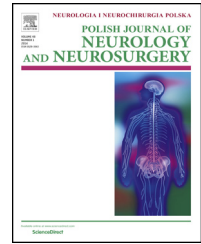


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Case report

Simultaneous acute shoulder arthritis and multiple mononeuropathy in a newly diagnosed type 2 diabetes patient – First case report

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ABSTRACT

Diabetes is a common disorder that leads to the musculoskeletal symptoms such as the shoulder arthritis. The involvement of peripheral nervous system is one of the troublesome for the patients as it provokes chronic sensory symptoms, lower motor neuron involvement and autonomic symptoms. In the course of the disease there has been several types of neuropathies described.

A 41-year-old male patient was admitted to the internal medicine department because of the general weakness, malaise, polydipsia and polyuria since several days. The initial blood glucose level was 780 mg/dl. During the first day the continuous insulin infusion was administered. On the next day when he woke up, the severe pain in the right shoulder with limited movement, right upper extremity weakness and burning pain in the radial aspect of this extremity appeared. On examination right shoulder joint movement limitation was found with the muscle weakness and sensory symptoms in the upper limbs. The clinical picture indicated on the right shoulder arthritis and the peripheral nervous system symptoms such as the right musculocutaneous, supraspinatus, right radial nerve and left radial nerve damage.

We present a first case report of simultaneous, acute involvement of the shoulder joint and multiple neuropathy in a patient with newly diagnosed type 2 diabetes, presumably in the state of ketoacidosis.

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Introduction

In the diabetic patients there is higher risk of musculoskeletal symptoms, such as the shoulder arthritis called “frozen shoulder” that is an orthopedic disorder connected with the presence of diabetes. The frequency in diabetic patients ranges from 6.7% to 31.8%, while in non-diabetics is observed in 2–3% [1,2]. There is a strong association between risk of shoulder capsulitis (SC) and the duration of diabetes. In diabetic patients it is also more often bilateral. There has been shown correlation between SC and microvascular complications such as retinopathy and autonomic neuropathy [3].

The musculoskeletal complications in diabetes result from prolonged hyperglycemia that activates two metabolic cascades: enzymatic (throughout aldolase reductase) and non-enzymatic (throughout glycation). Non-enzymatic glycation of type IV collagen leads to increase of arterial resistance that decreases tissue perfusion and causes nerve hypoxia [2].

The diabetic neuropathy contains several types of clinical manifestations. The pathogenesis is linked to hyperglycemia and subsequent metabolic and ischemic changes, but also compressive and inflammatory etiology is proposed. The most common type of diabetic neuropathy is symmetrical, distal, sensorimotor polyneuropathy. Other types of diabetic neuropathy include lumbosacral radiculoplexus neuropathy (diabetic cachexia), neuropathies with involvement of trunk, cranial nerves, mononeuropathies and autonomic neuropathy. There are also distinct types of neuropathies such as “neuropathy after ketoacidosis” and diabetic radiculoplexus neuropathies (DRPN). The DRPN neuropathies consist of diabetic cervical radiculoplexus neuropathy (DCRPN), diabetic thoracic radiculoneuropathy (DTR) and diabetic lumbosacral radiculoplexus neuropathy (DLRPN) [4].

There has been only 2 patients presented with SC and neuropathy as a cervical radiculopathy [5]. To our knowledge there has not been presented cases with an acute, simultaneous shoulder inflammation and multiple mononeuropathy in the new onset diabetic patient with ketoacidosis.

Case presentation

A male, 41-year old Caucasian patient was admitted to the internal medicine department in the west part of Poland,

because of high blood glucose level (780 mg/dl) detected by the general practitioner. The measurement was performed because of general weakness, malaise, polydipsia and polyuria that had been present for several days before. The initial laboratory results are listed in Table 1, the BMI was 28.5. During the first day after admission he was on the insulin pump with continuous insulin infusion. Till the next morning the blood glucose level of 200 mg/dl was reached and insulin infusion terminated. At this time, new symptoms appeared, such as the severe pain in the right shoulder with limited movement, right upper extremity weakness and burning pain within the radial aspect of this extremity. The exact time of the onset is not known, because patient woke up with these symptoms. After 7 days the weakness of left arm was noticed. There was number of additional tests performed. The abdominal ultrasonography showed moderate hepatic steatosis. The brain MRI detected bilaterally multifocal leukodystrophic lesions in the deep white matter. Other tests showed no abnormalities: cervical spine CT, the X-ray and ultrasonography of right shoulder, the right upper extremity Doppler ultrasonography. The concomitant medical history included hypertension and previous, distant glomerulonephritis. The orthopedics, rheumatologist and neurologist consultations were made, without establishing any diagnosis. After 1 week patient was sent home with drugs prescribed, including insulin and with advice to undergo further neurological diagnostics.

One month later patient visited the neurology outpatient clinic. The main complaints were pain with movement limitation in the right shoulder, weakness of the distal parts of the upper extremities with predominance on the right, burning pain radiating throughout radial aspect of the right upper extremity. On examination: muscle wasting in the right upper extremity within supraspinatus, subscapularis, teres major, brachial muscles, almost immobile right shoulder joint with 20° abduction, 30° flexion and 30° extension (Fig. 1). Muscle strength in the right elbow joint was decreased in the flexion movement. The strength in the right upper extremity girdle was difficult to assess, because of the severe passive and active movement limitation. There was also severe pain while shoulder movement. Flexion of the right wrist was 2 points in MRC (Medical Research Council) scale, extension 1 point. Decreased sensation of the radial aspect of right forearm and wrist was found. In the left upper extremity there was weakness of the wrist extension of 2 points MRC scale and decreased sensation over the skin area between the thumb

Table 1 – Initial blood and urine laboratory test results.

Parameter	Result	Parameter	Result
1. Creatinine	1.58 mg/dl	11. CRP	12.98 mg/l
2. Urea	44.5 mg/dl	12. pH	7.36
3. Sodium	132.8 mmol/l	13. PCO ₂	29.4 mmHg
4. Potassium	5.5 mmol/l	14. HCO ₃ ⁻	16.2 mmol/l
5. Glucose	678.22 mg/dl	15. Urine density	1.015
6. Alanine aminotransferase	215.84 U/l	16. Urine pH	5.5
7. Aspartate aminotransferase	104.77 U/l	17. Urine glucose	2014 mg/dl
8. TSH	1.28 uIU/ml	18. C-peptide	3.56 ng/ml
9. Triglycerides	311 mg/dl	19. Insulin	3.3 uIU/ml
10. LDL cholesterol	67.4 mg/dl	20. HbA1c	15.8%

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