg/dL 2-hours after oral 75 g glucose tolerance test, BSL > 200mg/dL with classic complaints or HbA1c of > 6.5%.[19]

This patient had random BSL of 426 mg/dL and fasting BSL of 263 mg/dL so that she was diagnosed with T2DM The therapy given is in the form of long acting insulin 0- 0-12 ui sc.

PsA is often related to a risk of major adverse cardiovascular events (MACE), such as myocardial infarction, cerebrovascular accidents, and cardiovascular death.[20] Systemic inflammatory conditions result in endothelial dysfunction resulting in stiffness of blood vessels. The cascade triggers atherosclerosis which causes cardiovascular disease[4]

The patient complained of sudden shortness of breath on the 15th day of treatment accompanied by chest pain that immediately caused death. The patient was concluded died with cardiovascular event.

Conclusion

PsA is challenging to be diagnosed and treated. It has similar symptoms with other autoimmune disease. In addition, PsA may cause complications, such as DM, DVT and MACE. PsA is also related to death due to cardiovascular event or pulmonary embolism. However, early diagnosis and prompt treatment improve morbidity and mortality caused by PsA.

Conflict of Interest: no conflict of interest.

Ethical Clearance: Not required for a case report.

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