Dental care in multiple sclerosis: an overlooked and under-assessed condition

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Abstract

Aims and objectives: Conditions affecting the oral cavity of patients with multiple sclerosis (MS) are rarely reported. However, teeth are a frequent source of infection, which may ultimately worsen MS. The present work assessed MS patients and controls in order to evaluate the dental conditions of both populations.

Design: Twenty-one MS patients underwent clinical and radiological oral investigation and the results were compared with those of a gender and age-matched control group.

Results: MS patients had significantly higher rates of tooth loss (p=0.035), silent infection (p<0.001) and temporomandibular dysfunction (p=0.003) than controls. Anatomical changes in CT scans of the temporomandibular joint were more frequently found in patients than in controls (p=0.004). Temporomandibular dysfunction did not correlate with tooth loss or dental infections. Teeth grinding was present in 40.9% of the patients in comparison to 22.7% of controls. Parafunctional habits (such as nail and lip biting) were observed in 54.5% of patients, and in 27.2% of controls.

Conclusions: MS patients presented very poor oral status. Despite strong recommendations for an interdisciplinary team caring for Brazilian MS patients, a dentist is not usually integrated into this professional health group. At the moment, the oral condition of MS patients is under-assessed and overlooked.

Key words: Multiple sclerosis, temporomandibular disorders, dental care

Introduction

Multiple sclerosis (MS) is a chronic, immune-mediated, demyelinating disease of the central nervous system. MS typically affects young adults (Confavreux & Vukusic, 2008) and the complex disease pathogenesis is still a matter for clarification (Holmoy & Hestvik, 2008). The relapsing-remitting form of the disease is the most typical MS presentation (Lublin & Reingold, 1996), the diagnosis being made using the McDonald criteria (McDonald et al., 2001) and the disease-related disability being assessed by the Kurtzke score (Kurske, 1983).

The intricate immunological mechanism and the complex degenerative condition of MS may progress over decades. Although the role of systemic infections in exacerbating clinical relapses and the associated image findings are well documented (Rapp et al., 1995; Buljevac et al., 2002; Correale et al., 2006; Correale et al., 2007; Topkaya et al., 2007), a typical Brazilian multidisciplinary team caring for MS patients does not usually include a dentist. Systemic infection increases T-cell proliferation, leading to higher levels of inflammatory response (Correale et al., 2006; Correale et al., 2007). Silent dental infections, frequent use of corticosteroids, immunomodulators and immunosuppressants, and the use of other drugs that may affect the oral mucosa (Fiske et al., 2002) may all add to the underlying abnormal immunological condition of these patients, thus influencing the course of MS and oral status. Additionally, temporomandibular dysfunction (Poveda Roda et al., 2007) may contribute to the chronic pain experienced by MS patients (Pollmann & Fenenberg, 2008).
Few papers have covered the subject of dental care in MS. Some concentrate on the supposed but unproven role of amalgam fillings in triggering MS (Aminzadeh et al., 2007), while others focus on the ergonomics for patients with MS attending dental appointments (Rosenblith and Murphy, 2001; Baird et al., 2007). Papers that consider oral health in MS (McGrother et al., 1999; Chemaly et al., 2000; Kovac et al., 2005; Baird et al., 2007) report that MS has a negative impact on dental care. Baird et al. (2007) reported that MS patients register with and visit dentists regularly, but have a worse dental status. They appear to have more temporomandibular complaints than do controls (Chemaly et al., 2000; Kovac et al., 2005). A recent review from Fischer et al. (2009) highlights the importance of proper dental care for MS patients.

The objective of this study was to present a clinical and radiological prospective evaluation of a series of MS patients, discussing the importance of including dentists in interdisciplinary MS practice.

Materials and method

This study was approved by the Ethics Committees of Universidade Metropolitana de Santos and Universidade Santa Cecilia, and was registered in a national research database (CNPq). Written consent was obtained from all participants. There were no conflicts of interest in this study. Merck-Serono provided an unconditional grant to pay for all radiological examinations. None of the authors received, or will receive, any benefits from pharmaceutical companies (financial or otherwise) regarding this work. Disability in MS patients was assessed using the expanded disability status scale (EDSS) (Kurtzke, 1983).

In this scale, zero refers to no neurological disability due to MS, while progressive values up to ten (which means death) are related to increasing neurological disability.

Patients attending the MS Reference Centre for the Coastal Region of the State of São Paulo were invited to attend a consultation with dentists at Universidade Santa Cecilia. Only patients who were free of relapses for at least three months were included in this study. The consultation consisted of a questionnaire, clinical evaluation, panoramic radiography of the mouth and computed tomography (CT) scans of the temporomandibular joint.

