NI-16. INTRA-OPERATIVE USE OF FLUORESCIN FOR MALIGNANT GLIOMA RESECTION DIFFERENTIATES TUMOR FROM NORMAL BRAIN TISSUE BASED ON HISTOPATHOLOGIC ANALYSIS
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OBJECTIVES: To determine whether the use of IV fluorescein during surgery for malignant glioma can reliably be used to differentiate between infiltrative tumor and normal brain tissue. BACKGROUND: Fluorescein sodium is a molecular compound with fluorescent capabilities between light wavelengths of 520-530nm, appearing yellow-green (1). Neurosurgical application of fluorescein has been studied primarily for increasing intra-operative visibility of malignant gliomas (1). The mechanism of action has been hypothesized to involve disruption of the blood brain barrier (BBB) (2). Cells in areas with disrupted BBB take up fluorescein with a sensitivity of 94% and specificity of 89% for high-grade gliomas (2). We performed histopathologic analysis on tissue obtained during fluorescein-guided tumor resections to evaluate the differences between fluorescent and non-fluorescent tissue. METHODS: Two adult patients with suspected high-grade gliomas underwent surgical resection. Prior to opening of the dura 3mg/kg of IV fluorescein was given. A Zeiss OPMI Pentero microscope (Carl Zeiss Meditech Inc.) with a yellow 560nm filter was used to visualize the tumor. At the tumor margins, tissue was identified as "bright" and "dark" and sent as separate specimens for histopathological analysis. RESULTS: Histological sections of specimens labeled "bright" contained infiltrating glioma with focal microvascular proliferation. Histological sections of specimens labeled "dark" contained gray matter and focal subcortical white matter with no high-grade glioma identified. Final grading for both patients was WHO Grade IV, glioblastoma. CONCLUSION: Intra-operative use of fluorescein in surgical resection of malignant gliomas can help to distinguish between infiltrating tumor and normal brain tissue based on histopathological analysis. Further evaluation of the utility of fluorescein during high and low-grade glioma surgery is necessary.