CASE REPORT

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Solitary Abdominal Wall Tuberculosis: A Rare Complication in a Type 2 Diabetic Patient

Wei Yang[1], Chendong He[2]

[1]The Affiliated Hospital of Nanjing University of Chinese Medicine (Jiangsu Province Hospital of Chinese Medicine), Department of Radiology, Nanjing, China
[2]Nanjing Hospital of Chinese Medicine, Department of Radiology, Nanjing, China

ABSTRACT

Solitary abdominal wall tuberculosis is a rare and often misdiagnosed form of extrapulmonary tuberculosis, primarily due to its non specific clinical presentation. It can mimic neoplastic or pyogenic lesions, leading to frequent misdiagnosis or delayed identification. A high index of suspicion is crucial, especially in patients with risk factors such as immunosuppression, poorly controlled diabetes, or living in endemic areas. We present the case of a 43-year-old man who initially had a chronic, painless abdominal wall mass that later became symptomatic. Pathological examination of the biopsy confirmed a tuberculous granuloma, highlighting the importance of thorough evaluation when encountering atypical soft tissue masses.

Keywords: Abdominal wall, Tuberculosis, Type 2 diabetes

INTRODUCTION

Solitary abdominal wall tuberculosis is rare in patients without a history of pulmonary tuberculosis. We present the case of a 43-year-old male who was admitted with a painless abdominal wall mass that had persisted for 8 years. His lung examination was clear, though he had a history of type 2 diabetes. Surgical pathology ultimately confirmed the mass as a tuberculous granuloma. This case highlights the need to include tuberculosis in the differential diagnosis of chronic soft tissue masses, especially in immunocompromised patients.

CASE REPORT

A 43-year-old male presented with a painless mass in the right lower abdominal wall persisting for 8 years. Routine physical examination showed normal chest computed tomography (CT) findings, while abdominal CT revealed localized swelling of the right external oblique muscle (Figure 1A). No treatment was initiated during this period. One month before admission, the patient developed sudden pain at the site of the lump, without associated redness or swelling, and denied recent fever or weight loss. The patient had an eight-year history of poorly controlled type 2 diabetes, managed with metformin; but denied any history of tuberculosis infection. Physical examination revealed a firm, well-defined, movable lump in the right lower abdomen. Laboratory tests indicated hyperglycemia (Table 1). Abdominal ultrasound identified a hypoechoic mass (4.9×3.2×1.2 cm) in the external oblique muscle of the right upper abdominal wall. Magnetic resonance imaging showed abnormal signals in the right external oblique muscle, extending into the adjacent superficial fascial layer (Figure 1B). Surgical exploration revealed infiltration of inflammatory cells, foamy tissue cell deposition, focal granulation tissue hyperplasia, and microabscess formation in the subcutaneous tissue (Figure 1C). Special staining confirmed the presence of acid-fast bacilli. The diagnosis was tuberculous granuloma of the abdominal

Table 1. Laboratory findings of the patient

Index	Results	Reference range	Unit
White blood cell count	6.59	4.00~10.00	10^9/L
Red blood cell count	5.31	4.00~5.50	10^{12}/L
Hemoglobin	156	120~160	g/L

Address for Correspondence: Chendong He MD, Nanjing Hospital of Chinese Medicine, Department of Radiology, Nanjing, China
E-mail: hcd1222@163.com **ORCID ID:** orcid.org/0000-0002-2216-7245
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Table 1. Continued

Index	Results	Reference range	Unit
Platelet	220	100~300	10^9/L
Neutrophils	48.7	50.0~70.0	%
Lymphocytes	39.5	20.0~40.0	%
Monocytes	9.3	3.0~8.0	%
Eosinophils	1.7	0.0~5.0	%
Basophils	0.8	0.0~1.0	%
Urea	6.69	2.86~8.20	mmol/L
Creatinine	63.1	44.0~110.0	umol/L
Aspartate aminotransferase	26	<38	U/L
Alanine aminotransferase	28	42	U/L
Total protein	62.77	64.00~83.00	g/L
Sodium	136.7	136.0~146.0	mmol/L
Potassium	4.27	3.50~5.10	mmol/L
Calcium	2.3	2.10~2.95	mmol/L
Glucose	12.82	3.89~6.11	mmol/L
Hemoglobin A1c	11.6	4.0~6.0	%
Cancer antigen 125	17.6	<35.00	U/mL
Cancer antigen 199	11.63	<37.00	U/mL
Ferritin	383.4	23.90~336.2	ng/mL
Carcinoembryonic antigen	2.51	<5.00	ng/mL

mmol/L: Millimole per liter, umol/L: Unit mole per liter, U/L: Unit per liter, g/L: Gram per liter, U/mL: Unit per milliliter, ng/mL: Nanogram per milliliter

