ORIGINAL ARTICLE

Pott's Disease during Pregnancy – A Physical Medicine and Rehabilitation Approach to Improve Function: A Case Report

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ABSTRACT

Objective: To assess the role of physical medicine and rehabilitation (PM&R) in an interdisciplinary team approach in managing a pregnant woman with Pott's disease.

Methods: A 24 year-old female in her 31st week of pregnancy ($G_2P_0A_1$) with a diagnosis of C4 tetraplegia AIS C and accompanying problems such as, premature ruptured of membrane, spondylitis tuberculous, cardiovascular compliance changes, weakness of all limbs, sensory deficit, severely dependent ADL (Barthel Index 60), and moderate depression. She was managed by an inter-disciplinary team. The short-term goals were saving the infant, protecting the spinal cord and its function and improving the psychological condition. The ultimate rehabilitation goals were independent ambulation, independent ADL, which increases the quality of life and helping her get back to work. Rehabilitation management included cervico-thoracal orthoses with FELR control for vertebral immobilization, mobilization exercises, active breathing exercises, ROM exercises of all of her limbs, improving cardiovascular endurance and sensory re-education.

Results: During conservative therapy, the patient used a cervical collar brace and tuberculous drugs category 1 except streptomycin. A caesarean section was performed on May 24th, 2013, followed by operative decompression and vertebral stabilization procedure with a pedicle and screw 1 week after (May 31st, 2013). Afterwards, the patient used cervico-thoracal orthoses with FELR control for vertebral immobilization. The histologic examination showed granulomatous inflamation supported Spondylitis tuberculous. Within 3 months of physical medicine and rehabilitation management, the Barthel Index, which was initially 60 (Severe dependent Activity Daily Living/ ADL), became 100 (independent ADL). Physical Medicine and Rehabilitation management included mobilization exercises, active breathing exercises, ROM exercises of all of her limbs, improving cardiovascular endurance and sensory re-education. Overall, the increased quality of life of this patient reflected the successful inter-disciplinary team management.

Conclusion: The PM&R approach in the interdisciplinary team resulted in an optimal functional recovery of the patient with Pott's disease during pregnancy.

Keywords: *Pott's disease, pregnancy, physical medicine and rehabilitation, function*

INTRODUCTION

Pott's disease is a presentation of extra pulmonary tuberculosis (TB) that affects the spine, a kind of tubercular arthritis of the intervertebral joints. It is named after Percivall Pott (1714-1788), a London surgeon.[1] Scientifically, it is called tuberculous spondylitis & it is most commonly localized in the lower thoracic & upper lumbar vertebrae & intervertebral discs.[2] Pott's disease results from haematogenous spread of tuberculosis from other sites, usually pulmonary. The infection then spreads from two adjacent vertebrae into intervertebral discs along with surrounding structures leading to para vertebral abscess formation The disease affects males more than females.[3,4] Pott's disease during pregnancy is rare and can be associated with vertebral body and disc destruction that can lead to cord compression, paraplegia, or quadriplegia.[5,6]

Symptoms of the spinal TB gradually manifest together with systemic features of TB. There is usually localized back pain which is made worse on weight bearing, coughing, sneezing, movement, etc. There may be kyphosis or paravertebral swelling or a psoas abscess may appear as a lump in the groin & resembles a hernia. If there is neural involvement there will be neurological signs like weakness, paraplegia or quadriplegia.[7]

A delay in diagnosis is common and most cases are diagnosed when paraplegia has already occurred. This is a serious complication that requires special attention during pregnancy and delivery.[8]

Pott's disease during pregnancy needs special concern and an interdisciplinary team.

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METHODS

A 24 year-old female in her 31st week of pregnancy ($G_2P_0A_1$) was referred to the PM&R department with a diagnosis of C4 tetraplegia AIS C on May 22nd 2013. The chief complaint was weakness of both legs with numbness and a tingling sensation from the breast for the last 4 months and it became worse in the last month, the upper extremities felt numb. There were no sweat or dry skin disorders. Urination used catheterization and defecation every three days. There was pain in the spine or upper back (VAS 4-5). Body weight did not decline, and there was no longer any coughing or night sweats.

She had no history of trauma or lumps found elsewhere. There was no close contact with tuberculous patients. The patient was never diagnosed with tuberculous or had a previous tumour. The patient had experienced a miscarriage 1 year ago.

The patients social history; the patient had never used drugs, but she had a free sex lifestyle (with her boyfriend), the patient had been married twice and divorced twice. The first husband was a drug user, but of an unknown type. She doesn't work now.

