

6-30-2016

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Recommended Citation

Zoulba, Erika; Sjamsoe, Emmy Soedarmi; Menaldi, Sri Linuwih; Marissa, Melani; and Irawan, Yudo (2016)

"Failure to use routine prevention of disability (POD) assessment resulting In permanent disability,"

Journal of General - Procedural Dermatology & Venereology Indonesia: Vol. 1: Iss. 2, Article 5.

DOI: 10.19100/jdvi.v1i2.34

Available at: <https://scholarhub.ui.ac.id/jdvi/vol1/iss2/5>

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Failure to use routine prevention of disability (POD) assessment resulting in permanent disability

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Case Report

Failure to use routine prevention of disability (POD) assessment resulting In permanent disability

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Abstract

Disability is one of problems in leprosy or Morbus Hansen (MH), which can cause the patient loose his autonomy and may affect his social relationship with family and community. Disability occurs due to neurological inflammation that can manifest as silent neuritis (which develops without any pain). Silent neuritis can be recognized early with a routine prevention of disability (POD) assessment.

A 19-year-old male patient was referred from a District General Hospital with a history of numbness and stiffness of his 4th and 5th fingers of his left hand since 1 month before admittance. The patient was referred by Community Health Center (CHC or PUSKESMAS) after a one year treatment and RFT. During his treatment at the CHC, no assessment of peripheral nerve or POD had ever been performed. The POD assessment at our hospital demonstrated sensory deficit at some points of assessment on both palms and reduced muscle strength of the first and 5th fingers in both hands. Nerve conduction velocity (NCV) performed at the outpatient of Neurology Department, showed multiple mononeuropathy MH with irreversible damage.

Nerve damage is still considered reversible when it occurs less than 6 months. In this case, the silent neuritis was not detected early and there was delayed treatment; as showed by NCV which revealed a manifestation of irreversible nerve damage. Routine POD assessment may detect the condition and appropriate treatment may overcome the nerve damage.

Keywords: *Morbus Hansen, silent neuritis, prevention of disability assessment*

Abstrak

Kecacatan merupakan salah satu masalah pada penyakit kusta atau Morbus Hansen (MH) yang dapat menyebabkan pasien kehilangan kemandirian serta memengaruhi hubungan sosial dengan keluarga dan masyarakat. Kecacatan terjadi akibat proses inflamasi pada saraf, yang dapat bermanifestasi sebagai silent neuritis (timbul tanpa nyeri). Silent neuritis dapat diketahui sejak awal dengan pemeriksaan prevention of disability (POD) secara teratur.

Seorang laki-laki 19 tahun, dikonsulkan dari Rumah Sakit Umum Daerah (RSUD) dengan rasa baal dan kaku pada jari ke-4 dan 5 tangan kiri sejak 1 bulan yang lalu. Satu tahun yang lalu, pasien berobat di Puskesmas sampai dinyatakan release from treatment (RFT). Selama di Puskesmas tidak pernah dilakukan pemeriksaan saraf tepi, maupun POD. Hasil pemeriksaan POD di Rumah Sakit terdapat gangguan sensoris pada titik-titik pemeriksaan di kedua telapak tangan dan penurunan kekuatan otot jari ke-1 dan 5 kedua tangan. Hasil pemeriksaan kecepatan hantar saraf (KHS) di Poliklinik saraf didapatkan gambaran mononeuropati multiplex pada MH dengan kerusakan yang ireversibel

Kerusakan saraf dianggap masih reversibel apabila terjadi kurang dari 6 bulan. Pada kasus ini silent neuritis tidak diketahui sejak awal dan terjadi keterlambatan tatalaksana, sehingga pada pemeriksaan KHS telah didapatkan gambaran kerusakan saraf yang ireversibel. Hal ini dapat dicegah dengan pemeriksaan POD secara teratur dan pemberian terapi yang sesuai.

