

Comparative study of intraoperative photodynamic diagnosis using 5-aminolevulinic acid and pathological diagnosis

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Introduction

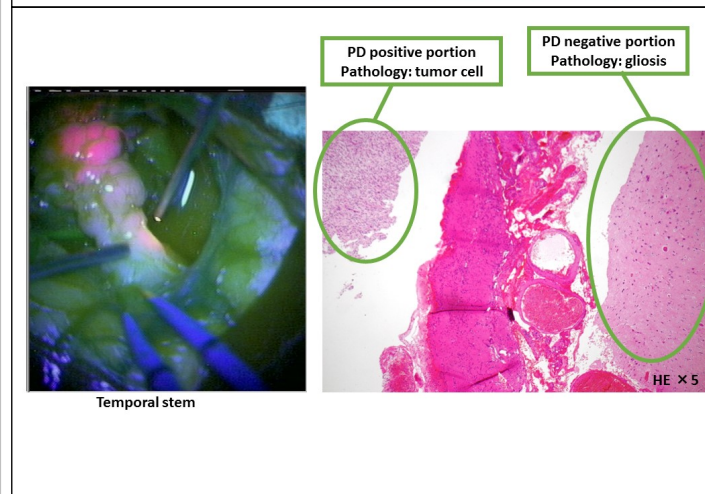
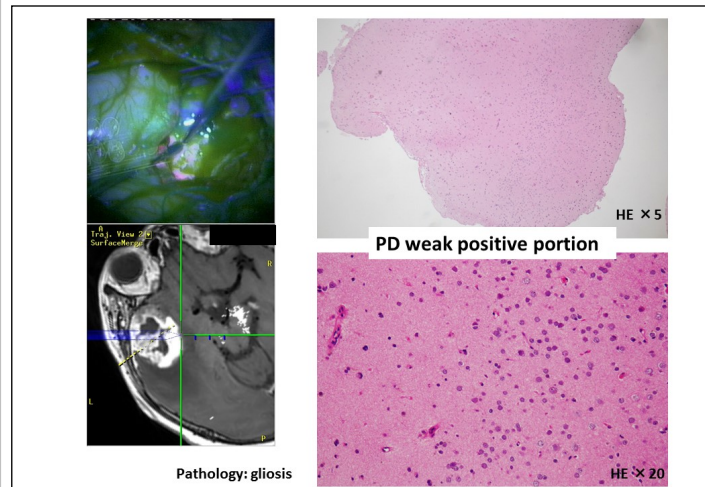
- It has been established that 5-aminolevulinic acid (5-ALA) induces the accumulation of fluorescent protoporphyrin, a phenomenon potentially exploitable to guide tumor resection.
- In this study, we examined the usefulness and limitations of photodiagnosis (PD) by 5-ALA, comparing the PD and the pathological diagnosis.

Methods

- In our institute, 70 glioma patients underwent tumor resection using 5-ALA from 2005 to 2013.
- The patients received 20mg/kg oral dose of 5-ALA 2 hours before induction of anesthesia.
- The findings of intraoperative PD and pathological diagnosis were compared and evaluated.
- ZEISS PENTERO Blue 400 and violaceous LED laser were used for PD in all cases.

Results

- In most cases, high grade gliomas showed positive responses, and low grade gliomas showed negative.
- However, some cases of low grade glioma showed positive response in part where the microscopic cell density was high. Also, some high grade gliomas included the portion of weak positive response, where gliosis instead of viable tumor cells was found.

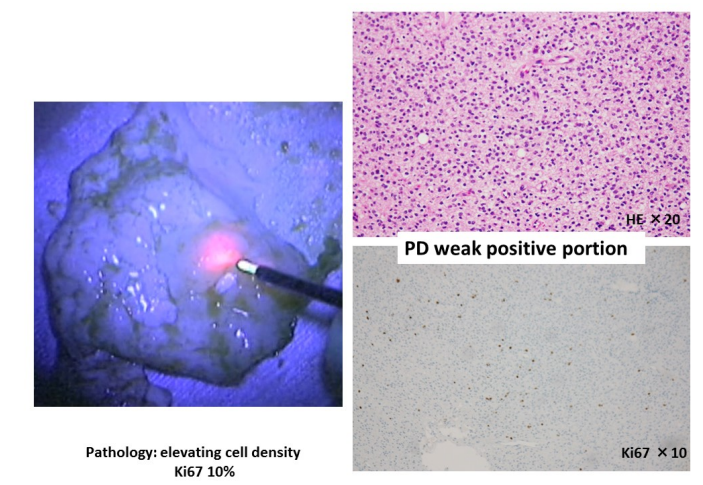
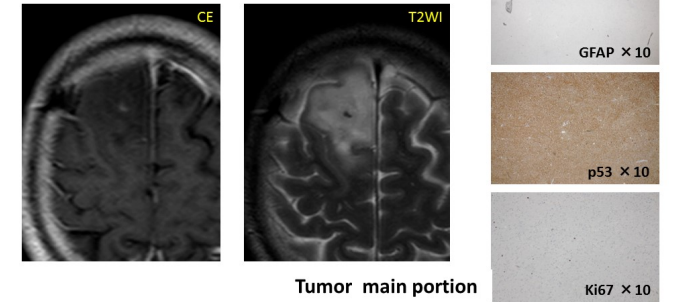


Conclusions

- 5-ALA PD is useful for increasing the tumor resection volume. However, irregularity of PD sensitivity limits its reliability in detection of residual tumors.
- Therefore, it is important to use this technique in combination with the other intraoperative support tools to overcome this disadvantage of PD.

Case2 43y/o male oligodendroglioma

- Rt. frontal lobe, epilepsy

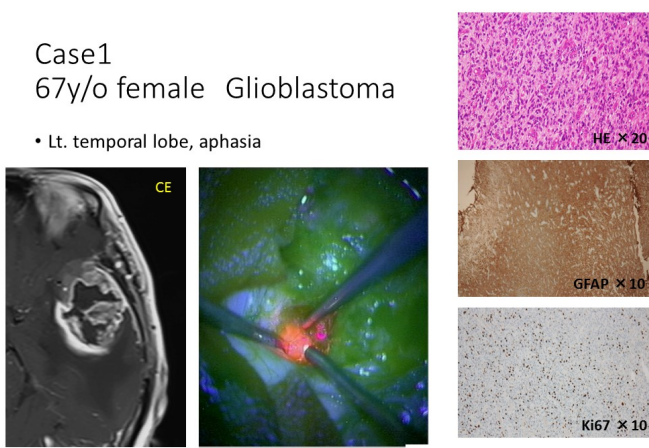


Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the importance of 5-ALA PD, 2) Discuss, in small groups, PD sensitivity limits its reliability in detection of residual tumors, 3) Identify an effective treatment of tumor resection.

Case1 67y/o female Glioblastoma

- Lt. temporal lobe, aphasia



PD strong positive portion