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Retrospective analysis of the synergistic effect of Temozolomide and metformin medications combination on survival in diabetic Glioblastoma patients. A large single institutional study.

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Abstract:

Introduction: Glioblastoma is a highly malignant primary brain tumor. The standard care of management for glioblastoma is cytoreductive surgery followed by Stupp regimen including radiotherapy and temozolomide. Although it`s provided a significant clinical and statistical survival benefit with a median survival reaching up to a year and a half, the prognosis still dismal and therapeutic efficacy for temozolomide is limited because of tumor resistant. Up to date, several therapeutic options have been introduced alone or in combination with other agents to improve glioblastoma treatment outcome. Interestingly, it has been validated that metformin reducing cancer risk, improving survival and exerting a strong Anti-neoplastic effect directly and indirectly through several pathways. The combination of both therapies to overcome Temozolomide resistance in glioblastoma and outcome was proposed and further validated by several in-vivo and in-vitro experimental studies. scientists proved that the combination has a higher ability to improve outcomes. The clinical studies comparing the outcome of temozolomide and metformin combination with the standard therapy is very limited. Acknowledging this, we lunched a first study of its kind to address the impact of the combination of metformin and temozolomide in glioblastoma patients' overall survival (OS).

Methods:A single institution,retrospective study of patients treated at a tertiary center for histologicallyconfirmed Glioblastoma.Our primary objective is to compare the overall survival rate of diabetic Glioblastoma patients among patients treated with metformin and Temozolomide with combination and Temozolomide alone.metformin).

Inclusion criteria

Patients with histologically proven Glioblastoma .

(Stuppregimen) =Radiation therapy with concurrent Temozolomide.

Chemoradiation to be started within 1 month of histopathological diagnosis.Karnofsky performance status (KPS) ≥ 60%

Age ≥ 18 years old both males and females.

Surgical diagnosis/intervention included partial or gross total.

Exclusion criteria

Pregnant or breast feeding.

A patient who Never starts Temozolomide or gets other chemotherapy.

Allergy to metformin or Temozolomide.

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Crossing over to the other arm by getting exposed to metformin or stopping metformin for any reason.
Neoplastic history.
Multifocal Glioblastoma.
Significant co morbidities
Biopsy

Result and conclusion: Among 20 patients with similar clinical status and gender, Half of the patient were diabetic on metformin and the rest were on other diabetic drugs, both groups were diagnosed with glioblastoma and started on the STUPP regimen. Followed for their survival, the diabetic group on metformin showed an average survival of 9 months, compared with the group not on metformin that showed an average survival of 4.5 month. In Stup trial The median survival improved by 2.5 months. Prince Sultan Military Medical City -Temozolomide /Metformin combination improved survival by 4.5 months.

Based on our study, multi-centers across the Saudi Arabia Kingdom agreed to launch a National Study as a Prospective Multi-institutional clinical trial named as:**Saudi Arabia TemozolomideAnd Metformin Study – Glioblastoma. (SATAMS-G)"A large Prospective Multi-institutional study**



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I. Biography:

Dr. AlRashed, A dedicated Neurosurgeon with a demonstrated history of working in the hospital & health care. Skilled in Clinical Research, Adult, Pediatrics, Hospitals, Medicine, and Healthcare. Strong healthcare services professional with a CCT and FRCS (Neuro.Surg) focused in Neurosurgery from 25 year in Academic and Clinical Experience in United Kingdom-London. First to be honoured to introduce ROWENA Neurosurgical models to train junior residents in Kingdom of Saudia Arabia

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