

## CASE REPORT

# Development of polymyalgia rheumatica during hospitalization and diagnosis based on history taking by physical and occupational therapists

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## Abstract

Polymyalgia rheumatica (PMR) is frequently reported in the outpatient setting and presents with pain, morning stiffness, mild fever, and fatigue. However, the clinical course of PMR during hospitalization is unknown. We report a case of PMR that developed during hospitalization. PMR diagnosis should begin with an evaluation of core inclusion and exclusion criteria. However, when examining elderly patients, retrieving symptom information from the patient or their family is often difficult, especially during prolonged hospitalization. History taking by physical and occupational therapists or by other health care professionals is paramount in the symptomatic diagnoses of inpatients.

## KEYWORDS

history taking, inflammatory response, occupational therapist, physical therapist, polymyalgia rheumatica, rehabilitation

## 1 | INTRODUCTION

Polymyalgia rheumatica (PMR), an inflammatory disease encountered relatively frequently in outpatient settings, presents with pain and morning stiffness, mild fever, and fatigue.<sup>1</sup> PMR diagnosis should start with an evaluation of core inclusion and exclusion criteria followed by an assessment of the response to a standardized dose of corticosteroid.<sup>2</sup> However, the course of PMR that develops during hospitalization is unknown. We report a case of PMR that developed during hospitalization at another hospital, and we demonstrate the importance of history taking in the course of PMR management.

## 2 | CASE REPORT

An 81-year-old man with chief complaints of weakness was transferred to our hospital. The patient developed left thalamic infarct and was admitted to the index hospital. In the same month, the

patient was transferred to the second hospital for rehabilitation. Two months prior to admission at our hospital, the patient presented with weakness and was clinically suspected of having a recurrence of cerebral infarction. However, during this time, the patient also had fever, elevated C-reactive protein level, thrombocytosis, and reduced albumin level. One month prior to admission at our hospital, the patient demonstrated body weight loss and anemia, and after hematological examination at another hospital, the cause of the symptoms could not be determined. To determine the cause, the patient was referred and transferred to our hospital. He took oral medications, which consisted of celecoxib, enalapril, cilnidipine, voglibose, apixaban, and pregabalin.

In the extremities, the patient experienced pain and limited range of motion during shoulder flexion, knee flexion, and wrist extension; his passive range of motion was better than the active range of motion, and edema was absent.

Laboratory data are shown in Table 1. Tests for rheumatoid factors, anticyclic citrullinated peptide antibodies, and antinuclear antibodies

**TABLE 1** Laboratory data

Variable	Units
White blood cell count	13 800/ $\mu$ L
Neutrophils	74%
Red blood cell count	$3.11 \times 10^6$ / $\mu$ L
Hemoglobin	8.0 g/dL
Hematocrit	35%
Platelet count	$540 \times 10^3$ / $\mu$ L
Total protein	6.8 g/dL
Albumin	2.7 g/dL
Total bilirubin	0.3 mg/dL
Aspartate aminotransferase	84 U/L
Alanine aminotransferase	128 U/L
$\gamma$ -glutamyltranspeptidase	46 U/L
Blood urea nitrogen	38 mg/dL
Serum creatinine level	0.52 mg/dL
Serum sodium level	134 mEq/L
Serum potassium level	4.3 mEq/L
Serum chloride level	101 mEq/L
Serum calcium level	8.9 mEq/L
Serum creatine kinase level	19 IU/L
C-reactive protein	10.0 mg/dL
Erythrocyte sedimentation rate	109 mm/h
Ferritin level	284 ng/mL
Thyroid-stimulating hormone	2.37 $\mu$ U/mL
Free thyroxine level	2.25 ng/mL

were all negative. In serum immunoelectrophoresis, chronic inflammatory pattern and ANCA were negative. Blood culture was negative. Contrast-enhanced thoracoabdominal computed tomography did not reveal pneumonia, abscess, neoplasm, or thrombus.

In addition to the fever and elevated inflammatory response described by the patient's previous physician, we observed arthralgia and limited range of motion. Determining whether symptoms were the effect of cerebral infarction and long-term hospitalization or whether they were novel symptoms was difficult. We therefore attempted to determine the course of onset. However, recall by the patient and his family was vague with little detail, and the physician at the patient's previous hospital had minimal information. Moreover, blood test results and imaging tests failed to yield a diagnosis.

