

Neurosyphilis Charcot's Joint

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Charcot's joints or neuropathic joints is a progressive arthropathy associated with loss of pain sensation and proprioception of the involved joint. The painless destructive joint is associated with tertiary syphilis (tabes dorsalis). Other causes are Diabetic neuropathy, Leprosy (mainly lower limb joints), Syringomyelia (upper and lower limbs), Multiple Sclerosis, Myelomeningocele, alcoholism, and spinal cord compression [1].

We would like to report a case of Charcot's joint in a neurosyphilis patient. A 55 years male, known syphilis for 30 years, presented with a history of progressively painless swelling both knees following instability and unable to walk for six years. Last 6 years ago, he noticed that both knee joints were swollen and deformed. There was a history of instability while walking and weight-bearing. Hence, he is ADL (Advance daily life support) dependent and uses a wheelchair. He has no history of alcohol consumption and drugs.

This case is selected for reporting due to its relatively rare incidence and unusual presentation.

Keywords: Charcot's joint; neurosyphilis; neuropathic joints.

1. INTRODUCTION

Charcot's joints or neuropathic joints were first described by Jean-Martin Charcot, a French

neurologist in tabes dorsalis in 1868. It is a progressive arthropathy associated with loss of pain sensation and position sense of the involved joint. Commonest joints involving Charcot's joint

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changes are the foot, ankle, shoulder, elbow and knee joints. The prevalence of Charcot arthropathy ranges from 0.1% to as high as 13% in specialized foot clinics. In patients with diabetes, the incidence of acute Charcot arthropathy of the foot and ankle ranges from 0.15-2.5%. The bilateral disease occurs in less than 10% of patients [2].

Articular cartilage and underlying bone are destroyed and deposited in hypertrophic synovium and may proliferate into large masses. The joint capsule is stretched and lax, becoming progressively unstable. The painless destructive joint is associated with tertiary syphilis (tabes dorsalis). Other causes are diabetic neuropathy, Leprosy (mainly lower limb joints), Syringomyelia (upper and lower limb), Multiple Sclerosis, myelomeningocele, and spinal cord compression [3].

Syphilis presents clinically as primary, secondary and tertiary syphilis. Primary syphilis manifests as a painless anogenital chancre. An untreated primary infection may progress to the secondary stage, classically associated with a maculopapular rash on the palms and soles along with generalized lymphadenopathy and condylomata lata. Individuals with untreated syphilis many years after initial infection often develop tertiary syphilis which develops chronic granulomatous lesions and cardiovascular or neurologic involvement. One example is Charcot's joint associated with Tabes dorsalis in tertiary which usually involves the knee or the hip [4].

We gave a description of a patient with an unexplained neuropathic knee joint who was diagnosed with neurosyphilis, which is found responsible for his destroyed, yet painless bilateral knee joint swelling.

2. CASE REPORT

A 55 years male, lorry driver presented with a history of progressively painless swelling both knees following instability and unable to walk for six years. He is a known case of neurosyphilis currently on penicillin and hypertensive on medication for 30 years.

Last 30 years back, the patient had a loss of sensation of both lower limbs and was diagnosed to have neurosyphilis after lumbar puncture and CSF examination. Last 6 years ago, he noticed that both knee joints were swollen and deformed.

There was a history of instability while walking and weight-bearing. So, he could not ambulate independently and use a wheelchair.



Fig. 1. Bilateral charcot knee joint (before surgery)



Fig. 2. Bilateral Charcot knee joint

2 years ago, the patient underwent left total knee replacement. Post-op was uneventful, and he was able to ambulate back. Then, he was admitted 2 months ago with painful swelling on left knee for 1 week prior to admission. The swelling started gradually on the anterior compartment of the left knee, which was red,

warm and soft. It was static in progression. There is no history of bleeding and discharge. The patient also developed sudden, continuous, severe throbbing pain with pain score of (9/10) on the anterior compartment of the left knee, which is aggravated by movement around the knee joint, relieved by analgesics but no radiation of pain. There was no history of fever, trauma, loss of appetite or weight, diffuse rash, multiple discrete lesions, motor weakness, and altered sensation. On further questioning, there was no history of foot or ankle deformities, dislocation, joint tightness or contractures, frequent urinary tract infections, and meningitis.



Fig. 3. Plain X-ray PA view of knee joint dislocation of tibia present, furthermore, disorganization and destruction of the knee joint with debris production

Furthermore, there was no family history of diabetes, hypertension, and malignancy. The patient had no changes in bowel or bladder habits. He is a chronic ex-smoker, 20 cigarettes per day for ten years and stopped 30 years back. There is no history of alcohol consumption and drug abuse but had a sexual promiscuity. He is an unmarried person.

