Journal of the Neurological Sciences 369 (2016) 333–341

Contents lists available at ScienceDirect

Journal of the Neurological Sciences

journal homepage: www.elsevier.com/locate/jns

Review article

Osteopathic manipulative treatment in neurological diseases: Systematic review of the literature

Francesco Cerritelli [a,b,*,1], Nuria Ruffini [a,1], Eleonora Lacorte [c,1], Nicola Vanacore [c,1]

[a] Clinical-based Human Research Department, C.O.ME. Collaboration, Pescara, Italy
[b] Department of Neuroscience, Imaging and Clinical Sciences "G. D'Annunzio", ITAB-Institute for Advanced Biomedical Technologies, "G. D'Annunzio" University of Chieti-Pescara, Italy
[c] National Centre for Epidemiology, Surveillance and Health Promotion, National Institute of Health, Rome, Italy

ARTICLE INFO

Article history:
Received 3 May 2016
Received in revised form 29 July 2016
Accepted 29 August 2016
Available online 30 August 2016

Keywords:
Neurology
Osteopathic manipulative treatment
Headache
Cerebral palsy

ABSTRACT

Objective: The aim of the present systematic review is to critically evaluate the effectiveness of OMT as an adjuvant therapy in the management of patients with neurological diseases.
Methods: A systematic review was conducted and the findings were reported following the PRISMA statement. Twelve databases were searched for articles reporting the use of osteopathic manipulative treatment in neurological disorders. Each article was assessed using the Cochrane risk of bias tool and the Jadad score.
Results: 10 articles were included. OMT was used to test its efficacy and/or effectiveness in treating tension-type headache, migraine, cerebral palsy and gait analysis in patients affected by Parkinson's Disease. The general quality of the included trials ranged from very low, to low and moderate according to Cochrane standards. High heterogeneity between studies was found for the type of intervention, control and outcome measures used.
Conclusion: Results showed that studies on the efficacy and/or effectiveness of OMT treatments are scarce, heterogeneous, and of low methodological quality. Further studies should be conducted including a more pragmatic methodology, an exhaustive description of all investigated and concurrent interventions, and a systematic report of adverse events, so as to obtain robust and generalizable results.

Contents

* Corresponding author at: COME Collaboration ONLUS, Via Vespucci, 188, 65126 Pescara, Italy.
E-mail address: francesco.cerritelli@gmail.com (F. Cerritelli).
[1] These authors contributed equally to the manuscript.

http://dx.doi.org/10.1016/j.jns.2016.08.062
0022-510X/

1. Introduction

Neurological disorders largely affect the global population. As reported by a recent review, their prevalence worldwide ranges from ~3 to 800/100,000 people, whereas their incidences ranges from 1 to 200 per 100,000 person-years [1].

According to the World Health Organization, neurological conditions were responsible in 2005 for 11.67% of the total deaths worldwide, and for 6.29% of disability adjusted life years (DALYs). Neurological conditions play an important role from both a sociological point of view, due to discrimination and stigmatization, and from an economical perspective, as the public health annual cost for neurological diseases reaches almost €139 billion [2].

The international community is committed to the improvement of prevention strategies, treatments and the management of neurological patients. Multidisciplinary approaches are also suggested as potentially effective, and an increasing number of patients asks for complementary and alternative medicine (CAM) as a support to usual care [3].

Osteopathy is currently classified as CAM. It is a branch of health care that was founded in the United States, in the 19th century, by A.T. Since then, osteopathy has expanded worldwide to include 2 different professions: non-physician osteopaths, and osteopathic physicians. The former are generally considered practitioners of alternative medicine, whereas the latter group, that only exists in the United States, has the same training and regulation as conventional physicians [4].

