

Application of sodium fluorescein for spinal cord lesions: intraoperative localization for tissue biopsy and surgical resection

Introduction: Sodium fluorescein (NaFL) has been used to aid in the resection of primary and secondary lesions within the brain. Comparatively, there is limited research on clinical applications for lesions within the spinal cord. Fluorescein-guided microsurgery may increase the ability to localize and safely surgically treat spinal lesions.

Objective: To describe our first-hand experience using sodium fluorescein for spinal lesions and the surgical advantages obtained

Methods: Twelve patients with spinal cord lesions received fluorescein sodium 10% (Alcon Laboratories INC, Fort Worth, TX, USA) at 3 mg/kg prior to surgical resection. Intraoperative visualization of fluorescence was performed using a Zeiss Pentero (Carl Zeiss AG, Oberkochen, Germany) microscope equipped with a Yellow560 filter or a Leica OH6 (Leica Microsystems, Wetzlar, Germany) equipped with a FL560 filter.

Results: Administration of sodium fluorescein resulted in lesional fluorescent contrast extravasation and facilitated surgical resection and localization in all patients. The addition of sodium fluorescein allowed for identification in all twelve patients. In patients with a goal of complete resection, NaFL aided in complete resection of the spinal lesions in seven patients. In surgical resection patients, pathology was consistent with WHO grade I myxopapillary ependymoma in one patient, WHO grade II ependymoma in five patients, and nerve sheath tumor in one patient. In the other five patients, NaFL allowed for intraoperative tissue identification and successful tissue biopsy. In patients undergoing biopsy, tissue samples were positive for an intramedullary abscess, EBV driven lymphoproliferative disease, and primary glial neoplasms.

Conclusion: Fluorescein is a helpful microsurgical tool in guiding surgical resection and in the localization of intramedullary spinal lesions. Further research is necessary to explore fluorescein sodium applications in the resection of spinal cord lesions.