Case Report

Archives of Infectious Diseases & Therapy

Chronic Inflammatory Demyelinating Polyneuropathy In A Patient With A Leprosy Reversal Reaction: A Case Report

Andrade LR, Jardim MR, Pitta IJR, Giesel LM, Silveira RC, Vital RT, Nery JAC and Sarno EN

Oswaldo Cruz Institute Rio de Janeiro, Avenida Engenheiro Martins Romeo, 78/501 Inga Niterói RJ CEP 24210400, Brazil

***Corresponding author**
Andrade LR, Oswaldo Cruz Institute Rio de Janeiro, Avenida Engenheiro Martins Romeo, 78/501 Inga Niterói RJ CEP 24210400, Brazil, E-mail: ligiaandradee@gmail.com.

Submitted: 27 Sep 2017; **Accepted**: 07 Dec 2017; **Published**: 12 Dec 2017

Abstract

Chronic inflammatory demyelinating polyneuropathy (CIDP) is a condition that affects the peripheral nervous system with progressive limb weakness, with predilection for proximal muscles, sensory loss and areflexia and it has a relapsing or progressive course. The physiopathology is still unclear, but it is probably an autoimmune disease involving autoreactive T and B cells. CIDP is well described in association with many diseases but not with leprosy reaction wich is an immunologically mediated episode of acute inflammation that occurs in any time of leprosy disease, including after the multidrug therapy. Here we presented a patient who developed CIDP in the context of a leprosy reversal reaction, years after the end of leprosy treatment who recovered for both conditions after corticosteroid therapy. This patient's CIDP presentation could be attributed to cell injury caused by type 1 reaction that exposed the neural antigens and incited an autoimmune reaction.

Keywords: Leprosy Reactions, Reversal Reaction, Type 1 leprosy Reaction, Chronic Inflammatory Demyelinating Polyneuropathy

Introduction

Chronic inflammatory demyelinating polyneuropathy (CIDP) is a condition affecting the peripheral nervous system [1,2]. The classic form of the disorder is characterized by: (1) progressive limb weakness, usually with a predilection for proximal muscles, sensory loss, and areflexia with a relapsing or progressive course; (2) electrophysiological features of demyelination, including prolonged distal motor and F-wave latencies, reduced conduction velocities, and conduction block and temporal dispersion; (3) laboratory features of albumino-cytological dissociation in the cerebrospinal fluid; and (4) inflammation, demyelination, and remyelination on nerve biopsy The etiology of CIDP is still unclear, but it is widely accepted that it is an autoimmune disease with underlying immunopathology involving autoreactive T cells and B cells Because CIDP has an autoimmune basis, it can occur in association with diseases such as HIV infection and hepatitis C, Sjogren's syndrome, monoclonal gammopathy of unknown significance, melanoma, lymphoma, diabetes and inflammatory bowel diseases [1,3,4].

Leprosy is a complex dermato-neurologic disease caused by Mycobacterium leprae that presents a wide spectrum of clinical manifestations characterized by distinct bacteriologic, immunologic and histopathologic features One of the main difficulties in the clinical management of leprosy patients is the development of leprosy reactions that can occur anytime during the chronic course of the disease: before diagnosis, during treatment and even years after treatment release [5,6,7]. Leprosy reactions represent immunologically mediated episodes of acute inflammation that if not diagnosed and treated promptly can cause irreversible impairment of nerve function and permanent incapacities [8]. There are two major types of leprosy reactions: type 1 reaction (T1R) or reversal reaction (RR) which is associated with Th1-type immunity and type 2 reaction (T2R) represented mainly by erythema nodosum leprosum (ENL) which is related to Th2-type immune responses Type 1 reactions typically result in inflammation and pain in preexisting lesions, which may also ulcerate. These reactions may also produce increased neuritis manifested as tenderness and nerve damage [6,9-12]. It typically occurs within the first 6 months after the start of multidrug therapy, although they can happen at any stage of the disease process [13-15]. We report a case of a patient with reversal leprosy reaction 12 years after Multibacillar treatment associated with chronic demyelinating polyneuropathy.

Case report

A 52-year-old man presented at the year at 2000 a picture of erythematous and scaly skins lesions on limbs, back and feet for four years of evolution. He had no fever, edema, arthralgia or paresthesias. His neurological exam and the nerve conduction study were normal at that time. He had a ski-n biopsy and was diagnosed as borderline-borderline leprosy disease. He started with multibacillary multidrug therapy for 12 months. By the end of the

treatment, he was discharged and had no signs of skin lesions or neurological symptoms.

At the year of 2012 he presented with a month evolution of low back pain, paresthesias and progressive weakness in lower limbs. At that time, he also had poorly delimited skin lesionsplaques type in legs and dorsal region with associated edema.

