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CASE REPORT

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Delayed diagnosis of systemic lupus erythematosus due to lack of competency skills in musculoskeletal examination

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Abstract Deficiencies in musculoskeletal (MSK) examination skills among internal medicine residents can cause serious outcomes. We report a case of systemic lupus erythematosus with active arthritis where the diagnosis was delayed for 7 days after hospital admission due to the lack of basic skills in MSK examination.

Keywords Arthritis · Competency skills · Internal medicine residents · Musculoskeletal examination · SLE

Introduction

Physical examination will always retain its importance as the most common diagnostic test used by doctors and as an essential tool for modern practice [1]. Findings from proper musculoskeletal (MSK) examination are extremely useful in diagnosing rheumatologic disorders especially where gold standard diagnostic tests are lacking. Therefore, internal medicine residents should have basic competency skills in MSK examination. We report a case of systemic lupus erythematosus (SLE) with active arthritis where the diagnosis was delayed 7 days after hospital admission due to lack of basic skills in MSK examination.

Case report

A 23-year-old male patient presented to the emergency room with 2 days history of fever and dyspnea. A week before this, he had complained of rigors, night sweats, and shivering. He reported significant weight loss of 17 kg during the preceding 3 months. There was history of loose bowel motion and frequent vomiting. There was no history of jaundice or hepatitis exposure. He took phenytoin as a treatment for epilepsy diagnosed since the age of 12 with no attacks for the last 3 years. There were no more symptoms reported like joint pain or swellings in the emergency room notes or in the internal medicine admission note.

Based on physical examination findings reported in the admission note, the patient was febrile at 38.9°C, had a blood pressure of 110/70, heart rate of 88 beats/min and respiratory rate of 18 per minute. Oxygen saturation was of 92% on room air. Diffuse lymphadenopathy was present but he had no hepatic or splenic enlargement. He had ejection systolic murmur. The rest of the examination was reported as normal. There were no comments on MSK examination findings.

The initial investigations revealed white blood cells of 1.9×10^3 per liter, platelet count of 81×10^3 per liter, and hemoglobin level of 8.8 mg/dl. After these results were obtained, hematology service was consulted and the patient was admitted to the hospital for fever and pancytopenia. Broad-spectrum antibiotics were started. All septic work-up including blood, urine, and sputum cultures were negative and the chest radiograph was within normal limits. Bone marrow biopsy showed hypocellular bone marrow with marked reduction in erythroid and myeloid series. Ziehl–Neelsen's stain was negative for acid fast bacilli. Echocardiogram was normal. The initial impression was a drug-related side effect.

During the hospital stay, significant hair loss was noted. This raised the suspicion for SLE in a febrile patient with pancytopenia that was not responding to antibiotics. Antinuclear antibody test was requested and it was positive on immunoflorescence technique. Further investigations showed that C3 level was 80 mg/dl (75–165), C4 level was 17 mg/dl (12–42), antidouble stranded DNA antibodies were positive, and erythrocyte sedimentation rate was 65 mm/h. Based on these findings, a rheumatology

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consultation was requested. On further questioning, history of morning stiffness was elicited in small joints of hands, wrists, elbows, and knees for about 60-min duration. The patient complained of a scalp rash but there were no mouth ulcers, malar rash, or photosensitivity. Physical examination by a rheumatologist revealed scarring alopecia measured 4×2 cm. Right and left elbows were warm and swollen and a fixed flexion contracture of about 15°. Knees, wrists, and small joints of hands, mainly, metacarpophalangeal joints were tender and range of motion was full but tender. A 24-h urine collection showed proteinurea of 1.8 g. A subsequent renal biopsy showed changes consistent with diffuse proliferative glomerulonephritis (stage IV). After 7 days of hospital stay with ongoing febrile illness, the diagnosis of SLE was established. The patient received pulse therapy of 1 g of methylprednisolone for 3 days. Then he was discharged and maintained on prednisone and mycophenolate mofetil 2 g/day. Follow-up assessment revealed a normal magnetic resonance imaging of the brain. A 24-h urine collection decreased to 400 mg. Hematology panel has normalized. However, the anti-dsDNA antibody titer remained elevated.

Discussion

Second only to upper respiratory illness, MSK symptoms are the most common reason that patients seek medical attention, accounting for approximately 20% of both primary care and emergency room visits [2]. In a health survey, MSK disorders were ranked first in prevalence as the cause of chronic health problems, long term disabilities, and consultations with a health professional [3].

Despite this impact of MSK disorders on health care, rheumatological diseases are often overlooked or inadequately assessed by doctors [4]. Among 200 general medical inpatients in a teaching hospital, the signs and symptoms of MSK disorder were recorded in the hospital notes in only 5.5 and 14%, respectively. This compared poorly with recorded examination of other systems and regions, for example, cardiovascular symptoms were recorded in 100% of the cases; respiratory and abdominal symptoms were recorded in 99%, the nervous system, skin and female breasts symptoms were recorded in 77%, 13%, respectively [5]. In another report, only, 40% of patients admitted to the general medicine ward had the history of their MSK symptoms recorded and only 14.5% of these patients received comprehensive MSK examination [6]. Furthermore, 80% of symptomatic patients received either no treatment for their rheumatic disorder or treatment that was regarded as suboptimal or inappropriate [6]. A more recent report shows even a higher percentage of patients—63% of all patient admitted to general medicine ward—had MSK symptoms or its signs but relevant MSK history was missed in 49% of the patients records, while signs were missed in 78%; 42% of those with MSK conditions would have benefited from additional treatment [7].

The dissatisfaction of internal medicine residents and family physicians about MSK training is described in the literature [8]. It means there are significant deficiencies in the teaching of MSK disorders. Competency identification is lacking not only for the majority of the undergraduate curriculum but also for the postgraduate training programs. For example, there are no clearly identified competencies required by a rheumatologist for MSK examination [9].

Some of the reasons behind the lack of proper skills in MSK physical examination are the vague MSK curriculum that is taught in many medical schools [2, 4]. This has lead clinicians involved in MSK teaching to address the need to agree which examination skills medical students should learn [10] and a core set of MSK clinical skills for medical students were established [11]. Other reasons may include the lack of knowledge of the general screening examination for MSK system [12] and the false impression that MSK assessment is difficult due to its length. There is a need to simplify and standardize MSK physical examination [9, 13–15].

Undergraduate and postgraduate training programs should consider more emphasis on MSK physical examination teaching. Additional training in MSK conditions among health care professionals was shown to have an impact on their confidence of managing these conditions [7, 8, 16]. However, the delivery of courses or sessions in MSK examination should be designed carefully, considering the current trends in medical education where there is active role for learners. Small group instruction with hands-on supervised practice is better than more passive instructional methods for teaching MSK examination [17].

Apparently, the focus of the medical team taking care of the patient presented in this report was on obvious findings like fever and pancytopenia that were identified in the emergency room. This might have restricted the clerking done on admission to "hematology and infectious diseases" while what should have been done was a complete history and thorough physical examination regardless of initial impression. MSK assessment should be a part of routine clerking [7]. Assuring such attitude among clinicians will prevent unnecessary delay in diagnosis. If a simple MSK screening examination focused mainly on range of motion testing to assess function was done, this patient's active arthritis would have been picked up on admission. This would have initiated the early search for a rheumatological disease and start treatment without a delay.

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