

Comparison of Standard of Care of Stroke Treatment to Newer Methods

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INTRODUCTION

The purpose of this experiment is to understand the standard of care for patients that are recovering from a stroke. Currently, physical therapy and chemical drugs are the only treatments being used in addition to over the counter medicines. In the past few years, stem-cell therapy has been a possible treatment for strokes and thus will be the third candidate for treatments. Once all three treatments have been thoroughly compared through numerical data such as efficacy and quality of life scores, it can be determined which treatment ought to be used and is more effective, or if there is an ideal combination of treatments that should be used for patients recovering from a stroke.

BACKGROUND AND SIGNIFICANCE

Throughout the United States, almost 800,000 people suffer from a stroke and nearly 140,000 die from one. Stroke is the leading cause of long-term disability in the United States. A stroke is caused by a blood clot that blocks a vessel in the brain and thus prevents blood flow. Since brain cells are suddenly deprived of oxygen, they begin to die immediately. Losing these cells can cause permanent problems such as inhibiting movement.

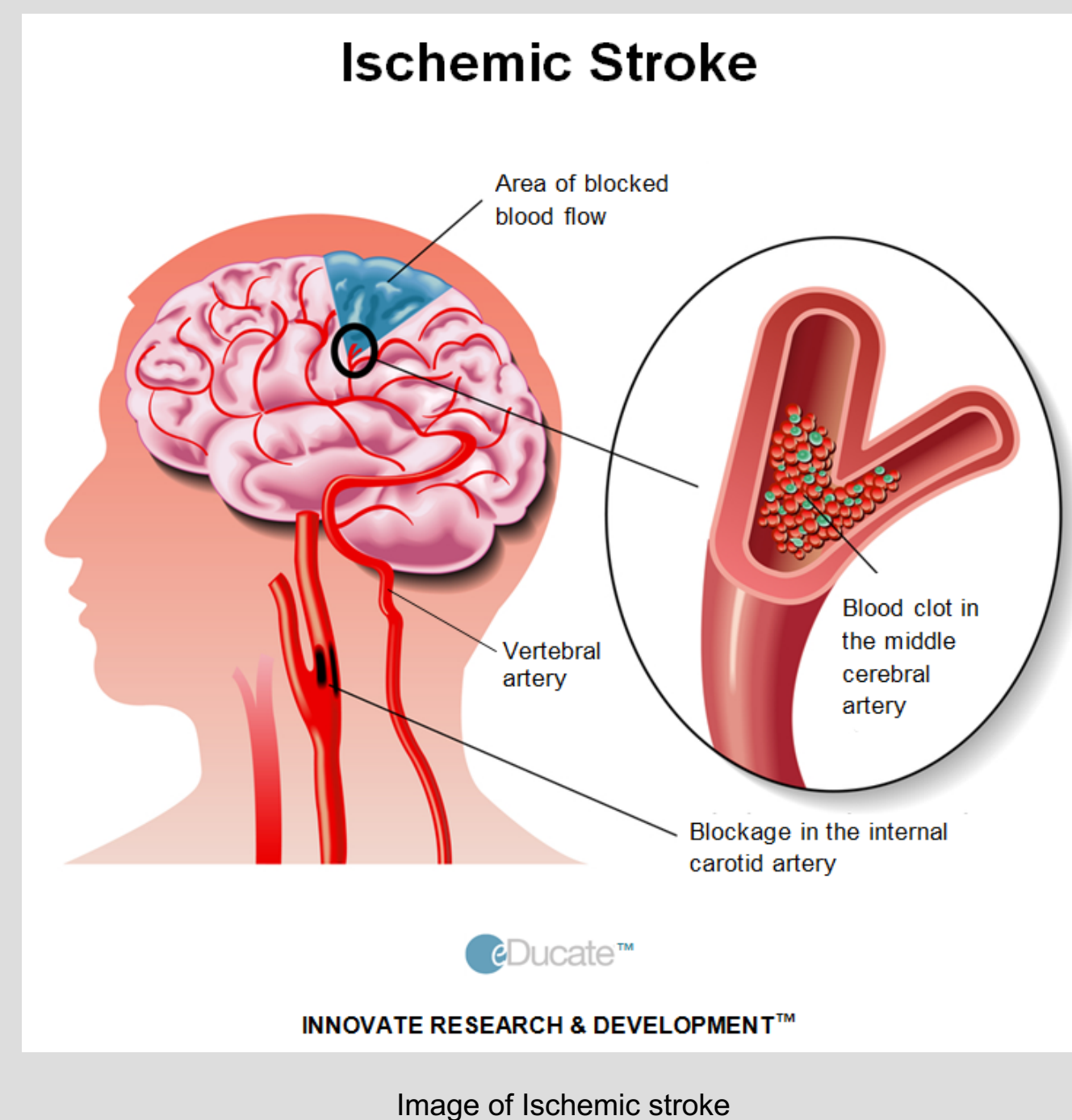
In terms of treatment for such problems, physical therapy and certain chemical drugs, such as serotonin reuptake inhibitors (SSRI) which work as antidepressants, have been the only way to help people regain some function. However, it is not a solution to restoring the brain cells that died as a result of the stroke. One solution to this problem is the use of stem cell therapy to replenish the lost brain cells.