On examination, his speech and mental function is normal but unable to walk and stand. Upon local examination of both knees revealed gross swelling, deformity, and variable in consistency, normal temperature, and no local tenderness. There were both thigh and calf muscles wasting,

flexion deformity of right knee joints and joint stability loss. Sensory impairment of both lower limbs, absence of knee and ankle reflexes were found on neurological examination. Review of other joints were normal. The range of movement is mentioned in the Table 1.



Fig. 4. Plain X-ray lateral view of knee joint



Fig. 5. Plain X-ray AP and lateral view of post total knee arthroplasty of the left knee

Table 1. Range of movement of right and left knee

Joint	Right		Left	
	Active	Passive	Active	Passive
Knee joint				
Flexion	30-120°	30-120°	0-100°	0-100°
Extension	0	0	0	0

Investigations revealed normal range of hemoglobin and complete picture. Fasting and post-prandial blood glucose estimation was normal, VDRL reactive (titer=16), CSF VDRL reactive, serum TPHA positive (1:320 dilution).

3. DISCUSSION

This case study highlights important points that alter the therapy of Charcot's joints. Charcot joint, also known as neuropathic arthropathy, results from neuro traumatic and neurovascular deficits. Charcot Joint can be classified according to Modified Eichenholtz's classification. On the plain radiograph of this patient, this patient has Stage 3 which is a stage of reconstruction, whereby, presence of consolidation of fixed flexion deformity of the knee, joint arthrosis, fibrous ankylosis and rounding and smoothing of the bone fragment [5]. Autonomic dysfunction associated osteopenia and increased blood flow to the affected joint, together with trauma, leading to inflammation [6]. History of smoking, previous open surgery and poor nutrition are significant in increasing the risk of infection. These factors predispose the patient to septic arthritis and periprosthetic fractures may aggravate septic shock and instability. As a result, arthroplasty is relatively contraindicated. Although not absolute contraindication, studies show neuropathic knee arthroplasty are partial satisfactory, a third of which have poor function and a fraction develop aseptic loosening which needed arthrodesis to salvage the limb [7]. Particularly in those with significant deformities, total knee arthroplasty (TKA) can usually reserve for complex revision arthroplasty.

Charcot joint is more commonly occur in the small joint such as tarsometatarsal, tarsal, and ankle joint and rarely happens in weight-bearing joints such as the knee, etc. [8]. When the knee is involved, and a higher chance of failure of conservative treatment, standard surgical intervention often include arthrodesis [9]. Neuropathic knees can be treated by total joint arthroplasty if severe bone loss or defects is reinforced by bone grafting or a custom-

augmented prosthesis with adequate ligamentous balancing [10].

According to the journal of arthroplasty in 1993, three cases with Neuropathic Charcot joint was done total knee replacement and follow up with them for more than 8 years and found to be effective with no sign of loosening of the implant [11]. In journals of physical medicine and rehabilitation in 1997 stated that arthroplasty is relatively contraindicated because of the higher chance of failure [12]. In this journal of arthroplasty in 2009, it stated that, out of 11 patients, 9 patients were having Charcot's joint and 6 out of 9 Charcot's joint patient's results were satisfactory and that was the reason that total knee arthroplasty is chosen as a treatment in this patient [13]. In this patient, he was apparently well for 1 year and 8 months after total knee arthroplasty of left knee. Within these months, he does not have any sign and symptoms of infection. In current admission, he presented with painful swelling of left knee with redness, but it was resolved with rest, cold compression and analgesics and he was discharged within 5 days.

The outcome of TKA in neurosyphilis poor with presence or development of ataxia. Intra-operative complications of medial collateral ligament avulsion and patellar tendon rupture. Post-operative complications like early loosening of prostheses, peri-prosthetic fracture, patellar dislocations, and recurrent instability will affect the decision for a total knee arthroplasty and alter the long-term management of the patient. [14] Up until now, he does not have any other complications such as loosening of prostheses, patellar dislocations, etc. In order to see the good result of total knee arthroplasty, therefore, we need to follow up long term for this patient to learn the effectiveness of total knee arthroplasty.

4. CONCLUSION

Neuropathic Charcot knee joint disease is rare in Malaysia. Total knee arthroplasty provides a painless functional limb in patients with Charcot joint, in other words, not absolutely contraindicated in Charcot joint. Implant systems, skills, and methods used are usually reserved for complex revision arthroplasties. Operative complications and benefits must be weighed out. In this patient, it was noted that total knee arthroplasty is more beneficial compared to arthrodesis, in order to observe whether the total knee arthroplasty can be the treatment of choice

for managing the case of Charcot joint disease, we are planning to long-term follow up in this patient for the outcome of arthroplasty.

CONSENT AND ETHICAL APPROVAL

Informed consent was taken from the patient and no ethical clearance is required.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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