A physical examination found GCS 456, vital signs within the normal limit, bedridden. General status was also within the normal limit. Her musculoskeletal status examination found MMT of the neck was 5, but back muscle strength was difficult to evaluate. MMT of the shoulders, elbows, wrists and fingers were 4. MMT of the hip, knees, ankles and toes were minus 2. All ROM's were full. Her neurological status had no signs of meningeal stimulation and no abnormalities in the cranial nerves. Deep tendon reflexes of the lower extremities were +3/+3 and clonus for both ankles were found. There were sensory deficits on C5 dermatome down both sides. Sphincter anti contraction still preserves, but reduced. No deformities, inflammation signs, gibbus and tenderness in the cervico-sacral spine region.

Chest expansions were decreased, with a

difference between inspiration and expiration of 2. There was also a decrease in the count test. The count test was 17.

A laboratory examination found that Hb 11.1, Leukocytes 8,520; Trombosist 254,000; SGOT 18; SGPT 10; CRP 0.9; LED 45; negative ICT tuberculous, reactive HIV rapid test. A smear examination could not be performed because the patient can not remove phlegm. The AP chest radiographs showed a collapse on the 1st thoracal vertebral body with paravertebral soft tissue mass that was projected as high as the 7th cervical vertebrae to the 3rd thoracal vertebrae. The patient refused to do CT guiding FNAB. The spinal MRI showed destruction/collapse on the 1st thoracal vertebral body with paravertebral mass in the subligament area of anterior and posterior longitudinal ligaments on the level of 1st to 3rd thoracal vertebrae (Figure 1). A HIV test with 3 methods and western blot showed negative results. The examination methods would be repeated 6 months later.

From obsgyn assessment, patients with a gestational age of 31/ 32 weeks for a single foetus, intra-uterine, breech with estimated foetal weight was 1600g and a pre-term rupture of membranes. Lung maturation was promoted with 2x6mg dexamethasone intramuscularly, for 2x24 hours and treated conservatively until the weight was 2000g.

We were concerned with the special problems including premature rupture of the membrane, spondylitis tuberculous, cardiovascular compliance changes (decreased chest expansion and count test), weakness of all limbs, sensory deficit, severely dependent ADL (Barthel index 60) and moderate depression (Beck depression score was 22). She was managed by an inter-disciplinary team (orthopaedic, physical rehabilitation & medicine, pulmo, internal, radiology, neuro, paediatric and obsgyn). Our short-term goals were saving the infant, protecting the spinal cord and its function and improving the psychological condition. Increasing the quality of life and helping her get back to work were our ultimate goals. The team decided to give her anti-tuberculosis drugs, caesarean section due to a premature rupture of the membrane and breech position, followed by operative decompression and a vertebral stabilization procedure with a pedicle and screw, and also psychological support. The rehabilitation short-term goals included protecting the spinal cord and it's functions, improving the psychological condition and improving cardiopulmonary compliance. The ultimate rehabilitation goals were independent ambulation, independent ADL, which increases the quality of life and helping her get back to work. The rehabilitation management included cervico-thoracal orthoses with FELR control for vertebral immobilization, mobilization exercises, active breathing exercises, ROM exercises of all of her limbs and to improve cardiovascular endurance and sensory re-education.

RESULTS

During conservative therapy, she used a cervical collar brace and tuberculosis drugs category 1 except streptomycin. FDCs were used based on the patients body weight (45 kg) with isoniazid 225 mg, rifampicin 450 mg, ethambutol 825 mg and pyrazinamide 1200 mg. FDCs were taken every day during the intensive phase (2 months) and were continued in the advanced phase (7 months). The advanced phase FDCs were isoniazid and rifampicin, taten three times a week. A caesarean section was performed due to a premature rupture of the membrane and a breech position was done on May 24th, 2013, followed by an operative decompression and vertebral stabilization procedure with a pedicle and screw 1 week after (May 31st, 2013). After that, the patient used cervico-thoracal orthoses with FELR control for vertebral immobilization (Figure 2). The histologic examination after the operation showed granulomatous inflamation supported Tuberculous Spondylitis (Figure 3).

Figure 1. Spinal MRI Showed Destruction/Collapse on the First Thoracic Vertebral Body with Paravertebral Mass in the Subligament Area of Anterior and Posterior Longitudinal Ligaments on the Level of 1st to 3rd Thoracal Vertebrae.

