ISSN: 2167-7182
Gerontology & Geriatric Research

OPEN ACCESS Freely available online

Mini Review

The Relationship between Glioblastoma and Internal Carotid Artery Calcium Score: Exploring Connections and Implications

Sara Francis*

Department of Clinical Gerontology and Geriatric Rehabilitation, Pantheon-Sorbonne University, 12 Pl. du Panthéon, 75231 Paris, France

ABSTRACT

Glioblastoma, the most aggressive form of brain cancer, presents a formidable challenge in both diagnosis and treatment. Recent research has explored various factors contributing to its development and progression, including the role of vascular health. One such area of interest is the correlation between glioblastoma and the internal carotid artery calcium score, a marker of atherosclerosis and cardiovascular risk. This article delves into the emerging understanding of this relationship, shedding light on potential implications for diagnosis, prognosis, and therapeutic strategies.

Keywords: Glioblastoma; Atherosclerosis; Computed tomography

INTRODUCTION

Glioblastoma multiforme is a devastating primary brain tumor characterized by its rapid growth, infiltrative nature, and resistance to conventional therapies. Despite advancements in treatment modalities, the prognosis for patients with GBM remains poor, with a median survival of around 15 months from the time of diagnosis. Given the complex nature of this disease, researchers continue to explore various factors that may influence its onset and progression.

Atherosclerosis, a chronic inflammatory condition characterized by the accumulation of plaques within arterial walls, has long been recognized as a significant risk factor for cardiovascular disease. However, emerging evidence suggests that the relationship between atherosclerosis and cancer may extend beyond shared risk factors, with implications for the development and progression of malignancies such as GBM. In particular, attention has turned to the internal carotid artery calcium score, a marker of subclinical atherosclerosis, and its potential association with GBM.

LITERATURE REVIEW

The internal carotid arteries supply blood to the brain, making them crucial vessels in the context of GBM. Studies have shown that calcification within these arteries, as measured by ICACS using imaging techniques such as computed tomography or magnetic resonance imaging, is associated with atherosclerosis and increased cardiovascular risk. Importantly, recent research has suggested that ICACS may also serve as a biomarker for systemic inflammation, which plays a significant role in cancer development and progression [1-3].

Several studies have explored the relationship between ICACS and GBM, with mixed findings. Some investigations have reported a positive association between higher ICACS levels and an increased risk of GBM, suggesting that atherosclerosis may contribute to the pathogenesis of this aggressive brain tumor. Other studies, however, have failed to find a significant correlation, highlighting the complexity of the relationship and the need for further research.

DISCUSSION

Several mechanisms have been proposed to explain the potential link between ICACS and GBM. One possibility is that systemic inflammation and oxidative stress, which are prominent features of atherosclerosis, create a microenvironment conducive to tumor growth and invasion. Additionally, calcification within the internal carotid arteries may lead to alterations in blood flow and vascular function, thereby promoting the development of hypoxia within the brain tissue, which is known to fuel the growth of GBM cells [4,5].

Furthermore, it has been suggested that circulating calcification-related factors, such as matrix vesicles and calciprotein particles, may directly influence tumor behavior and aggressiveness. These

Correspondence to: Sara Francis, Department of Clinical Gerontology and Geriatric Rehabilitation, Pantheon-Sorbonne University, 12 Pl. du Panthéon, 75231 Paris, France; E-mail: SaraFrancis5@gmail.com

Received: 01-February-2024, Manuscript No. jggr-24-25274; **Editor assigned:** 02-February-2024, Pre QC No. P-25274; **Reviewed:** 16-February-2024, QC No. Q-25274; **Revised:** 22-February-2024, Manuscript No. R-25274; **Published:** 29-February-2024, DOI: 10.35248/2167-7182.2024.13.715

Citation: Francis S (2024). The Relationship between Glioblastoma and Internal Carotid Artery Calcium Score: Exploring Connections and Implications. J Gerontol Geriatr Res. 13: 715.

factors could potentially interact with signaling pathways involved in cell proliferation, migration, and angiogenesis, contributing to the malignant phenotype of GBM. The potential association between ICACS and GBM has significant clinical implications. Firstly, ICACS assessment could serve as a non-invasive tool for identifying individuals at higher risk of developing GBM, allowing for targeted screening and surveillance efforts. Moreover, ICACS may have prognostic value in patients already diagnosed with GBM, with higher levels potentially indicative of a more aggressive tumor phenotype and poorer outcomes.

From a therapeutic perspective, targeting pathways involved in atherosclerosis and vascular dysfunction could represent a novel approach to GBM treatment. Strategies aimed at reducing inflammation, improving vascular health, and disrupting the crosstalk between tumor cells and the microenvironment may hold promise in enhancing the efficacy of existing therapies and overcoming treatment resistance. Despite growing interest in the relationship between ICACS and GBM, many questions remain unanswered. Further research is needed to elucidate the underlying mechanisms linking atherosclerosis to tumor development and progression. Longitudinal studies are required to establish the temporal relationship between ICACS levels and GBM incidence, as well as to assess the predictive value of ICACS in different patient populations [6].

Moreover, the potential utility of ICACS as a biomarker in the clinical management of GBM warrants exploration. Large-scale prospective studies are needed to validate its prognostic significance and evaluate its role in guiding treatment decisions. Additionally, preclinical investigations are needed to assess the efficacy of targeting atherosclerosis-related pathways in GBM models, paving the way for future clinical trials.

CONCLUSION

The relationship between glioblastoma and internal carotid artery calcium score represents a fascinating area of inquiry with implications for both research and clinical practice. While evidence supporting a direct association is still evolving, the intersection of vascular health and cancer biology offers new avenues for understanding and combating this deadly disease. By unraveling the complex interplay between atherosclerosis and GBM, we may uncover novel therapeutic targets and diagnostic strategies that hold the promise of improving patient outcomes in the future.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

None.

REFERENCES

1. Caccese M, Simonelli M, Villani V, Rizzato S, Ius T, Pasqualetti F, et al. Definition of the prognostic role of MGMT promoter methylation value by pyrosequencing in newly diagnosed IDH wild-type glioblastoma patients treated with radiochemotherapy: A large multicenter study. Cancers 2022;14:2425.
2. Burton E, Ugiliweneza B, Woo S, Skirboll S, Boaky M. A surveillance, epidemiology and end results-medicare data analysis of elderly patients with glioblastoma multiforme: treatment patterns, outcomes and cost. Mol Clin Oncol 2015;3:971-978.
3. Ohrnberger J, Fichera E, Sutton M. The relationship between physical and mental health: A mediation analysis. Intern Med J 2017; 195:42-49.
4. Cleland JA, Lee AJ, Hall S. Associations of depression and anxiety with gender, age, health-related quality of life and symptoms in primary care COPD patients. Fam Pract 2007; 24:217-223.
5. Haraldstad K, Wahl A, Andenæs R, Andersen JR, Andersen MH, Beisland E, et al. A systematic review of quality of life research in medicine and health sciences. Qual Life Res 2019; 28:2641-250.
6. Ismail Z, Gatchel J, Bateman DR, Barcelos-Ferreira R, Cantillon M, Jaeger J, et al. Affective and emotional dysregulation as pre-dementia risk markers: Exploring the mild behavioral impairment symptoms of depression, anxiety, irritability, and euphoria. Int Psychogeriatr 2018; 30:185-196.