

MUSIC – A BOON TO LIFE

Abstract

In this article the activation of brain by music and way how neuronal connections within the brain are stimulated while listening to music are discussed. The impact of music on the nondominantheisphere of the brain and how music can pacify the negative thoughts in an individual have been discussed. The roles of music in the recovery from neuropsychiatry disorders have also been mentioned.

Keywords: Nondominantheisphere, Neuropsychiatry disorders

Authors

Dr. S Prathiba

Lecturer
Department of Pharmacology
Meenakshi Ammal Dental College and
Hospital
Meenakshi Academy of Higher
Education and Research (MAHER)
Chennai, India.
prathibamahesh86@gmail.com

Dr. P Mahesh Kumar

Associate Professor
Department of Oral Medicine and
Radiology
Meenakshi Ammal Dental College
and Hospital
Meenakshi Academy of Higher
Education and Research (MAHER)
Chennai, India.

I. INTRODUCTION

As cool breeze chills down your body good music soothes your soul. Music is definitely a compliment for peaceful living for all those shaken by stress in life. Peaceful music can make miracles happen in our life filled with unravelling mysteries. There are few who may not accept that music can be a therapy for people affected by mind related disorders. In this article, I like to explain the physiology behind listening to music and its innumerable beneficial effects on body and mind.

II. NEURONAL CIRCUITRY BEHIND MUSIC

The average adult brain weighs between 1400 and 1500 gms consisting of billions of neurons intricately connected to one another. Each person has their unique architecture of neurons derived from their forefathers. The internal traits of any individual are the result of electrical performances of neurons and their complex associations. There is stimulation of neuronal circuitry when we listen to music. The part of the brain that controls emotions is the limbic system. When we listen to music, neuronal connections are established between the limbic system and hypothalamus. Furthermore the neurons carry the message from hypothalamus to the pre-frontal association areas via the amygdala. Such intricate links are running between different parts of the brain. Functional neuroimaging and lesion studies show that music-evoked emotions can modulate activity in virtually all limbic and paralimbic brain structures [1].

Thus listening to harmonious music quietens the emotions and provides tranquility. When we listen to music along with the intonations in the voice we can learn the language as Wernicke's Area which is present at the junction of Temporal lobe & Parietal lobe is stimulated. This Wernicke's Area is the area for language interpretation & Intelligence, thus stimulation of this part of the brain helps in developing linguistic skills and also helps in laying the foundation of intelligence. Music plays a pivotal role in establishing the core for emotional intelligence in children. Early introduction of kids to the world of music is really beneficial thus the lullabies sung by our older generation is clearly an advantage.

III. INFLUENCE ON NONDOMINANT AREA

Nondominant area is the part of the brain that helps the individual to appreciate the esthetics and the abstract sense of things happening around him or her. For a right handed person left part of the brain is the dominant area and the other half of the brain is the non-dominant area. The artistic skills and the nuances required to learn each and every art are possessed by the neurons belonging to the nondominant area. When we sing or listen to good music, neuronal stimulation happens in the non-dominant area to grasp the language and tune of the music. Brain imaging studies have shown that the non-dominant hemisphere is preferentially stimulated when listening to music that produces an emotional experience, and that even imagining music kindles areas on this side of the brain [2]. Thus music affects the nondominant part of the brain to a greater extent and it is this part of the brain that helps in recognition of esthetic sense of things around him or her. Actually to the contrary the non-dominant part of the brain is playing a dominant role in our life.

IV. MUSIC IN CNS DISORDERS

Psychiatry disorders like Schizophrenia, Mania, Depression, Bipolar disorder are due to alterations in the concentration of neurotransmitters at the synaptic junction of neurons. Deficiency or excessive presentation of neurotransmitters like Dopamine or Serotonin or any other neurotransmitter results in manifestation of neuropsychiatry issues. The health hampering effects of these diseases can be overcome by music listening as music regulates the activity of neurotransmitters like dopamine and serotonin in the brain. It also favours the release of inhibitory neurotransmitter GABA in the neurons thus producing a sedating effect in individuals prone to develop anxiety. Dysregulation of GABAergic neurons in the brain can lead to the occurrence of neuropsychiatric disorders [3]. Thus listening to soothing music kindles the different areas of brain and produces sedation by stimulating the release of GABA from neurons. This effect will help the affected individuals to tide over their negative expressions and have an equilibrium in their emotions as emotions are to be handled delicately with care.

Neuroimaging studies have brought into limelight that unique circuitry in brain areas connected with emotions such as the insular and cingulate cortex, hypothalamus, hippocampus, amygdala, and prefrontal cortex are found to be induced by music. In addition, neurochemical studies have suggested that there is rise in levels of several biochemical mediators, such as endorphins, endocannabinoids, dopamine and nitric oxide amongst the brain cells to experience the good effects of music [4]. The distressing psychological sequelae of degenerative disorders like Alzheimer's and Parkinsonism especially anxiety, depression and aggression can be minimized by pacifying music [5]. Even music kindled the past memories in most of the patients treated by music therapy. It also produces emotional stability in people. However robust scientific data substantiating these effects are the need of the hour.

V. CONCLUSION

From neuroimaging studies we can understand that music can kindle different emotions and produce overall tranquility in the individual who is listening to it. Thus it can be a boon for people deranged by neuropsychiatric disorders and helps in their speedy recovery and also help in mindful living of people. Listening to music can help people re-establish their social networks and can also help in overcoming their obstacles to lead a near normal life.

REFERENCE

- [1] Stefan Koelsch, Towards a neural basis of music-evoked emotions
Trends Cogn Sci., 2010 Mar;14(3):131-7. doi: 10.1016/j.tics.2010.01.002.
- [2] Blood, A. J., Zatorre, R. J., Bermudez, P., et al. (1999) Emotional responses to pleasant and unpleasant music correlate with activity in paralimbic brain regions. *Nature Neuroscience*, 2, 382–387.
- [3] Michelle Pugle, What is GABA?, Very well Health, Updated on November 04, 2022
- [4] Marianna Boso¹, Pierluigi Politi, Francesco Barale, Emanuele Enzo, Neurophysiology and neurobiology of the musical experience, *Funct Neurol*. 2006 Oct-Dec;21(4):187-91
- [5] S Guetin¹, F Portet, M-C Picot, C Defez, C Pose, J-P Blayac, J Touchon, Impact of music therapy on anxiety and depression for patients with Alzheimer's disease and on the burden felt by the main caregiver (feasibility study), *Encephale*. 2009 Feb;35(1):57-65. doi: 10.1016/j.encep.2007.10.009.