Based on our experience with physical therapists (PTs) and occupational therapists (OT) at our hospital, we considered it likely that PTs and OTs would have made detailed daily assessments and records; we thus requested all related records at the second hospital (Table 2). These records demonstrated that 85 days before admission to our hospital, arthralgia presented for the first time. Pain in the major joints, morning stiffness, and impairment in daily activities were novel symptoms that fully emerged within 29 days. Based on a combination of physical and laboratory findings at admission, PMR was strongly suspected. Based on ultrasonography findings, synovitis was not found in the fingers. The patient was clinically diagnosed with PMR and treated with 15 mg/day prednisolone. Based on rapid alleviation of pain and independence in daily activities, corticosteroid responsiveness was considered favorable. On day 18 postadmission, the patient was transferred to his previous hospital to continue rehabilitation.

**TABLE 2** Medical records of PTs and OTs at the second hospital

The patient developed cerebral infarction 121 d before admission to our hospital and was admitted to the index hospital.

The patient was transferred to the second hospital 98 d before admission to our hospital.

Then, 85 d before admission to our hospital,

PT: "Arthralgia present; no pain occurred during passive movement."

\*This record was the first time that PT or OT described the pain or stiffness.

Further, 69 d before admission to our hospital,

OT: "Starting in the morning, unable to move right shoulder or right medial thigh due to pain."

Additionally, 59 d before admission to our hospital,

OT: "Systemic pain present,"

"Assistance required in both daily activities and transfer activities,"

"Pain manifests during movement of left arm."

Next, 56 d before admission to our hospital,

PT: "Systemic stiffness present."

Lastly, 24 d before admission to our hospital,

PT: "Intensive assistance required in daily activities,"

"Freer body movement starting in the afternoon."

Novel symptoms fully emerged within 29 days.

OT, occupational therapist; PT, physical therapist.

Incidentally, as mentioned earlier, the patient was clinically suspected of having a recurrence of cerebral infarction 2 months prior to admission at our hospital. However, his symptom had just been weakness, and he was finally diagnosed with the development of PMR during hospitalization. Therefore, we speculate that the recurrence of cerebral infarction was a misdiagnosis.

### 3 | DISCUSSION

The present case revealed the following: (a) History taking by PTs and OTs is useful in the symptomatic diagnosis in hospitalized patients; (b) PMR can develop during hospitalization.

In the first case, history taking by PTs and OTs was useful in symptomatic diagnosis. At the previous hospital, a novel reduction in activity was misunderstood by a physician, leading to symptomatic treatment for pain with nonsteroidal anti-inflammatory drugs (NSAIDs). In diagnosing PMR, the core inclusion criteria (duration >2 weeks, bilateral shoulder or pelvic girdle aching, or both; morning stiffness duration >45 minutes) must be confirmed.<sup>2</sup> However, when examining elderly patients, requesting the onset, duration, and sequence of symptoms from the patient is often difficult; in such cases, obtaining information from the patient's family and friends is important.<sup>3</sup> It may also be obtained from a healthcare professional who has known the patient for an extended period. The rehabilitation records revealed the course of symptom onset, ultimately leading to a diagnosis of PMR. Symptomatic diagnoses were obtained from history taking in 82% of outpatients in a 1975 study<sup>4</sup> and in 76% of outpatients in a 1992 study.<sup>5</sup> Even after several decades, the importance of history taking in symptomatic diagnosis remains significant.

In the second case, we experienced a patient that developed PMR approximately 1 month after hospital admission, and the symptoms fully developed within 1 month after PMR onset. The physician observed fever and elevated inflammatory response on one occasion shortly after PMR onset, and, following transfer to our hospital, we also observed fever; thus, it is surmised that monthly fever was masked by regular use of NSAIDs. Fever may be attenuated in older patients and moderated by the use of corticosteroids and NSAIDs.<sup>3</sup> Novel febrile episodes during hospitalization are most commonly caused by infection. However, fever caused by inflammatory disease is rare. The cause of fever was reported to be infection and inflammatory in 78% and 3% of patients, respectively, in an acute care setting<sup>6</sup>; furthermore, the same causes of febrile episodes were seen in 70% and 0.3% of cases, respectively, among 443 elderly patients in another study.<sup>7</sup> In Japanese convalescent rehabilitation wards, the maximum possible duration of hospitalization is 180 days, and the mean duration is 75 days.<sup>8</sup> If hospitalization is prolonged, novel febrile

episodes associated with inflammatory disease and malignant neoplasms are predicted to occur more frequently, which is similarly observed in the community; however, further prospective research is needed due to the limitations of case reports.

In conclusion, PMR is a potential cause of fever during hospitalization, and thus, history taking by PTs, OTs, or other health care professionals is paramount in the symptomatic diagnoses of inpatients.

### ACKNOWLEDGEMENTS

None.

### CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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