Figure 2. The Patient Used Cervico-thoracal Orthoses with FELR Control for Vertebral Immobilization

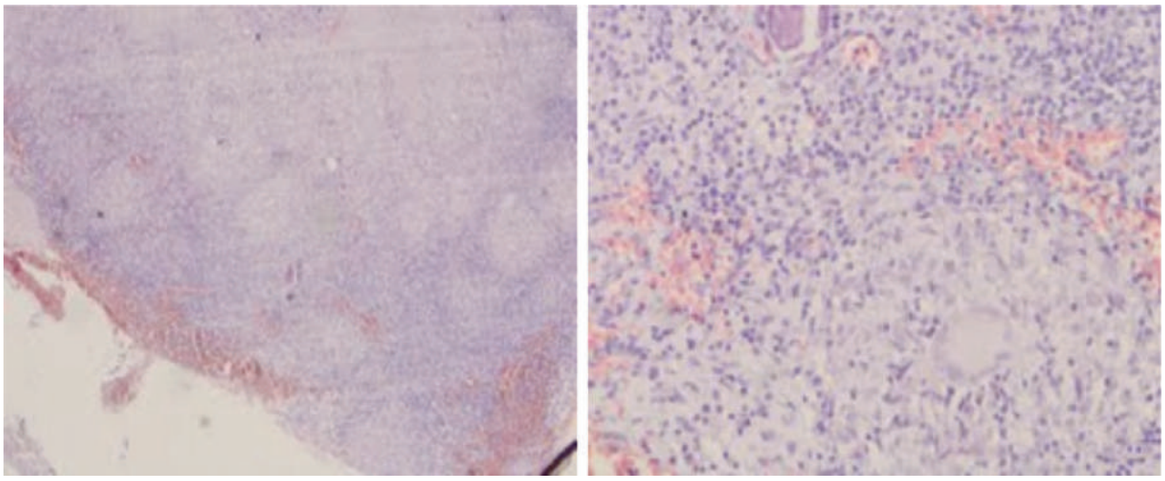

Figure 3. Result of the Histologic Examination.
Left Figure showed multinucleated giant cell and Right figure showed multinucleated giant cell with bigged.

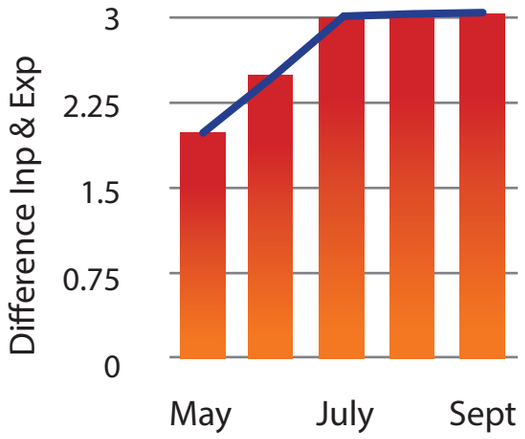

Figure 4. The Result of the Chest Expansion Examination

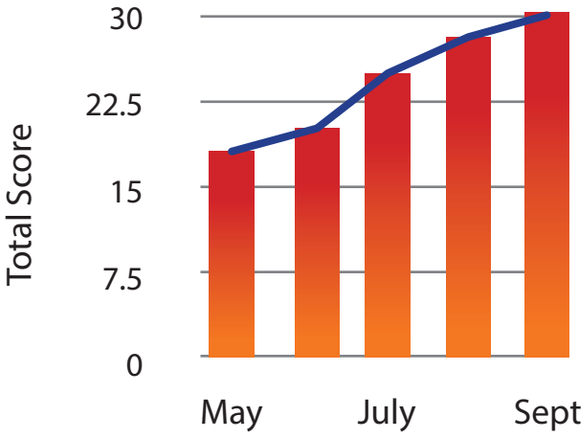

Figure 5. The Value of the Count Test

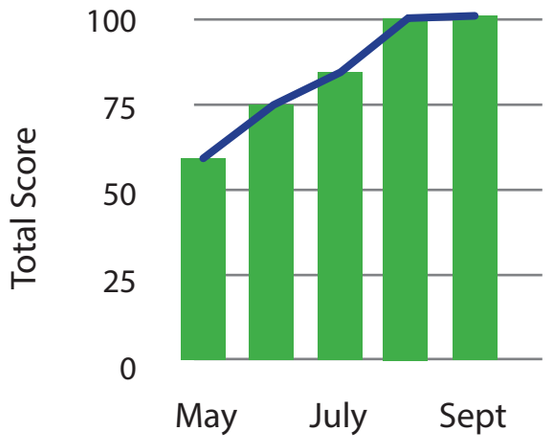

Figure 6. Barthel Index

Figure 4 describes the result of the chest expansion examination. The chest expansions were increased after the operation for 5 months (from May until September). In July the patient reached normal chest expansion. Figure 5 shows the count test value. The count test value increased from month to month. Firstly the examination found that the value was 17, the mean, and reached normal value in September.

Figure 6 describes the Barthel Index. Firstly the Barthel Index was 60 (Severe dependent Activity Daily Living/ ADL). After the physical medicine and rehabilitation management, the Barthel Index was increased. In June the Barthel Index was 75 (moderate dependent ADL). In August the Barthel Index reached a value of 100 (independent ADL). Physical Medicine and Rehabilitation management included mobilization exercises, active breathing exercises, ROM exercises of all of her limbs, improved cardiovascular endurance and sensory re-education. Overall, an increased quality of life for this patient reflected the successful inter-disciplinary team management.