Osteopathy uses manual procedures for both the diagnosis and treatment of clinical conditions. Osteopaths use the osteopathic manipulative treatment (OMT) to treat somatic dysfunction (SD), i.e. tissue modifications, impaired range of motion and asymmetry. OMT can be defined as "the therapeutic application of manually guided forces by an osteopathic physician to improve physiologic function and/or support homeostasis that has been altered by somatic dysfunction" [5]. According to the Glossary of Osteopathic Terminology, OMT takes advantage of several manual techniques and approaches, ranging from articulatory, fascial or visceral manipulation, to cranial osteopathy, which are considered the most popular, aiming at resolving SDs. OMT has been claimed to produce anti-inflammatory [6] and hyper-parasympathetic [7–9] effects.

The WHO recognized the osteopathic five-model concept (Biomechanical model, Respiratory-Circulatory model, Neurological model, Metabolic-Energy model, Behavioral model) as a unique osteopathic contribution to world health care [4].

The U.S. national health statistics reported that almost 10% of the US population in 2015 requested osteopathic manipulations [10]. Analyzing trends from 2002 to 2012 reports, authors claimed that osteopathy proved to be a consistently popular approach over that period [10].

Licciardone et al. reported that in 2004 almost 62 million of osteopathic visits were carried out among US population [11], with the majority of patients requesting them to treat low back pain. A more recent study estimated that in the period between 2002 and 2006 osteopathic physicians carried out over 336 million visits [12]. Degenhardt et al. [13] confirmed these data, adding that up to 15% of visits in private practices were due to neurological complaints. In the same study, authors reported that the large majority (92%) of patients showed a positive response to OMT immediately after treatment, and 72% of them reported that the benefits lasted up to 7 days after OMT. Effects size estimates ($d > 1.0$) suggested that OMT is highly effective in reducing symptom severity.

Despite the popularity of the approach in the clinical context, several clinical trials were carried out investigating the efficacy and effectiveness of osteopathy in neurological patients, and none of them reported robust evidence supporting its use. Moreover, no systematic reviews (SR) assessing the effectiveness of OMT on neurological disorders have been published. In fact, the lack of high quality research on OMT is a critical factor undermining the credibility of the osteopathic profession [14].

Thus, the objective of the present SR is to critically assess the efficacy, effectiveness and safety of OMT, administered either alone or in combination with (as an adjuvant therapy) usual/routine care, in the treatment of patients with neurological disorders.

2. Materials and methods

2.1. Studies

The present systematic review included multi-center, single-center, quasi-randomized and randomized clinical controlled trials (RCT), interrupted time series, controlled clinical trials, and observational studies. No language restrictions nor other limits, such as year of publication, were applied. Studies which were uniquely concerned with collecting data from neurological patients were excluded. Non-peer reviewed papers, conference proceedings, editorials, letters and abstracts were excluded. Studies including patients with back pain or musculoskeletal problems, but without any underlying neurological disorders were also excluded.

2.2. Population

We included patients from any socio-demographic condition, of both genders and any age class, that reported a neurological condition. We considered as neurological disorder any disease of the central and peripheral nervous system, including brain, spinal cord, cranial and peripheral nerves, nerve roots, autonomic nervous system, and neuromuscular junctions and muscles. Thus, according to this definition, neurological disorders included also: epilepsy, Alzheimer's disease and other dementias, cerebrovascular diseases including stroke, migraine and other headache disorders, multiple sclerosis, Parkinson's disease, neurological infections, brain tumors, traumatic disorders of the nervous system (i.e. due to head trauma), and neurological disorders subsequent to malnutrition.

2.3. Intervention

Only studies considering OMT as the main intervention of interest were included. The term OMT currently includes nearly twenty-five types of manual treatments. These techniques are used to treat SD within the body's framework, including skeletal, arthrodial and myofascial structures [15]. OMT techniques have been classified as direct or indirect [15] (see Appendix 1).

To be considered eligible, studies had to include patients with neurological conditions treated with an OMT intervention performed by an osteopath. Due to the intrinsic clinical variability of manual techniques in terms of magnitude, frequency, and timing, no dosage restrictions were applied. The following interventions were considered as possible comparisons: sham therapy, waiting list control, routine care or no treatment. All studies considering both the OMT intervention and the control treatment as administered either alone or in combination with usual/routine care were included. Studies including combined manual treatments were excluded.