QUALITY OF LIFE AND EPIDEMIOLOGICAL PROFILE OF PATIENTS UNDERGOING BOTULINUM TOXIN TREATMENT

Qualidade de vida e perfil epidemiológico de pacientes submetidos a tratamento com toxina botulínica

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ABSTRACT

The botulinum toxin (BTX) is a therapeutic modality used in diverse range of diseases in neurology such as dystonia, tics and tremors and spasticity. The literature about the relation between the use of BTX and its impact in quality of life scales are conflicting, our study proposes to aid answering this question. We selected 110 patients between April 2014 and January 2015, from two tertiary hospitals (movement disorder outpatient clinic), which have been evaluated for age, gender, type of BTX applied, technic of application, adverse events, clinical syndrome and etiology. To evaluate quality of life we used the SF-36® scale. The most prevalent clinical syndromes were dystonia, spasticity and daytime bruxism. We applied the scale in 55 patients pre and post treatment to trace a clinical and epidemiological profile of patients treated with botulinum toxin, evaluating its impact on quality of life. Main etiologies were: idiopathic, stroke and peripheral facial palsy. SF-36® scale applied to 55 patients showed that 35 of them improved, with higher impact upon the mental health, vitality, physical functioning and body pain subsections. Incidence of adverse events (21,8%) was similar to the literature. Botulinum toxin application was associated with higher scores on SF-36®, therefore representing a good therapeutic option dystonia and spasticity.

Keywords-Botulinum toxin, quality of life, spasticity, dystonia

RESUMO

A toxina botulínica (TB) é uma modalidade terapêutica utilizada em diversas condições em neurologia, dentre elas distonia, espasticidade, tremor e tique. A literatura médica é conflitante em estabelecer a relação entre o uso da TB e seu impacto nas escalas de qualidade de vida. O presente estudo se propõe a avaliar esta relação. Foram selecionados 110 pacientes, no período entre abril de 2014 e janeiro de 2015 provenientes do ambulatório de Distúrbios do Movimento de 2 hospitais terciários, que foram avaliados de acordo com a idade, gênero, tipo de TB aplicada, técnica de aplicação, eventos adversos, síndrome clínica e etiologia. Para avaliar a qualidade de vida foi utilizada a escala SF-36®. As síndromes mais prevalentes foram distonia, espasticidade e bruxismo diurno. Aplicamos a escala em 55 paciente pré e pós tratamento para traçar um perfil clínico e epidemiológico dos pacientes tratados com toxina botulínica, avaliando o seu impacto na qualidade de vida. As principais etiologias foram: idiopática, acidente vascular encefálico e paralisia facial periférica. A aplicação da escala SF-36® em 55 pacientes revelou que 35 deles apresentaram beneficio, com maior impacto na avaliação dos subitens: saúde mental, vitalidade, performance física e dor. A incidência de efeitos adversos foi de 21,8%, similar à literatura. A aplicação de toxina botulínica foi associada com maior pontuação na escala SF-36®, portanto trata-se de boa opção terapêutica nos casos de distonia e espasticidade.

Palavras-chave-Toxina botulínica, qualidade de vida, espasticidade, distonia

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INTRODUCTION

Botulinum toxin (BTX) was first applied as a therapy modality in 1977 by Alan B. Scott for squint treatment and for blepharospasm in 1980[1] and thereafter had its use extended for several conditions. In neurology, indications include conditions that lead to skeletal muscle hyperactivity, through its action on the motor plate, temporarily inhibiting the release of acetylcholine and therefore muscle contraction[2]. Another indication is for bruxism. Although not approved by the Food and Drug Administration (FDA), BTX has been used by dentists for bruxism based on a report of case series[3].

According to the American Academy of Neurology, the application of BTX has therapeutic indication in the following neurological conditions: dystonia (cervical, focal limb, hemifacial spasm), tics and tremors, in addition to spasticity[4,5]. These disorders have in common a great impact on the quality of life of patients determined by pain, functional disability, and sometimes social embarrassment[6].