Neurological exam revealed flaccid paraplegia (grade 3 MRC scale) and areflexia in lower limbs, and diminished reflexes in upper limbs. The strength on upper limbs was normal. He had no signs of cranial nerves involvement, no respiratory or bladder dysfunction. He also presented distal superficial and deep sensory loss in the lower limbs.

A spinal fluid exam was performed and showed a protein-cytologic dissociation (2mg/dL of leukocytes and 149 mg/dL of proteins). Hemogram, liver and renal function were normal.

A neuroconduction study revealed reduced conduction velocity and prolonged latencies on motor median, ulnar, peroneal and tibial nerves. The Study of the F wave showed response with prolonged latencies in the fibular, ulnar and median nerves. The findings were compatible with motor sensitive polyradiculoneuropathy with demyelinating predominance.

A skin biopsy was performed and the findings were typical of reversal reaction, with the dermis exhibiting perianexial and perivascular edema and granulomatous infiltrate, dissociating erector muscle from the hair and invading nerve fille

The patient was diagnosed as chronic inflammatory demyelinating polyneuropathy and leprosy reversal reaction. He was treated with pulsoteraphy with methylprednisolone 1g intravenously per day for 3 days in a row, then once a week for 4 weeks and once a month until he completed 6 months of treatment. After 2 months he presented no skin lesions.

The patient gradually improved his neurological condition and by the end of the treatment he was able to walk by his own, only remaining with a mild atrophy in the left quaddriceps.

Discussion

The pathogenesis of neuropathy in leprosy is diverse and not fully understood. Mechanisms include Schwann cell invasion by Mycobacterium leprae, host immune responses and drug toxicity [16].

The type I reactions, also known as reversal reaction are the result of increased cell-mediated immunity. They lead to swelling and exacerbation of skin lesions, painful swelling of nerve trunks, and sensory and motor deficits. Nerve biopsies in type I reaction show perineuritis, granuloma with multinucleated giant cells, lymphocytic infiltration and vasculitis [17].

CIDP is a chronic demyelinating condition that causes symmetric weakness of the limbs and paresthesias in its typical presentation The mechanisms that trigger CIDP and the way in which the nerves are damaged are not fully understood. Most evidence suggests that it is a immunomediated condition, but unlike Guillain-Barré syndrome (GBS), usually there is no antecedent illness [18].

Although the CIDP is associated with several disorders, it is not well described it`s relation with leprosy reactions. Abundant experimental evidence suggests that CIDP is caused by an aberrant immune response thatinvolves autoreactive T cells, macrophages, and autoantibodies However, despite extensive research over the last decades, the target antigens of the humoral and cell-mediated immune response are yet poorly defined [19-21,1].

Reported a case of a 52-year-old woman with a past history of lepromatous leprosy and 14 years later presented with progressive weakness and severe arm/leg pain, cerebrospinal fluid analysis revealed protein-cytological dissociation, skin and sural nerve biopsy showed no bacilli. Immunomodulatory treatment led to clinical and neurophysiologicalimprovement. The patient was diagnosed with CIDP and type 2 leprosy reaction [22]. They postulated that since in type 2 reactions there is complement activation and deposition of immunoglobulins, probably this altered immunologic state favored the involvement of motor roots leading to increased protein in cerebrospinal fluid and motor impairment.

Described a case of a 19 year old female patient of lepromatous leprosy with type II reaction, on multidrug therapy and prednisolone that presented with acute onset flaccid quadriparesis. The cerebrospinal fluid exam also had albumino-cytological dissociation. There were no other identifiable precipitating factors for Guillain Barré Syndrome in this patient. Her condition improved without any steroid therapy. The authors suggest the hypothesis that the cell injury caused by type II reaction exposed neural antigens and caused an autoimune reaction, leading to the acute neuropathy [23,24].

In our case, the patient presented a classic clinical picture of CIDP in the context of a reversal leprosy reaction, years after the end of treatment of a bordeline leprosy disease. The patient demonstrated improvement of both conditions on neurological and nerve conduction grounds after steroid treatment.

The leprosy type 1 reaction damages the nerves most often in a mononeuritis pattern and there was no results founded describing CIDP related to leprosy reverse reaction in the literature. We postulate that this patient's CIDP presentation could be attributed to cell injury caused by type 1 reaction that exposed the neural antigens and incited an autoimmune reaction.

