

Parkinson's Disease and Exercise; Effects of Endorphins

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Abstract

More than 200,000 patients with Parkinson's disease (PD) present yearly for treatment. The diagnosis is entirely observational that is recognition of the disease is possible clinically, the so called spot diagnosis for the neurologist.

We observed passengers on an aerial tram for the past thirty-five years.

The passengers were standing for the journey. We found five patients with Parkinson's disease.

We interviewed one of the patients who volunteered to tell his experience while riding the tram to the crest of the mountain, then walking the trails at the crest and confirmed his story by observing the other patients.

The patients' stiffness, tremor, stooped posture, respiration and well-being (he said) improved.

We surmise that the transient improvement of the patients is the result of exercise and the concomitant release of endorphins.

We confirmed our observations by comparing the prevalence of Parkinson's disease on the tram and worldwide. The ABQ Tram prevalence is, of course, less than the worldwide rate reported here (Poisson rates, < 0.001).

Keywords: *Parkinson's Disease; Exercise; Endorphins*

Introduction

More than 200,000 patients with Parkinson's disease present yearly for treatment in the USA. This disease affects the elderly; its symptoms include: tremor, muscular stiffness, difficulty standing, stooped posture, muscle rigidity, problems with coordination, shuffling gait, poor balance, difficulty speaking, blank stare, weight loss and many more symptoms and signs.

Because there are no readily available cheap laboratory tests for the disease, the diagnosis is usually entirely observational that is recognition of the disease is clinical. For Parkinson's disease the so called spot diagnosis for the neurologist is usually instantaneous on first sight of the patient [1].

Materials and Methods

Observations were carried out over a period of thirty-five years. We found five patients with Parkinson's disease who were riding the aerial tram.

Results

For more than 35 years we observed the tram passengers who were standing for the journey and found five patients with Parkinson's disease. We interviewed one of the patients who volunteered to tell his experience while riding the tram to the crest and walking the trails of the mountain and confirmed his story by observing the other patients; his stiffness, tremor, stooped posture, respiration and well-being improved.

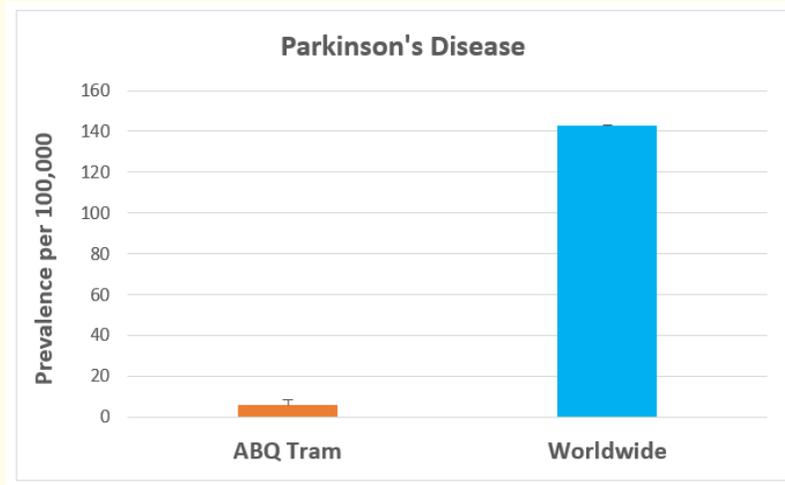


Figure 1: Parkinson's disease prevalence at Sandia peak tram near Albuquerque, NM.

Prevalence rates per 100,000 population were computed from observation at the Sandia Peak Tram (ABQ Tram) and from the internet. Worldwide prevalence rate given here was computed from data given on the Parkinson Foundation web site; this rate is consistent with rates reported using record-based studies in a systemic review and less than the rates reported for door-to-door surveys. The ABQ Tram prevalence is, of course, less than the worldwide rate (Poisson rates, < 0.001) [5].

Discussion

There is an aerial tram near Albuquerque NM USA that reaches an altitude of 3254m in about 15 minutes from its starting altitude of about 1800m. The prevailing oxygen availability at the crest of the mountain is about 13% compared to sea level; 21%. Thus, the journey to the crest is associated with considerable ambient hypoxia. The tram has been operational for more than 50 years and has carried about 11 million passengers to the crest of the Mountain. Most of the visitors are from out of state, many are from overseas, usually resident at sea level.

We surmise that the improvement of the patients is the result of exercise and the concomitant release of endorphins and not related to ambient hypoxia [2,3]. Recently a well controlled study supported our interpretation of these observations [6]. We confirmed our observations by statistically comparing the prevalence of Parkinson's disease on the tram and worldwide (Figure 1).

Patients often report that they improve transiently by embracing habits that might be considered unusual, like taking a journey by tram to the crest of the Sandia Mountain. We suggest that their transient improvement, however, is the result of exercise [3,6] and the concomitant release of endogenous opioids and not the result of the ambient hypoxia.

Conclusion

We conclude that exercise and the concomitant release of endorphins is associated with transient clinical improvement in patients with Parkinson's disease.

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Approval and Informed Written Consent

The study was reviewed and approved by the IRB committee of the NMHEMC Research Foundation (2020-19-6).

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