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First-in-human sonodynamic therapy with ALA for pediatric diffuse intrinsic pontine glioma: a phase 1/2 study using low-intensity focused ultrasound

Technical communication

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References

1. Jeong E-J, Seo S-J, Ahn Y-J, Choi K-H, Kim K-H, Kim J-K (2012) Sonodynamically induced antitumor effects of 5-aminolevulinic acid and fractionated ultrasound irradiation in an orthotopic rat glioma model. *Ultrasound Med Biol* 38(12):2143–2150. <https://doi.org/10.1016/j.ultrasmedbio.2012.07.026>
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2. Suehiro S, Ohnishi T, Yamashita D, Kohno S, Inoue A, Nishikawa M, Ohue S, Tanaka J, Kunieda T (2018) Enhancement of antitumor activity by using 5-ALA-mediated sonodynamic therapy to induce apoptosis in malignant gliomas: significance of high-intensity focused ultrasound on 5-ALA-SDT in a mouse glioma model. *J Neurosurg* 129(6):1416–1428. <https://doi.org/10.3171/2017.6.JNS162398>

 3. Wu S-K, Santos MA, Marcus SL, Hynynen K (2019) MR-guided focused Ultrasound facilitates Sonodynamic Therapy with 5-Aminolevulinic acid in a rat glioma model. *Sci Rep* 9(1):10465. <https://doi.org/10.1038/s41598-019-46832-2>
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