Kata kunci: Morbus Hansen, silent neuritis, POD

Introduction

Leprosy or morbus Hansen (MH) is a chronic infection caused by *Mycobacterium leprae* (*M. leprae*). Although it is a treatable disease, but the patient may experience a quite significant nerve damage.¹ Nerve involvement may occur in all type of MH, both lepromatous and tuberculoid types.² Disability is a serious consequence of leprosy. It also leads to the stigma attached to the patient. Most patients have got nerve damage at the time they are diagnosed with MH, which may lead to disability despite prednisone treatment that can alleviate symptoms of acute nerve damage in approximately 60% patients.³

Neuritis in MH may have some clinical manifestations. One of them is silent neuritis, which is defined as nerve involvement (sensory or motor nerves) without symptoms of pain in patients. Silent neuritis can be recognized early by a routine prevention of disability (POD) assessment by health care providers.²

POD aims to prevent the development of new disability and to prevent exacerbation of the preexisting disability. Therefore, POD should be performed at the first visit before the patient started to receive any treatment and re-assessment should be performed continuously.⁴

The assessment of nerve involvement in MH case can be performed by using various modalities. The simplest method is by palpating peripheral nerves and evaluating whether there is nerve hypertrophy with/without tenderness. The other nerve assessment utilizes certain instrument or method, i.e. assessment of sensory function using monofilament to evaluate sensation on skin and electromyography (EMG) to record electrical activity of the muscles. The function of motor nerves is performed using voluntary muscle test (VMT); the autonomic nerve function is assessed by performing sweating test using pilocarpin nitrate injection, which is then marked with iodine tincture and tapioca starch.²

Deformity and disability due to leprosy may occur in various organs of the body; but disabilities of hands, feet and eyes need special attention since it can reduce the autonomy of the patient. In 1988, WHO categorized degree of hands, limbs and eyes disabilities into grade 0, 1 and grade 2; if there any disability or deformity has been developed, educational supports should be provided so that the existing disability will not become worse and interfere the patients' autonomy.⁴

According to Srinivasan, the affected peripheral nerve will undergo several stages of damage, i.e. stage of involvement (the nerve gets thickened, but there is no neural functional deficit yet), stage of damage (the nerve has been damaged, but the process lasts no longer than 6-9 months), stage of destruction (the nerve has been completely damaged, the damage has occurred more than a year).⁵ The treatment should be adjusted with the existing nerve damage and the final objective is preventing the development or transition from disability to handicap so that MH patients can do their daily activities despite of their autonomy dysfunctions.^{2,5}

Case

A 19-year-old male patient came with a history of numbness and stiffness of his 4th and 5th fingers of his left hand since 1 month ago. There was no fever, no tingling, no new nodules or patches. Old patches were reported as patches with the same redness and thickness. In history taking, we found that the red patches with numbness on upper and lower limbs were developed about 1 year.

There was numbness on right fingers, which was followed by stiffness. At first, it was on the 5th finger and then on the 4th finger. The patient was treated at a Community Health Center (CHC or PUSKESMAS) and received a set of drugs with red color, which was taken regularly for 12 months and was released from treatment (RFT). There was a claw hand (the 4th and 5th fingers of his right

hand were noticeably curved or bent) one year before he received treatment at the CHC.

During treatment, there was pain on his elbow and small nodules occurred for several times. The patient then received green tablets, starting from 6 tablets and later the dosage was tapered off gradually. When receiving the treatment, the patient had never undergone bacteriological, peripheral nerve or POD assessments. The patient was declared as having cure by the CHC on October 2013 and never visited again afterwards.

In January 2014, the patient felt numbness and stiffness on his left 5th finger and then had similar complaint on his left 4th finger. No fever, no tingling, no new patches and old patches were reported as patches with the same redness and thickness. No nodule was developed. The patient revisited the CHC and was referred to District General Hospital. At the beginning of February 2014, he was referred from the District General Hospital to dr. Cipto Mangunkusumo National Hospital for further treatment to manage his finger deformities.

The patient denied any history of contact with leprosy patient. There was no similar complaint in his family. History of BCG vaccination was unknown.