Over the summer, scientists in Stanford's Lab of Neurosurgery, including Chairman Dr. Gary Steinberg, held a clinical trial where stem cells were injected into stroke lesions of patients. The neurosurgeons injected SB623 cells which are derived from the bone marrow of two donors. These cells are then modified to restore neurologic function. The results proved to be rather effective and showed that there is a future in regenerative medicine when it comes to the brain and parts of the nervous system. In fact, one lady who was in a wheelchair for two years is now walking after the stem cell injection. The purpose of this research topic is to compare these three forms of treatment and evaluate if a particular treatment is better than the others, or if there is an ideal combination of treatment for patients recovering from a stroke.

RESEARCH METHODOLOGIES

1. Method

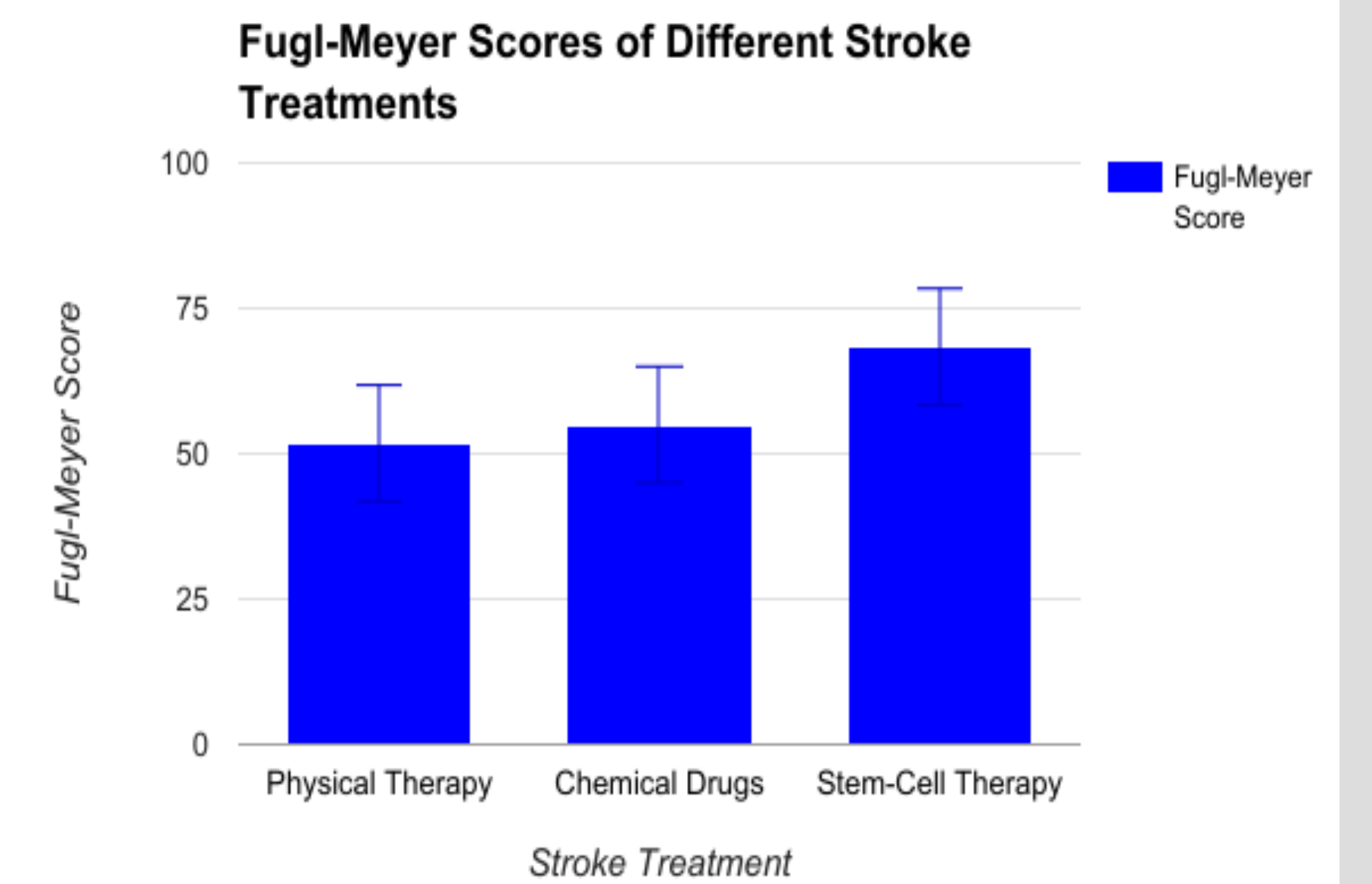
My research entails comparing three forms of stroke treatment which include physical therapy, chemical drugs, and stem-cell therapy. In order to compare the treatments the motor control scores for each method were collected, specifically from the Fugl-Meyer Assessment. In order to collect the Fugl-Meyer scores, journals were found in which researchers published results from Fugl-Meyer Assessments they had done for each stroke treatment. I began researching physical therapy, then chemical drugs, and finally, stem-cell therapy. After data collection, the data points were compiled into a graph based on the results to compare the three forms of stroke treatment and determine which is most effective or if there is a combination of treatments that would benefit a stroke patient the most.



2. Fugl-Meyer Assessment

The Fugl-Meyer Assessment performance based stroke index designed to test motor control, balance, sensation and joint functioning in post-stroke patients. Scoring of the FMA is based on direct observation where 226 is the total possible score. Points are divided among five domains which include: motor function (0 to 100 points), sensation (0 to 24 points), balance (0 to 14 points), joint range of motion (0 to 44 points), and joint pain (0 to 44 points).

DATA ANALYSIS AND RESULTS



CONCLUSION

In conclusion, after conducting abundant research and collecting the Fugl-Meyer scores for three types of stroke treatment: physical therapy, chemical drugs, and stem-cell therapy, it can be determined that the treatment with the highest Fugl-Meyer score is stem-cell therapy. This form of treatment averaged at a 68.4 on the Fugl-Meyer Assessment. The average Fugl-Meyer scores for physical therapy and chemical drugs were 51.8 and 55, respectively. Therefore, moving forward, stem-cell therapy is the ideal treatment for ischemic stroke as it brings back the most amount of motor control.

ACKNOWLEDGEMENTS / REFERENCES

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