References

1. Köller H, Kieseier BC, Jander S, Hartung HP. N Engl J Med. (2005) Chronic inflammatory demyelinating polyneuropathy 352: 1343-1356.
2. Dalakas MC (2011) Medscape. Advances in the diagnosis, pathogenesis and treatment of CIDP. Nat Rev Neurol 7: 507-517.
3. Dyck P, Prineas J, Pollard J (1993) Chronic inflammatory demyelinating polyneuropathy. In: Peripheral Neuropathy. Philadelphia, PA: Saunders.
4. Joint Task Force of the EFNS and the PNS.J Peripher Nerv Syst. (2010) European Federation of Neurological Societies/ Peripheral Nerve Society Guideline on management of chronic inflammatory demyelinating polyradiculoneuropathy: report of a joint task force of the European Federation of Neurological Societies and the Peripheral Nerve Society-First Revision 15: 1-9.
5. Ridley DS, Jopling WH (1966) Classification of leprosy according to immunity. A five-group system. Int J Lepr Other

Mycobact Dis 34: 255-273.
6. Pandhi D (2013) Chhabra N Indian J Dermatol Venereol Leprol. New insights in the pathogenesis of type 1 and type 2 lepra reaction 79:739-749.
7. Scollard DM, Smith T, Bhoopat L, Theetranont C, Rangdaeng S, Morens DM Int J (1994) Lepr Other Mycobact Dis. Epidemiologic characteristics of leprosy reactions 62:559-567.
8. Rodrigues LC (2011) Lockwood DNj Lancet Infect Dis.Leprosy now: epidemiology, progress, challenges, and research gaps 11: 464-470.
9. Kumar B (2004) Dogra S, Kaur I. Epidemiological characteristics of leprosy reactions: 15 years experience from north India. Int J Lepr Other Mycobact Dis 72: 125-133.
10. Rodrigues LC, (2011) Lockwood DNj Lancet Infect Dis. Leprosy now: epidemiology, progress, challenges, and research gaps 11: 464-470.
11. Scollard DM Lepr Rev (2008) Nerve damage in leprosy: a continuing challenge to scientists, clinicians and service providers. The biology of nerve injury in leprosy 79: 242-253.
12. Lockwood DN (2012) Saunderson PR Int Health 4: 77-85.
13. Kahawita IP (2008) Lockwood DN Trans R Soc Trop Med Hyg. Towards understanding the pathology of erythema nodosum leprosum 102: 329-337.
14. Graham A, Furlong S, Margoles LM, Owusu K, Franco-Paredes C (2010) Clinical management of leprosy reactions. Infect Dis Clin Pract 18: 235-238.
15. Franco-Paredes C, Jacob JT, Stryjewska B (2009) Yoder L PLoS Negl Trop Dis. Two patients with leprosy and the sudden appearance of inflammation in the skin and new sensory loss 3: 425.
16. Grover, C, Kubba S, Nanda S, Kumar V. Reddy, B. S. N (2004) Leprosy with Guillain Barre Syndrome A New Neurologic Manifestation? The Journal of Dermatology 31: 119-123.
17. Scollard DM, Adams LB, Gillis TP, Krahenbuhl JL, Truman RW, Williams DL (2006) Clin Microbiol Rev. The continuing challenges of leprosy19:338-381.
18. Mendell JR, Kissel JT, Cornblath DR (2001) editors. Diagnosis and management of peripheral nerve disorders. New York Said G. Leprous neuropathy 551-564.
19. Dyck PJ, Oviatt KF, Lambert EH (1981) Ann Neurol.Intensive evaluation of referred unclassified neuropathies yields improved diagnosis 10: 222-226.
20. J Peripher Nerv Syst. 2014;19:2-13.
21. Dalakas MC (2011) Advances in the diagnosis, pathogenesis and treatment of CIDP. Nat Rev Neurol.Nobile-Orazio E. Chronic inflammatory demyelinating polyradiculoneuropathy and variants: where we are and where we should go 7: 507-517.
22. Vallat JM, Sommer C, Magy L (2010) Chronic inflammatory demyelinating polyradiculoneuropathy: diagnostic and therapeutic challenges for a treatable condition. Lancet Neurol 9: 402-412.
23. Gondim Fde A, Thomas FP, de Oliveira GR, Pimentel LH, Bastos BP (2009) de Castro Costa CMNeuromuscul Disord. On the spectrum of leprosy neuropathies: multifocal inflammatory neuropathy heralding leprosy relapse 19: 711-713.
24. van Brakel WH, Nicholls PG, Das L, Barkataki P, Suneetha SK, Jadhav RS, Maddali P, Lockwood DN, Wilder-Smith E (2005) Desikan KV Lepr Rev.The INFIR Cohort Study: investigating prediction, detection and pathogenesis of neuropathy and reactions in leprosy. Methods and baseline results of a cohort of multibacillary leprosy patients in north India. Mar 76: 14-34
25. Gondim Fde A, Thomas FP, de Oliveira GR, Pimentel LH, Bastos BP (2009) de Castro Costa CMNeuromuscul Disord.On the spectrum of leprosy neuropathies: multifocal inflammatory neuropathy heralding leprosy relapse19:711-713.