The physical examination revealed that on face, upper and lower limb regions, there was bilateral macular hyperpigmentation (figure 1). The hyperpigmentation was diffuse, discrete with numular to plaque size with partially diffuse margin and anesthesia to hyperesthesia in some lesions. There was muscle atrophy in both hands, bilateral enlargements of the great auricular, ulnar, lateral peroneal, and posterior tibial nerves with hard consistency, but without any tenderness.

On POD assessment (figure 2), we found there was sensory deficit at some points of assessment on both palms and reduced muscle strength of the first and 5th fingers in both hands. There was a claw hand (the 4th and 5th fingers of his right and left hand were noticeably curved or bent), (figure 3).



Figure 1. Macular hyperpigmentation

Figure 2. Prevention of disability assessment form for the patient



Figure 3. Claw hand on the 4th and 5th fingers of both hands

The Acid Fast Bacillus (AFB) test revealed Bacteriological Index (BI) of 11/6 and Morphological Index (MI) of 0%. The patient was diagnosed with Borderline Lepromatous (BL) type of MH. He was declared as released from treatment (RFT) with clawing hand of the 2nd – 5th fingers of right hand and 4th – 5th fingers of left hand.

The patient was then referred to the Department of Neurology and the assessment of nerve conduction velocity (NCV) found demyelinated multiple mononeuropathy with bilateral secondary axonal degeneration on ulnar and median nerves, particularly the right side, which was consistent with the manifestation of multiple mononeuropathy in MH. Treatment received from the outpatient clinic of Department of Neurology was prednisone 20 mg/day, mecobalamin, vitamin B6 and B12.

During his visit to the Division of MH about 2 weeks later, the patient complained about 6 nodules that developed on his both upper limbs and pain on his left elbow. We increased the dose of prednisone to 30 mg/day and reduced the dose gradually in every 2 weeks. Based on the results of consultation to the outpatient clinic, the patient was also referred for consultation to the outpatient clinic at Department of Pulmonology, Department of Oral and Dental Medicine to find any source of infection and Department of Medical Rehabilitation for exercise training

Discussion

A 19-year-old male patient was diagnosed with MH, BL type, RFT, grade II bilateral deformity on 4th and 5th fingers and silent neuritis. At the first visit, there was already deformities on 4th and 5th fingers of right hand in the form of claw hand since one year; while the symptoms on the 4th and

5th fingers of left hand was felt later by the patient since 1 month.

Deformity of his right hand was the reason that brought the patient for the first time to visit the CHC. It frequently occurs in leprosy patients, i.e. the deformities of hands or feet, which occurs after the numb patches on the skin as the main reason for the patient to find treatment. This is actually too late, because claw hands indicates that nerve damage had occurred for a long period of time.

The treatment for the long-existing claw hands was aimed to prevent the bent fingers from getting worse. In general, nerve damage is considered as reversible when it occurs less than 6-9 months; before it continues to a stage of nerve destruction, in which the damage becomes irreversible.^{5,6}

The symptoms of numb and stiff fingers were then felt again by the patient after he was declared RFT. He did not receive information about complete clinical course of MH disease that after RFT, there is a possibility of silent neuritis or leprosy reaction that may cause nerve damage; therefore, the patient felt that he did not have to undergo physical examination after he was declared RFT.

Neural deficit can be early recognized through a routine POD assesment by health care providers continuously. The patient should also be educated to have regular visit for treatment after being declared as RFT so that the POD assessment can be performed. In patients who had been declared RFT, a routine POD assessment includes examinations of eyes, hands and feet that can recognize any neural deficit promptly or detect worsening of the existing disability. Now, not all of health care services that treat MH patients have performed POD assessment for the patients.

Other neurological assessments can also be used for diagnosis and determining prognosis of the existing damage, i.e. by using electromyography (EMG) and also by measuring the nerve conduction velocity (NCV). Some studies found abnormal results of NCV in patients who had been declared normal or without defect during clinical neurological examination. Therefore, it can be concluded that the modalities can be used to confirm the clinical neurological examination.^{7,8}

As a conclusion, MH is a treatable disease although it has some risks to cause disability. Disability caused by MH can be prevented and early detected by the patients and health care

providers by performing simple method of POD assessment, which can be followed with EMG for some centers with the facilities.

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