Many studies associate BTX application to quality of life improvement by enhancing functional performance and reducing pain[7]. Others studies show that there is no actual impact on the quality of life, which is in large part ascribed to the need of periodic applications, adverse events and suboptimal response in a few cases, associated with high cost[8].

This study aims to outline an epidemiological profile of patients treated at Movement Disorders Clinic of two tertiary hospitals from Rio de Janeiro, describing gender, age, clinical presentation, etiology, effectiveness and adverse events. All patients signed the informed consent form.

METHODS

We selected 110 patients from the Departments of Neurology-Movement Disorders Clinic (49 from Institute of Neurology-Federal University of Rio de Janeiro and 61 from Hospital Federal dos Servidores do Estado) between April 2014 and January 2015, in compliance with the following variables: age, gender, applied BTX (Dysport® or Xeomin®), application guided or not by electroneuromyography, adverse events, effectiveness, clinical syndrome and etiology. To assess quality of life we used SF-36® translated scale[9], applied in 55 of these 110 patients, in the day of BTX application and 14 days later. We defined as criteria for inclusion the regular practice of physical therapy and established diagnosis and exclusion criteria was any contraindication for treatment with BTX.

The SF-36® scale was chosen for the study because it corresponds to a generic questionnaire not limited to specific etiologies, nor age, gender or treatment groups. It consists of 36 questions and responses which are divided into two fields: physical and mental. The physical domain comprises the following sub-items: physical functioning, role-physical, body pain and general health. Mental domain includes: vitality, social functioning, role-emotional and mental health. The score ranges from 0 to 100 for each sub-item, 100 representing the best functional assessment.

For those patients with misreading or misinterpretation was offered aid for completing the questions, respecting written sentences. The assessment of quality of life was not performed in all patients due to difficulties in application that could not be overcome with the help offered (significant cognitive deficits, lack of proper interaction with the examiner and loss to follow-up within 14 days).

RESULTS

The average age of the patients was 52,9 years. Clinical syndromes were: dystonia (65%), spasticity (29%), and daytime bruxism (5%). From all of the 110 patients evaluated, 24 (21,8%) developed transient adverse events after the use of toxin. Among them, 14 with Xeomin® and 10 with Dysport®. In 6 patients the toxin application was guided by eletroneuromyography. Among them 3 developed transient adverse events. Eletroneuromyography was recommended for patients who had history of several adverse events in previous applications and complex cases.

	Female	Male	Total	%
DYSTONIA	40	32	72	65%
hemifacial spasm	19	19	38	35%
cervical dystonia	6	10	16	15%
focal limb dystonia	6	2	8	7%
Blepharospasm	8	0	8	7%
trunk dystonia	1	1	2	2%
SPASTICITY	18	14	32	29%
BRUXISM	4	2	6	5%
Total	62	48	110	100%

Table 1- Gender and clinical diagnosis

Among the diagnoses our group was very heterogeneous. The most prevalent was idiopathic (43%), stroke (10%) and peripheral facial palsy (9%), and others as listed below: Idiopathic myelopathy, traumatic brain injury, HTLV myelopathy, spinal cord injury, Meige's syndrome, after procedure injury, familial dystonia, Arnold-Chiari type 1 syndrome, hereditary spastic paraparesis, chronic encephalopathy, HIV myelopathy, progressive supranuclear palsy (PSP), Angelman's syndrome, tardive dystonia, primary lateral sclerosis, Ehlers-Danlos syndrome, neurocisticercosis, Machado-Joseph's disease, Parkinson's disease, bacterial meningitis, multiple sclerosis, facial nerve vascular compression and ferritinopathy.

There was an incidence of 21,8% of adverse events, as listed below: ptosis (13), dysphagia (6) and limb paresis (5).