DISCUSSION

The systemic signs of tuberculous were not found in this patient. But the diagnosis of tuberculous could not be removed. The diagnosis of tuberculous was based on clinical, epidemiological, radiologic and histologic results. Neurological deficits on extremities without traumatic history in young age lead us to suspect the possibility of Tuberculous Spondylitis or Pott's Disease. From the laboratory results we found an increased LED due to the active tuberculous infection. LED can also be used to examine the response therapy. The Mantoux test cannot be used because of a false positive result, because tuberculous is endemic to Indonesia. Although BTA and FNAB CT guiding were not done, there was no reason to delay the diagnosis and tuberculous treatment, because these examinations can show negative results. A HIV test was used, because, based on the literature there are correlations between tuberculous during pregnancy and HIV infection. If there is HIV in a Pott's disease patient during pregnancy, the management of it will be different, with giving retro viral drugs. Interaction tuberculous and retro viral drugs give a bad prognosis for both mother and foetus.

The patient had a caesarean section due to the premature rupture of the membrane and breech position, followed by operative decompression and a vertebral stabilization procedure with a pedicle and screw. The caesarean was done first to protect the foetus from anaesthetic drugs that were used

during the prolonged operation. Operative debridement, decompression, fusion and vertebral stabilization procedures were done with a posterior procedure. A pedicle screw put at the 2nd-3rd thoracal vertebraes and lateral screws at the 6th-7th cervical vertebraes (Figure 7). A laminectomy was done on the 1st thoracal vertebrae. Debridement was done transpedicle and an abscess was found of approximately 5cc. Fusion was done from posterolateral with a bone graft and there was a post operative hemorhage of 200cc. There were no complications after the operation.

The prognosis of this patient is ad bonam (good), because of her young age, having no other diseases, no severe neurologic deficits and the disease has not occurred for a long time, tuberculous drugs were given immediately and decompresion and stabilization were done immediately.

The overall management of this patient was done by an interdisciplinary team. An interdisciplinary team is different to a multidisciplinary team, because an interdisciplinary team works with a collaborative approach. The team members work together in goal setting and communication between all the members is crucial, to sit together and solve the ongoing problems. On the other hand, the members of the multidisciplinary team work independently to accomplish their specific goals. Communication is more vertical than lateral and they do not participate in team conferences and may not communicate directly.

Sensory re-education is part of rehabilitation management. But some literature states that therapy is not utilized, because of after operation debridement, decompression and stabilization, sensory deficits have disappeared. But other literature says that sensory re-education should be given to stimulate sensory functions and to achieve a faster result.

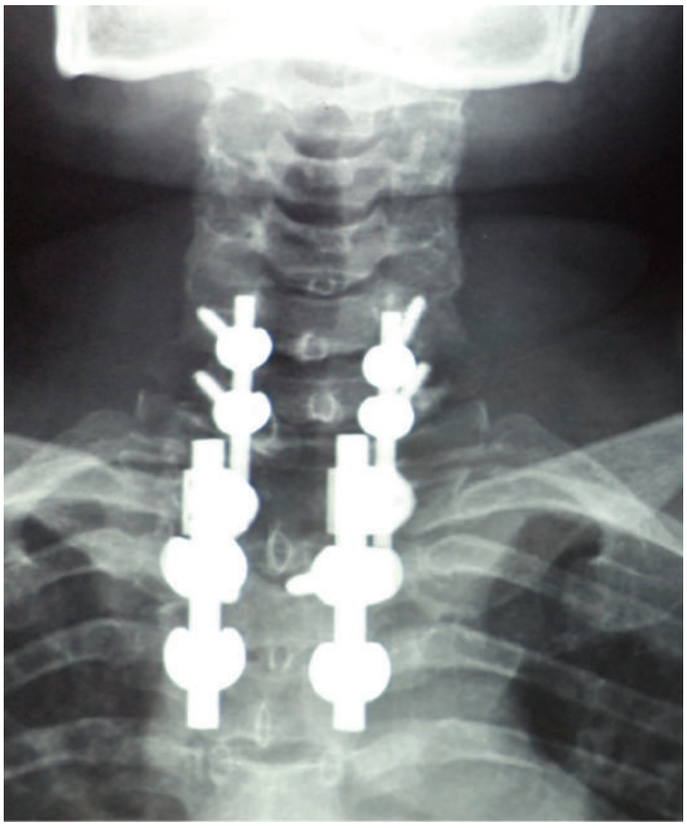

Figure 7. Cervical X-ray Post Debridement and Stabilization with Lateral Screw

CONCLUSION

The PM&R management in the interdisciplinary team reached an optimal functional recovery for the patient with Pott's Disease during pregnancy.

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