# Focal brain hyperthermia

Recent studies using rat models suggested that epileptic discharges (EDs) can induce focal brain hyperthermia, but such ED-related hyperthermia has not been confirmed in humans. We examined hyperthermia of the focus of epilepsy using noninvasive proton magnetic resonance spectroscopy (1H-MRS) thermometry. We recruited six pediatric patients with refractory daily seizures, continuous interictal epileptic discharges, and concordant focus lesions on MRI who had undergone comprehensive presurgical exams. 1H-MRS thermometry calculated the temperatures of the presumed epileptogenic lesions, and we examined the contralateral counterparts in each patient as controls. As a result, the mean temperature of the epileptogenic foci (36.81°C) was significantly higher than that of the controls (36.01°C). The mean difference was 0.81°C (95%CI: 0.22-1.39, p=0.017). 1H-MRS thermometry may have the ability to noninvasively detect focal brain hyperthermia related to continuous EDs in human subjects, and to contribute to a better understanding and focus detection of epilepsy [1)].

1)
Sone D, Ikegaya N, Takahashi A, Sumida K, Ota M, Saito T, Kimura Y, Matsuda H, Sato N. Noninvasive detection of focal brain hyperthermia related to continuous epileptic activities using proton MR spectroscopy. Epilepsy Res. 2017 Oct 6;138:1-4. doi: 10.1016/j.eplepsyres.2017.10.001. [Epub ahead of print] PubMed PMID: 29017073.