

Ketogenic Diet as an Anticancer Therapy

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Dear Editor,

Cancer is one of the major public health concerns globally. Despite the advances in anticancer therapies, we still lack the approach to enhance its efficacy. Although the gold standard of treatment for most cancers includes a combination of chemotherapy, radiation and surgery, many patients still suffer from poor prognosis and alternative effective therapy is required. Recently, the Ketogenic Diet (KD) has been proposed as an adjuvant therapy in cancer treatment which is a rich fat, low carbohydrate and adequate protein diet¹.

The ketogenic diet is designed to emerge as a promising metabolic therapy for the treatment of cancer. The main mechanism is to induce a shortage of glucose and/or lactate for tumour cell survival². Warburg effect is characterized by high glucose uptake which is essential for the survival and growth of cancerous cells. With the use of a ketogenic diet, a fasting state is achieved, in which the body responds to the lack of glucose by producing ketones for energy. Furthermore, high-calorie intake is associated with an increase in the risk of developing cancer by promoting metastasis and proliferation of the cells. A ketogenic diet can be implemented to reduce the expression of cytokines that promote inflammation like TNF- α , IL-1 β , and IFN- γ . A prominent feature of most tumours includes a mutation in transcription factor p53, leading to the accumulation of these proteins. According to several studies, a ketogenic diet can be useful for the downregulation of such mutants via deacetylation and cell death³.

Glioblastoma is the most common type of primary aggressive tumour in adults that begins within the brain. It has a median survival of 12-14 months, with only a small percentage of up to 27% of glioblastomas surviving for more than 2 years with standard treatment⁴. An 80-month follow-up case report of a patient diagnosed with IDH-mutant glioblastoma (WHO Grade 4) showed that he rejected the standard of care (SOC) and steroid medication to treat his cancer. The patient was keen enough to adopt a low carbohydrate ketogenic diet and maintained his glucose ketone index around 2.0 without any weight loss. He was treated with ketogenic metabolic therapy (KMT) and surgical debulking without any chemo or radiotherapy. The long-term survival of this patient reflects the advantages of using the body's metabolism to fight aggressive cancer instead of chemo and radiotherapy⁵.

Further studies should be done to prove the causal association between the ketogenic diet and anticancer therapy, if proven it could revolutionize the patient treatment plan and may also create a positive impact on the patient's well-being.

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CONFLICT OF INTEREST

All authors agreed to the publication of this manuscript.

AUTHORS' CONTRIBUTION

SM, NFD and OAS contributed to manuscript writing and editing. All authors read and approved the final manuscript.

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