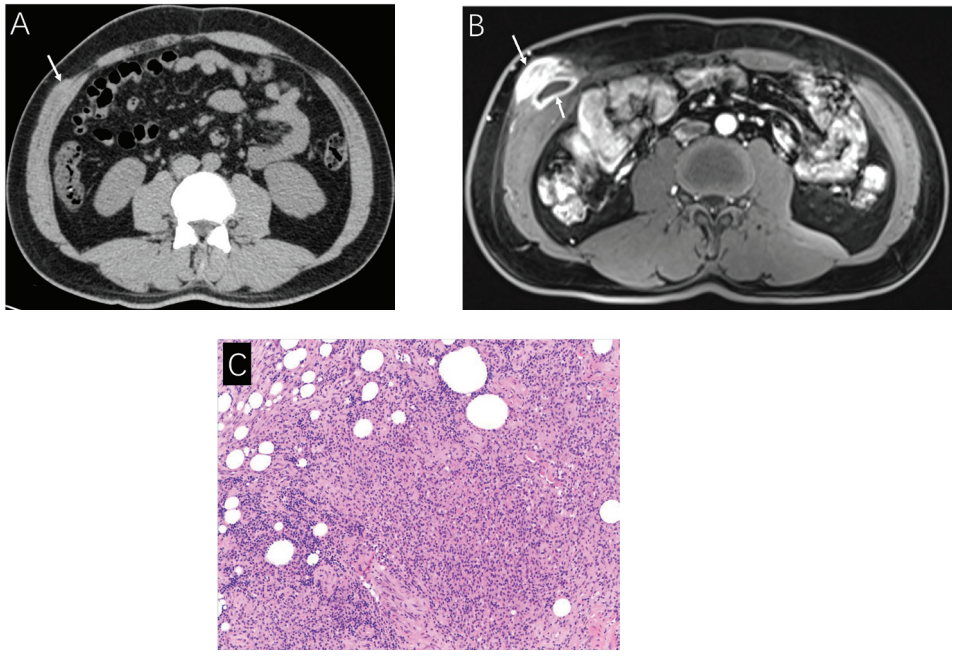

Figure 1. Imaging and pathological results. (A) Abdominal CT showed slight swelling of the right abdominal wall. (B) Post-contrast T1 fat-saturated MRI showed significant enhancement. (C) The pathological results confirmed a tuberculous granuloma.

CT: Computed tomography, MRI: Magnetic resonance imaging

wall. The patient received symptomatic treatment, including anti-infective therapy and blood sugar control. Eleven days after admission, he was transferred to a specialized hospital for anti-tuberculosis treatment.

DISCUSSION

Pulmonary tuberculosis most commonly affects the lungs, while extrapulmonary tuberculosis can involve any organ. Extrapulmonary tuberculosis can occur in both immunocompromised individuals [1] and those with normal immune function [2], comprising about 15% of all tuberculosis cases [3,4]. The most frequent extrapulmonary locations include the pleura, followed by lymph nodes, musculoskeletal system, and urogenital organs [5]. *Mycobacterium tuberculosis* can spread to the abdomen through routes like blood, lymph nodes, or sputum; and abdominal tuberculosis accounts for about 3-4% of tuberculosis cases [6].

Abdominal wall tuberculosis is a rare condition, typically resulting from drainage through the lymphatic system from the ruptured tuberculosis focus, through the peritoneum or adjacent soft tissues. Possible contributing factors include abdominal wall injury, vaccination, or direct spread of tuberculosis from the peritoneum or internal organs [6-8]. Abdominal wall tuberculosis lacks specific clinical symptoms and is typically located on the anterior chest wall. Eighty-three percent of patients have a history of tuberculosis. Nonetheless, literature also reports cases of abdominal wall tuberculosis in immunocompetent individuals [3,5,9], especially in low- and middle-income countries. According to the literature, diabetic patients have a threefold increased risk of contracting pulmonary tuberculosis [10]. Alcala et al. [6] reported a case of a 38-year-old female with type 2 diabetes presenting with a recurrent abdominal wall tuberculosis abscess.

In our case, the patient had no history of tuberculosis infection, and there was no recent trauma or injections. Notably, the patient has a history of type 2 diabetes. Research has indicated that diabetic patients have immune dysfunction, which results in decreased resistance to *Mycobacterium tuberculosis*. High blood glucose levels cause microvascular damage, reducing the effectiveness of tuberculosis treatment and potentially promoting the development of multidrug-resistant tuberculosis. Thus, we speculate that abdominal wall tuberculosis is a rare complication in patients with diabetes. Diagnosing abdominal wall tuberculosis is challenging; a definitive diagnosis is based on pathology. The sensitivity of fine needle aspiration is relatively low, making surgical biopsy the preferred approach. If the lesion becomes purulent, aspiration and local injection of anti-tuberculosis drugs are recommended. If the lesion does not become purulent or aspiration is unsuccessful, surgical resection should be considered [11].

In conclusion, this case emphasizes the importance of considering atypical tuberculous granulomas, particularly in diabetic populations. We suggest optimizing blood glucose control as part of improving the management of tuberculosis in diabetic patients. When evaluating abdominal masses in diabetic patients, especially those with chronic or persistent lesions, clinicians should consider tuberculosis in the differential diagnosis. Early detection through targeted screening, diagnostic imaging, and tissue biopsy may lead to more accurate diagnoses and treatment.

Ethics

Informed Consent: Informed consent was obtained from the patient for publication of this case report, including any accompanying images and data.

Footnotes

Authorship Contributions

Concept: W.Y., C.H., Data Collection or Processing: W.Y., Literature Search: W.Y., C.H., Writing: W.Y., C.H.

Conflict of Interest: No conflict of interest was declared by the authors.

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