

Brain Cancers Effects on the Brain

Earold Farquharson

UMB CURE Scholars Program - Grade Cohort 5 (Green Street Academy), Baltimore, MD
Marlene and Stewart Greenebaum Cancer Center, University of Maryland, Baltimore

Purpose of Study

To see how gaming can benefit those with brain cancer and how it can negatively affect the brain.

Introduction

- An estimated 23,820 adults (13,410 men and 10,410 women) in the united states will get diagnosed with primary cancerous tumors of the brain and spinal cord.

Background Info /Symptoms

- New onset or change in pattern of headaches.
- Headaches that gradually become more frequent and more severe.
- The most common cancerous primary brain and spinal cord tumors are gliomas, and the most common glioma is called a glioblastoma.
- Brain or spinal cancer can refer to cancer that starts in the brain or spinal cord, or cancer that starts elsewhere in the body and eventually metastasizes (spreads) to the brain or spine through the bloodstream.
 - If a tumor originates in the brain or spinal cord tissue, it is known as a primary brain tumor; if it originates elsewhere in the body and spreads to the brain, it is known as a metastatic brain or spinal tumor.

Discoveries and Innovations

- In this pilot study, active video gaming used as a home-based intervention for childhood brain tumor survivors improved motor and process skills in activities of daily living.
- All 13 children enrolled completed the program. Compared to baseline, the motor and process parts of their amplified musculoskeletal pain syndrome (AMPS) improved significantly after active video gaming.
 - In the parallel group analysis the improvement in the process part of AMPS remained statistically significant.
- Virtual reality can be used to improve functioning in patients with cancer, according to David Rhew, MD, Chief Medical Officer, Vice President and General Manager of Enterprise Healthcare, Samsung Electronics America. Research has shown that this technology can decrease pain and improve vision, as well as improve memory and functioning in older adults with dementia and Alzheimer disease.

Reducing Risk

- Being overweight or obese increases the risk of some cancer types including a type of brain cancer called Meningioma and if you are exposed to alot of radiation your risk of developing cancer depends on many things including your age, genetics, lifestyle and environmental factors. Anything that can increase your risk is called a risk factor. **Don't use tobacco**
- Eat a healthy diet
 - Eat plenty of fruits and vegetables
 - Exercise frequently to avoid being overweight and or obese
 - Limit processed meats

Data

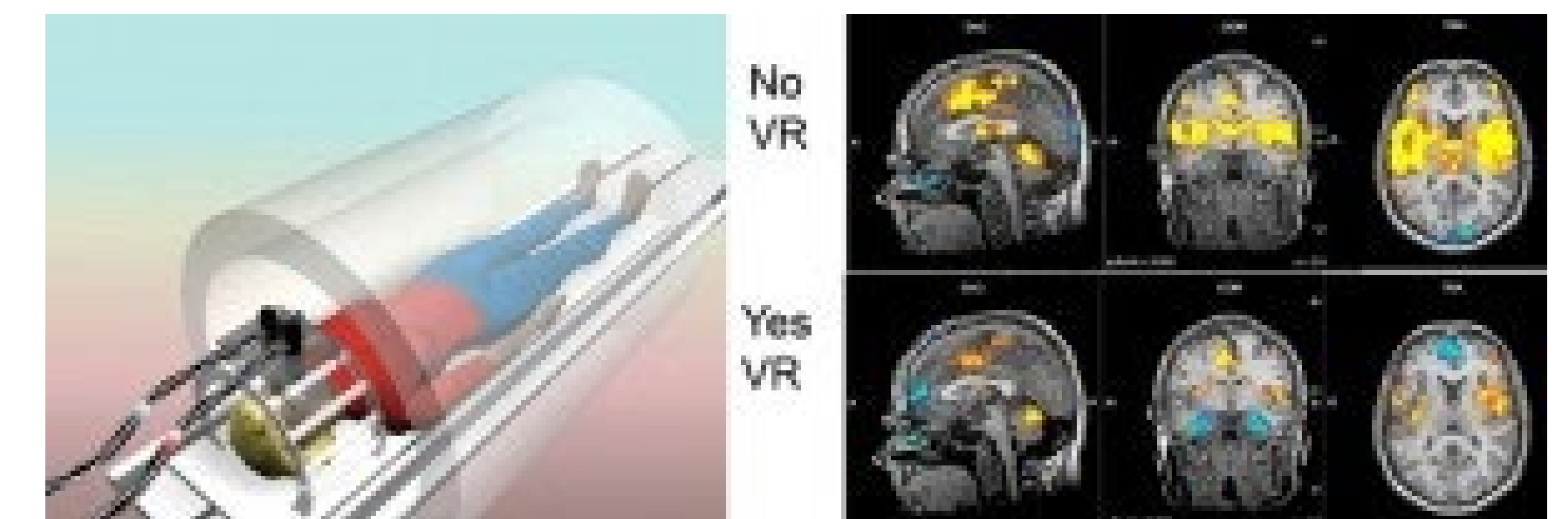


Figure 1: This image shows the results of using VR as a pain reduction method.

Conclusion

- Scientists can use the information I found to help themselves locate and record the growth of brain cancer. Future problems that may arise is some treatments might not work for people. Some questions that have not been answered are how can people know early that they have brain cancer. Some things scientists need to do address these remaining problems are make test people can take every time they go to the doctor.

References

Symptoms: <https://www.mayoclinic.org/diseases-conditions/brain-tumor/symptoms-causes/syc-20350084>
 Lifestyle: <https://www.cancerresearchuk.org/about-cancer/brain-tumours/risks-causes>
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 Video Game Therapy:
<https://academic.oup.com/nop/article/4/2/98/2631789>
<https://psycnet.apa.org/record/1987-32225-001>
<https://www.ascopost.com/issues/august-25-2019/virtual-reality-and-patients-with-cancer/>

Reducing Risks and How do you get screened for Brain Cancer

- **Don't use tobacco**
- **Eat a healthy diet**
 - **Eat plenty of fruits and vegetables**
 - **Exercise frequently to avoid being overweight and or obese**
 - **Limit processed meats**

Screenings

[https://www.mayoclinic.org/diseases-conditions/brain-tumor/diagnosis-treatment/drc-20350088#:~:text=A%20number%20of%20specialized%20MRI,inclusing%20computerized%20tomography%20\(CT\).](https://www.mayoclinic.org/diseases-conditions/brain-tumor/diagnosis-treatment/drc-20350088#:~:text=A%20number%20of%20specialized%20MRI,inclusing%20computerized%20tomography%20(CT).)

- Neurological Exam
- Imaging Test
 - Magnetic resonance imaging (MRI)
 - computerized tomography (CT)
 - Positron emission tomography (PET)
- Collecting and testing a sample of abnormal tissue Biopsy