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Case Report

An atypical presentation of acute pancreatitis after simultaneous bilateral total knee replacement: A case report

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ABSTRACT

Acute pancreatitis is a known post-operative complication, commonly after abdominal surgery rather than total knee arthroplasty. When complications occur, post total knee arthroplasty, they tend to be cardiovascular and neurological events, rarely involving the gastrointestinal system. Therefore, when gastrointestinal complications occur, especially if they present with atypical symptoms, this tends to result in a delay in diagnosis. We present a case of acute pancreatitis post simultaneous bilateral total knee arthroplasty in a patient with risk factors like alcoholism and hypercholesterolaemia. Its atypical presentation of only persistent tachycardia, without abdominal pain, was misleading and the resultant delay in treatment dangerous. Therefore, it is important to consider acute pancreatitis as a differential diagnosis in a patient with persistent tachycardia post total knee arthroplasty, especially if he has risk factors for the condition.

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1. Introduction

For patients with advanced osteoarthritis of the knee unresponsive to conservative therapy, total knee arthroplasty (TKA) is widely accepted as the treatment of choice for symptom relief and restoration of knee function. Many patients present in the late stages of the disease with bilateral gonarthrosis, and the patient and his surgeon have to decide whether to proceed with bilateral knee replacement in a single sitting or as a sequential, staged procedure.

There have been numerous reports on the safety and outcomes of bilateral total knee arthroplasty: some studies report excellent outcomes with bilateral total knee arthroplasty, whereas other investigators caution against replacing both knees in a single stage, citing a higher incidence of general and surgical complications.^{1–5} These complications include various cardiovascular, thromboembolic and neurological events, and excess mortality amongst high-risk patients.⁵ Gastrointestinal complications, while not uncommon, have not been noted as frequently.

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Acute pancreatitis is a common inflammatory condition of varying severity. Common causes and risk factors include the presence of known gallstones, alcoholism, hypercholesterolaemia and post surgery. These patients typically present with abdominal pain with nausea and vomiting. Treatment of this condition is largely conservative, with disease severity and the presence of organ failure determining its prognosis. Therefore, early disease recognition and intensive treatment is of outmost importance.⁶

In this brief report, we present a case of an atypical presentation of acute pancreatitis in a male patient after simultaneous bilateral total knee arthroplasty with known risk factors for this condition. His initial presentation of only persistent tachycardia, without abdominal pain, was misleading and resulted in a delay in his diagnosis and subsequent treatment.

2. Case report

A sixty-nine-year old Chinese gentleman presented with progressively worsening bilateral mechanical knee pain, with no antecedent history of a specific injury event. His symptoms had been present for the last 10 years but had been worsening over the last 3 months. He now had difficulty ambulating and needed to use the wheelchair when leaving the house. Clinical evaluation was consistent with a diagnosis of primary osteoarthritis of both knees, and standard knee radiographs confirmed the presence of tricompartmental arthritis with varus deformity involving both knees (right knee-grade 3, left knee-grade 4; based on the Kellgren–Lawrence scale^{7,8}). Bilateral simultaneous total knee arthroplasty was offered in view of the severity of his symptoms in both knees. Other medical issues included hypertension (well-controlled with medication), mild diabetes mellitus on diet control and hypercholesterolaemia. He did not have a history of smoking, but had a significant drinking history of approximately 7–10 units of alcohol a day for the past 10 years. He had voluntarily stopped drinking approximately 6 months prior to the surgery. At the time of surgery, he weighed 73.4 kg and was 1.63 m tall (BMI 27.6). Pre-operative cardiovascular and blood investigations, including liver function tests, were within normal limits. Pre-operative haemoglobin was 16.3 g/dl.

He underwent bilateral total knee replacement under spinal regional anaesthesia. The knees were operated on simultaneously by two surgical teams. A tourniquet was applied to both lower limbs during the surgery and the operative time was 100 min and 115 min for the right and left limbs respectively. The same cemented cruciate-substituting total knee implants were used bilaterally. The tourniquets were deflated individually at the end of the procedure for each leg. Total intra-operative blood loss was estimated at 480 ml. The operation itself and the immediate post-operative recovery period were uneventful. Post-operative pain was initially managed with patient-controlled intravenous morphine and orally-administered paracetamol. Thromboembolic prophylaxis was started on the 1st post-operative day (POD 1), comprising both chemoprophylaxis with subcutaneous enoxaparin, and mechanical prophylaxis using pneumatic calf intermittent compression devices.

In the evening of the day of surgery, sinus tachycardia of 100–120 beats/min was noted, but the patient was afebrile and other vital signs were otherwise stable. The initial impression was that of inadequate analgesia as the patient complained of breakthrough pain, and an oral non-steroidal anti-inflammatory drug (diclofenac) was added. This was successful in achieving adequate analgesia, and intravenous morphine was stopped on the 3rd POD. The subsequent analgesic regimen consisted of oral analgesics prescribed on an as needed basis (paracetamol, diclofenac, tramadol).

However, his tachycardia of 100–120 beats/min continued to persist over the following days despite optimum pain control and hydration. He was afebrile, and both the blood pressure and oxygen saturation were within normal limits. Serial Haemoglobin level checks were 12.5 g/dL (POD 1), 10.4 g/dL (POD 2) and 9.6 (POD 4) respectively. He was otherwise asymptomatic, and had no complaints of abdominal pain, chest pain or shortness of breath. There were no clinical signs of deep vein thrombosis in the peripheries.

