Characteristics of Adult Glioblastoma in Kuwait

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Abstract

Introduction

Classification of glioblastoma (GBM) into primary (p-GBM) and secondary (s-GBM) is based on IDH1 status. This study aims at evaluating genetic and clinical characteristics of adult GBM in Kuwait and establishing guidelines for case selection for DNA sequencing.

Methods

Archived blocks of 100 GBM initially diagnosed in the Department of Pathology, Al-Sabah Hospital between 2009 and 2016 in patients aged ≥20 years were retrieved and used for immunohistochemistry (IHC) for wild-type and mutant IDH1, p53 and EGFR. Patients' characteristics, presenting symptoms and duration, number of lesions, and tumor anatomic location and extent were extracted from the surgical records.

Results

S-GBM comprises 10%, spares patients aged ≥60 years, has a median age of 37.5 years, significant association with young age (<50 years) and an exclusive lobar distribution with a predilection for frontal lobe (60%). P-GBM has a median age of 52.5 years and a more varied anatomic distribution. In 2%, IHC is negative for wild-type and mutant IDH1. About 38% and 34% are p53+ and EGFR+. Significantly, 80% of s-GBM and 33% of p-GBM are p53+. EGFR+ is observed in 20% s-GBM and below the age of 35 years.

EGFR-/p53+, EGFR+-/p53-, EGFR+/p53+, and EGFR-/p53- phenotypes form 27%, 23%, 11% and 39% of all GBM respectively.

Symptoms lasted for <3 months in 80%. Only 1% of these has s-GBM. About 13% have multiple lesions.

Conclusion

Factors that preclude DNA sequencing include patient's age (≥60 years), multiple lesions, short duration of symptoms and EGFR+/p53- phenotype. IHC for wild-type IDH1 is not necessary for routine GBM investigation.

Keywords: Glioblastoma, IDH1, p53, EGFR, Kuwait