

What are the detrimental effects of chemotherapy on children with medulloblastoma and What are the efforts being made to introduce a new medicine into the world?

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Author Note

My name is Josephine Fiawoo. As a dedicated student and aspiring scientist, I am enthusiastic about sharing my research on the incredible advancements being made in cancer treatments. I aim to disseminate knowledge to the public, emphasizing both the challenges and successes in this crucial field. Cancer affects numerous lives, including those of loved ones and friends, and I believe that understanding the latest breakthroughs can provide hope and encouragement to those impacted. Within my paper, you will find information about innovative therapies, research studies, and ways our community can support cancer awareness. I hope to inspire others to engage in this topic, initiate conversations, and motivate actions for a healthier future. Together, we can support the fight against cancer and explore the promise of new and effective treatments. Contact: fiawoojosephine3@gmail.com

Abstract

Has cancer impacted your life? Do you want to understand the extent of the damage caused by chemotherapy? In this research proposal, I will investigate the harmful effects of chemotherapy on children diagnosed with medulloblastoma, one of the most common brain cancers affecting young patients. While chemotherapy can be life-saving, it often results in severe and long-lasting side effects, such as growth challenges, cognitive developmental issues, and emotional well-being struggles. I will examine how these side effects affect the lives of affected children and their families, emphasizing the urgent need for better treatment options. Additionally, I will explore the innovative efforts currently underway to develop new medications and therapies that aim to minimize these harmful effects while still effectively targeting the cancer. Through my research, I hope to raise awareness about the challenges of existing treatments and highlight promising advancements in the field, ultimately advocating for improved care and quality of life for young patients battling medulloblastoma.

Introduction

Cancer has been around for centuries and affects about a million people each year, according to the CDC. This paper will focus on the harmful effects of chemotherapy on children with medulloblastoma and the efforts being made to introduce a new medicine into the world. Medulloblastoma is one of the most common brain tumors in children, occurring in the cerebellum of the brain and spreading to the spine.

Currently, medulloblastoma is mostly treated with chemotherapy, which has negative effects on patients. Some symptoms include headaches, nausea, and trouble with balance. Treatments that have been used for it include radiation and chemotherapy. Scientists are working to understand the causes of medulloblastoma, develop better treatments, and improve outcomes for

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patients. They are studying genetic mutations, risk factors, and ways to eliminate the tumor without harming healthy brain tissue. Scientists use various approaches, such as genetic studies to identify specific mutations, research new treatments like targeted therapies, and explore immunotherapy options.

Why does medulloblastoma mostly affect kids? According to Boston Medicine, there is no definitive cause or reason as to why children are predominantly affected by this disease. However, it is more commonly seen in kids. Medulloblastoma affects children differently than adults, mainly due to their developing brains and bodies. In young patients, the tumor can disrupt normal growth and cognitive functions, leading to issues with learning, memory, and motor skills. Moreover, children may experience more severe side effects from treatments like chemotherapy, which can impact their physical health and emotional well-being. Unlike adults, children's bodies are still growing, so the long-term consequences of treatment can be particularly challenging. This highlights the need to develop safer and more effective therapies, which is the primary focus of this research paper.

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This paper aims to serve as a warning to encourage the search for new and better medicines worldwide to prevent these cases. It also aims to shed light on the impact of chemotherapy on the human brain of patients.

Methods

I will conduct a comprehensive study using a multiphase approach to explore the effects of chemotherapy on children with medulloblastoma and the introduction of new medicines. Firstly, I will conduct a literature review to gather existing data on chemotherapy side effects. Next, I will distribute a survey to families of affected children to collect first-hand experiences about treatment outcomes and quality of life. Finally, I will conduct interviews with healthcare professionals to gain additional insights into new treatment options being developed. This thorough approach aims to highlight the significant challenges and advancements in treating medulloblastoma.

For this research, I will use databases such as Web of Science and Google Scholar to find relevant sources. I plan to use specific keywords such as "brain cancer," "biology of tumors," and "history of tumors" to aid in my search for important articles and books on my topic. Once I gather all the

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relevant literature, I will organize the information by grouping similar studies based on their themes and findings. This will enable me to identify common findings, as well as any diverging perspectives, allowing me to draw appropriate conclusions.

To compare findings from different studies and identify patterns and connections, I will analyze the collected data. I intend to address any disagreements and consider the reasons behind them. This rigorous process will enable me to create a clear picture of the current state of research on my topic while also highlighting any new insights I may uncover. Furthermore, this method will make it easier for other researchers to follow the process and verify the results.

One crucial approach I will take involves conducting a case study on children diagnosed with medulloblastoma. I will endeavor to identify commonalities among the cases to understand the potential causes of this disease, as there must be a reason for its occurrence. This calls for extensive research to uncover the underlying cause.

Discussion

Hypermuted gliomas react differently to immunotherapy compared to other hypermutated cancers. The lack of detectable microsatellite instability in MMR-deficient gliomas is highlighted, as well as the ineffectiveness of current immunotherapy approaches. The author encourages further research into longer treatments that may be necessary for these kinds of cancers. Some key points include the research showing that some breast cancer patients experience cognitive changes after treatment, not just from chemotherapy. Another important point is that researchers should explore the causes of these changes and consider how they relate to normal aging. The author then encourages more research to improve the understanding and management of cognitive health in cancer patients. Both papers emphasize the importance of further research to understand cancer treatment better and improve it. They share a similar perspective, with the only difference being that the second

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paper narrows down the issue to the patient's cognition after treatment. These research papers are relevant to my proposal because my question is based on the effects of chemotherapy on the brain and the complications that arise after treatment. These papers provide detailed information on alternatives to chemotherapy and how they can improve the patient's immune system. The other research paper includes detailed information on how the patient's cognition is mostly affected after treatment, which gives a clearer picture of the effects of the treatments and will encourage me to learn more. Through continuous research, my proposal will help provide more knowledge on chemotherapy and its effects on cognition

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Conclusion

The proposal aims to provide relevant information to individuals interested in developing improved treatments for cancer. It will also raise awareness of existing treatments while emphasizing areas that require further focus.

Additionally, it will shed light on the effects of certain treatments on the brain and other parts of the body. This research will offer valuable insights for the education system regarding the topic of oncology.

References

Mechanisms and therapeutic implications of hypermutation in

gliomas

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