SF-36® scale was employed in 55 patients submitted to treatment with BTX, for pre and post-therapy evaluation. Results were compared and 35 patients (64%) achieved an improved score after treatment, with a higher impact upon mental health, vitality, physical functioning and body pain subsections. When the group of 19 (35%) patients with worse score in comparison to pre-therapy ones was analyzed, the most compromised aspects were mental health, vitality and social functioning, although role-emotional and role-physical showed improvement.

	Improve			Equal	Worse		
Total	35 (64%)			1 (1,8%)	19(35%)		
	Improvement Group				Worsement group		
	improve	equal	worse		improve	equal	worse
Physical functioning	20	8	7	Role-physical	10	4	5
Body pain	20	9	6	General Health	9	3	7
Role-physical	19	12	4	Body pain	7	5	7
General Health	19	4	12	Physical functioning	6	7	6
Mental health	28	5	2	Role-emotional	11	3	5
Vitality	23	3	9	Social functioning	7	2	10
Social functioning	21	11	3	Vitality	3	5	11
Role-emotional	15	16	4	Mental health	3	2	14

Table 2: SF-36® Score relation pre and post therapy

DISCUSSION

The prevalence of dystonia in this sample was higher than spasticity, which contradicts the prevalence in the general population being 16-20 per 100,000 for dystonia[10], 4 per 10,000 for spasticity due to post traumatic brain injury and 9 per 1000 for spasticity post stroke[11]. A possible reason is that patients attended a specific clinic for movement disorders and many general practitioners are unaware of BTX as a treatment for spasticity. On the other hand, some patients referred with spasticity had already ankylosis, and in those cases the application of BTX would not be associated with positive effects.

About etiologies, idiopathic was the most prevalent in this group, which corresponds to the literature, since the most prevalent dystonia is idiopathic[10].

The main known adverse event of BTX consisted in muscle weakness in or around the injected region, observed as ptosis or peripheral facial palsy in cases of facial dystonia, and limb paresis in segmental dystonia and spasticity, with a reported incidence of about 11,8%(ptosis) to 40% (weakness)[12]. In our study we observed a incidence of 21,8% of adverse event, with 29% in dystonia and 6% in spasticity. The low incidence of adverse events in spasticity can probably be explained by the reduced number of cases in our sample, as stated previously. One long-term side effect of BTX use is the development of an immunologic resistance due to the production of neutralizing antibody for the neurotoxin after repeated injections (about 3-10%). We did not observe such response in our sample due to the short follow-up period.

Six patients were referred from the Oral and Maxillofacial Surgery for BTX application for severe bruxism and were included based on randomized studies that demonstrate clinical improvement in this scenario[3]. Five of them improved and adverse effects were observed in only 1 case (dysphagia).

Dystonia and spasticity are clinical conditions that result in pain and significant impact on the quality of life of patients, affecting functional and emotional aspects[12], as we have seen through the questionnaire used. SF-36® was chosen as the evaluation tool in our study because it is practical, fast, easy and not restricted to specific causes, allowing its application in several clinical conditions.

SF-36® scale was not obtained from 55 patients. Cognitive and language (aphasia) issues limited the scale application and half of the patients did not return on the follow-up appointment within 14 days.

Most patients had improvement in pain and/or functionality due to the application of BTX, and on the analysis of SF-36® we observed that most patients showed improvement in the overall score, with the greatest impact on functional capacity and vitality, consistent with the results observed clinically. However, some patients with good clinical response showed no changes in the score, probably influenced by emotional aspect and presence of comorbidities (progressive disease and depression) cited in several studies as a determinant of worse quality of life in dystonias[6,7].

In our study we conclude therefore that BTX represents a good choice of treatment in cases of dystonia and an important adjuvant therapy in cases of spasticity, when combined with physical therapy, with good therapeutic response and low rate of adverse events. Scale application provides an outcome assessment in an objective manner, and can be used as an auxiliary tool in monitoring clinical effect. In addition, we can conclude also that BTX constitutes a good therapeutic option for bruxism, with considerable improvement in pain and good clinical response, although further studies are necessary.

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