Article ID: WMC002239 ISSN 2046-1690

Potential Role of Placebo-Effect in the Anti-Epileptic Influence of Meditation in Patients with Epilepsy

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Article ID: WMC002239

Article Type: Meta analysis

Submitted on:22-Sep-2011, 06:41:13 AM GMT **Published on:** 22-Sep-2011, 06:49:56 PM GMT

Article URL: http://www.webmedcentral.com/article_view/2239

Subject Categories:BEHAVIOUR

Keywords: Meditation, Placebo-effect, Remedial Efficacy, Anti-epileptic Influence, Epilepsy

How to cite the article: Jaseja H , Tonpay P , Badaya S , Jaseja B . Potential Role of Placebo-Effect in the Anti-Epileptic Influence of Meditation in Patients with Epilepsy . WebmedCentral BEHAVIOUR 2011;2(9):WMC002239

Source(s) of Funding:

None

Competing Interests:

None to declare.

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Abstract

Meditation has remained a widely practiced technique since long and the spectrum of health disorders in which it is claimed to exercise significant remedial efficacy has widened in recent past. Meditation has also been considered a safe and harmless mental practice for neurological disorders especially epilepsy for a long period of time. However, in recent times, its role in epilepsy has emerged as a topic of debate resulting in interest and exploration of the mechanisms involved in its epileptogenic versus anti-epileptic influence. It is recognized that several factors contribute to the remedial efficacy of a medical intervention, especially alternative forms of medical therapies, the role of which may be direct or indirect. Placebo-effect is one such factor that has been known for a long period of time to contribute to remedial efficacy of medical therapies, the exact mechanism of which also needs to be elucidated. This brief paper is intended to explore the role of placebo-effect in the anti-epileptic influence of meditation.

Introduction

Meditation is an age old mental practice that is increasingly gaining popularity in wider sections of the human society and establishing as an effective alternative therapy for various disorders, especially stress-related.

The role of meditation in epilepsy has recently been a subject of an interesting debate [1-16] warranting greater in-depth studies of meditation-induced alterations in brain environment and neural functioning.

Meditation has been reported to exert anti-epileptic influence in patients with epilepsy by several researchers [8,11,13]; yet, the exact mechanism through which meditation exercises its anti-epileptic action remains to be elucidated. Although, a possible mechanism for its anti-epileptic effect operating at cellular level has been proposed earlier [15], this brief paper attempts to explore the role of placebo-effect in contributing to the anti-epileptic influence of meditation.

The role of placebo-effect

Beliefs are important and inherent attributes of human behavior. Placebo is a harmless substance of treatment with no therapeutic value and is widely used in scientific and clinical trials. The word ‘placebo’ is derived from the Latin word “placere” (to please) and the improvement that patients experience in their ailment is known as “placebo-effect’.

Placebo-effect has been known for a long period of time along with its significance in remedial efficacy especially in alternative medicine, where its efficacy is believed to be due to alteration in the levels of stress and anxiety. In a landmark report in 1955 known as The Powerful Placebo [17], analysis of several studies by H K Beecher revealed that nearly one-third of patients responded to a placebo.

Researchers have been exploring the effects of placebos and their mechanisms that might be operating in medical disorders especially in alternative medicine. In one large study [18], the researchers observed that glucosamine and chondroitin sulfate were not significantly better than placebo in reducing knee pain by 20 percent. Clinicians have sometimes even utilized placebo-effect by giving sugar pills or vitamins which had no role in the treatment of the medical conditions they were used in. Even dummy pills have been found to induce physiological changes especially in autonomic functioning of the body in study-subjects in accordance with the effect professed by the researchers. A few anecdotal experiences have even reported patients sleeping well with sleeping pills kept at their head-end and in the absence of which the same patients complaining of disturbed sleep and even insomnia.

Some studies have reported definite changes during placebo-effect at both biochemical and cellular levels, which may imply that placebos can not be considered inert in nature or action. Benedetti [19] has suggested that psychosocial-induced biochemical changes in brain during placebo-effect could affect the course of the disease and also the response to a therapy. Brain imaging has demonstrated activation of some brain regions during placebo-effect and which has been clearly shown to be mediated by dopamine and endorphins [20]. Incidentally, activation of pre-frontal

regions and release of the two chemicals i.e. dopamine and endorphins have also been reported during meditation [21]. However, this striking similarity alone cannot lead to a firm assumption that meditation simulates placebo-effect or vice versa.

In patients with epilepsy, trigger-factors or seizure precipitants play a major role in determining the frequency of seizures as reported in several studies. In one study, stress was perceived as the most common seizure-precipitant for seizures [22], while anxiety was found to be linked with poor seizure-control and even fresh seizures in another study [23]. Instructions in meditation-programs form an important integral component of its practice and therefore it is not unlikely that the placebo-effect of meditation could be operating in altering the levels of stress and anxiety resulting in its anti-epileptic or seizure-suppressant influence. Such a phenomenon is soundly exemplified by a reported case-study [13] in which a young patient with long standing epilepsy with very frequent seizures reported total cessation of the attacks from the very first day of instructions on meditation. Meditation is a complex neural task associated with recognized alteration in neurophysiology and neurochemistry of the brain over a definite period of time; hence, complete relief from seizure-attacks from day one of simply instructions on meditation obviously implicates a psychological intervention due to placebo-effect in the anti-epileptic influence of meditation. Smith in his study on isolation of the trait-anxiety-reducing effects of transcendental meditation (TM) from expectation of relief has also concluded that the therapeutic component of TM was not the TM exercise itself [24].

From their study [25] Burneo et al have also emphasized the consideration of non-pharmacological effects including placebo-effect in gauging the magnitude of the efficacy if new anti-epileptic drugs. Beyenburg et al [26] in their review and meta-analysis of the therapeutic efficacy of newer anti-epileptic drug(s) (AEDs) versus placebo-effect in refractory epilepsy have also found that the placebo-corrected efficacy of newer AEDs was disappointingly small. This has led to claims that placebo-effect does exist in epilepsy, the main effects of which are seizure frequency and severity on account of their easy quantification. The renowned epileptologist, Dr Steven C Schachter also claims definite existence of placebo-effect in epilepsy. According to Dr Robert Ader, a psychologist, most of the relief by alternative procedures is due to placebo-effect. It should however be recognized that the use of placebos in clinical trials on patients with epilepsy assumes great significance and caution for fear of aggravating the disorder and on account of the life-threatening risk associated with it.

Thus, the role of placebo-effect in meditation-induced anti-epileptic influence needs to be recognized and attempts made to design appropriate studies for its evaluation keeping in view that its contribution to anti-epileptic influence is likely to vary in proportion to the popular or patients' belief in meditation.

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