The risk of tooth losses was assessed using the O'Leary (1967) index, where less than 30% is considered ideal and values over 30% indicate risk.

Gender matched controls with ages similar to the MS patients were obtained from consecutive records of patients attending the same dental practice for any reason other than MS. Records from controls were obtained consecutively and retrospectively, with strict selection for gender and age matching. O'Leary grading was performed only on the MS patients, since control data were historical, from dental databases. For the control group, only individuals with full assessments (clinical and radiological) were included. The t-test was used to calculate continuous data and the chi-square test, for categorical data. Correlations were assessed using the Pearson and Spearman tests. Results were considered significant when p<0.05.

Results

Twenty-one MS patients volunteered to participate in this study. The group consisted of 18 women and three men, with a mean age of 43.9 years (range: 22-59 years). The control group was of similar age and gender distribution.

On average, patients had their MS diagnosis for 5.6 years (range: one to 20 years) and their mean EDSS was 2.9 (range: 1.0 to 5.5). On average, patients with MS brushed their teeth 3.4 times a day. Fifteen MS patients visited a dentist at least once a year, while seven patients visited the dentist on a less regular basis. Seven patients were regularly using glatiramer acetate and eight patients, interferon beta. The remaining six patients were not regularly using immunomodulators, although three had previously used them. The mean number of times that these patients had undergone corticosteroid pulses was 3.3 (Range: zero to six times).

The mean O’Leary index for the patients was 45.6% (range: 11.9 to 85.6%). Sixteen patients (72.7%) presented an O’Leary index greater than 30%, indicating a risk of losing teeth. The mean tooth loss among patients was 6.86 ± 5.72, while among controls it was 3.74 ± 2.92 (p=0.035). Tooth loss did not correlate with either the immunomodulator used or to the number of corticosteroid pulses.

Caries was recorded in 10 patients and five controls. Nineteen MS patients (86.3%) presented silent and active dental infection, compared with none of the controls (p<0.001). Sixteen patients (72.7%) presented an orofacial and facial pain compatible with temporomandibular dysfunction, compared with six controls (27.2%; p=0.003). Nineteen patients (86.3%) had abnormalities on CT scans of the temporomandibular joint, compared with 10 controls (45.4%; p=0.004). Temporomandibular dysfunction did not correlate to missing teeth or dental infections. Nine patients (40.9%) also presented teeth grinding (bruxism), compared with five controls (22.7%). Parafunctional habits (such as nail and lip biting) were observed in 12 patients (54.5%), compared with six controls (27.2%).

Discussion

MS is a prime example among diseases requiring multidisciplinary care. MS centres of excellence always include a variety of medical specialists that include neu-
rologists, as well as nurses, physical therapists, speech therapists, psychologists, social workers and, more recently, lawyers. However, there are few reports on dental care as part of an interdisciplinary team for MS patients, in the literature.

This study showed that this group of MS patients presented poor oral status, with severe risk of tooth losses, very high dental infection rates and a high incidence of temporomandibular disorders. These findings were particularly surprising in a population routinely attending dental services and practising regular oral hygiene. It is possible that, unaware of the consequences of MS, the dentists who regularly attended these patients were not looking for such infections in routine consultations. At the same time, neurologists and other medical staff, unaware of the poor dental condition of these patients, have not paid attention to such a serious situation. Although this may be claimed to be a Brazilian situation, the lack of research in this field suggests the situation may happen more globally. Although MS patients may present simultaneously with osteoporosis, the influence of the latter on dental disease is not well established (Dervis, 2005). Likewise, low ultraviolet radiation and its influence on vitamin D metabolism (Cartorna, 2008) is not a problem in tropical areas and should not influence dental findings in well-nourished patients living in sunny places like Brazil.

The influence of systemic bacterial infections on MS is well documented (Chemaly 2000; Buljevac et al., 2002; Aminzadeh and Etminan 2007; Baird et al., 2007; Cartorna 2008) and silent oral infections can be very detrimental to these patients. No study has ever been performed on the association of dental infections and relapses, perhaps because such infections have never been considered as a potential risk for MS patients. It is possible, however, that patients who are considered to be non-responders to immunomodulatory drugs have, in fact, hidden infections that could maintain a poor response to specific MS treatment. Although this is a hypothetical situation, this possibility could be considered before changing treatments for MS treatments on the assumption that the patient is simply a non-responder who does not present any kind of infection.

Conclusions

The present findings reinforce the urgent need to include a dentist in the interdisciplinary team caring for MS patients. In fact, the inclusion of immunological medical conditions that could affect dental conditions (and vice-versa) could also be part of dentistry teaching and specialisation.

Conflict of interest statement

No conflict of interests to declare. All radiological stud-

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