To rule out the possibility of a silent myocardial event, a set of serial cardiac enzyme measurements and electrocardiograms were performed. These were negative for cardiac ischaemia and the electrocardiograms only revealed sinus tachycardia. In view of his persistent sinus tachycardia, a computer tomography pulmonary angiogram (CTPA) was performed on the morning of the 4th POD and this was negative for pulmonary embolism. On this same evening, the patient developed a fever of 37.8 °C but was otherwise asymptomatic until the following morning (POD 5), when he complained for the first time of a distended abdomen with mild discomfort. On examination, the abdomen was tympanic but with no significant tenderness. Bowel sounds were present but had a ‘tinkling’ quality. Both the C-reactive protein and white cell count were significantly raised at 363 U/L and $24.25 \times 10^9/L$ respectively. Arterial blood gas estimation was consistent with mild Type 1 respiratory failure (pH 7.45, PaO₂ 51.8 mmHg, PaCO₂ 33.9 mmHg, base excess 0.0 mmol/L on room air). Serum amylase was within the normal range at 147 U/L but serum lipase was raised to about twice the upper limit of normal at 79 U/L. An urgently arranged CT scan of the abdomen and pelvis confirmed the presence of extensive peripancreatic fluid collection, consistent with a diagnosis of acute pancreatitis. A sub-centimeter calculus at the neck of a moderately distended gallbladder, with no thickening of its wall, was also noted. The bowel loops were prominent, suggesting some degrees of ileus (Fig. 1). These findings were indicative of a likely diagnosis of acute pancreatitis, which requires 2 of the following 3 criteria: 1) abdominal pain 2) raised amylase and/or lipase 3) the presence of its characteristic findings on CT scan.⁹

A general surgical consult was sought, and a “drip-and-suck” protocol was immediately instituted: an intravenous drip of normal saline 0.9% was maintained, and both nasogastric and flatus tubes were inserted. Broad-spectrum intravenous antibiotic therapy was also begun. The pancreatitis improved over the next three weeks, with close biochemical and CT scan monitoring. He was subsequently discharged well to a community rehabilitative hospital for convalescent care before returning home, 6 weeks after the index surgery.

Fig. 1 – Peri-pancreatic fluid seen on CT Abdomen Pelvis.

3. Discussion

Due to its efficacy and safety, TKA has become widely accepted as the procedure of choice in patients with significant degenerative arthritis of the knee, what has not responded adequately to other forms of management.¹⁰ It is not uncommon for up to one third of patients to present with bilateral symptomatic knee arthritis requiring bilateral total knee replacements for restoration of function.¹¹ In this setting, the surgeon must then decide, together with the patient and other care providers, whether to proceed with bilateral TKA or whether it would be more appropriate to stage the replacements as two separate procedures.

Controversy exists with regard to the safety of simultaneous bilateral TKA. Advocates of simultaneous bilateral total knee arthroplasty point to its relative safety, convenience, shorter hospital stay, cost effectiveness and faster return to functional independence to support its implementation where appropriate.^{1,12–14} Some authors even go as far to suggest that possibly no difference exists in the complication rates of both unilateral and bilateral total knee replacements, irrespective of the pre-operative risk.¹⁵ Critics however point to other studies that report higher rates of post-operative mortality, cardiovascular, thromboembolic, neurological and occasionally gastrointestinal complications, especially in elderly patients over 70 years of age.^{3–5,16}

Gastrointestinal complications following simultaneous bilateral total knee arthroplasty is rare. Reported complications include gastritis, gastrointestinal bleeding and intestinal ileus.² We are currently unaware of any reports of acute pancreatitis as a complication of simultaneous bilateral TKA in the English literature. We did however uncover a translated

abstract from a Japanese journal referencing a similar event. In this case report, the patient presented with post-operative nausea and vomiting after bilateral TKA that was performed under general anaesthesia. Further investigations revealed an area of inflammation around the head of the pancreas on computed tomography and raised levels of serum amylase. No other risk factors for pancreatitis were mentioned to be present in the patient.¹⁷

Acute pancreatitis is a serious condition of varying severity. Early recognition is crucial in administering the proper treatment and ensuring the most favorable therapeutic outcome.¹⁸ It commonly presents with abdominal pain radiating to the back, accompanied by nausea and vomiting. Signs can be highly variable and may not reflect the severity of the disease. They include tachycardia, fever and even circulatory collapse. Up to 80% of all cases of acute pancreatitis may be related to gallstone disease and regular alcohol consumption, with alcohol-related pancreatitis presenting more commonly in males. However, not all patients with these risk factors develop the disease. Studies have shown that less than 3% of all heavy drinkers and only about 0.2% of patients with cholelithiasis actually develop the disease.^{18,19}

Prior to his bilateral total knee operation, our patient had multiple risk factors for acute pancreatitis. These include a history of chronic and excessive alcohol consumption, hypercholesterolaemia and cholelithiasis²⁰ which was previously unknown. Therefore, it is likely that these played an important part in his episode of acute pancreatitis. However, his presentation was atypical: he did not present with any significant abdominal pain, nor was there nausea and vomiting. The only sign present was that of persistent tachycardia, leading us to focus more on the possibility of cardiovascular complications considering his recent simultaneous bilateral total knee arthroplasty.

In summary, we present a case of a patient with an atypical presentation of acute pancreatitis after an uncomplicated simultaneous bilateral total knee operation.

The diagnosis of acute pancreatitis should be entertained in the post-operative patient with persistent tachycardia, in addition to the admittedly more common differential diagnoses such as uncompensated anaemia and cardiopulmonary events. The index of suspicion should be raised in patients with known risk factors for pancreatitis and the diagnosis confirmed with a serum lipase/amylase and a CT scan of the abdomen and pelvis. Early recognition and focused management will likely result in an excellent overall outcome for such patients.

Conflicts of interest

All authors have none to declare.

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