

THE EFFECT OF FACE FANNING ON CONTINUOUSLY MEASURED INTRACRANIAL AND EXTRACRANIAL TEMPERATURES IN HUMANS

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The estimate of intracranial temperatures from extracranial core temperature measurement sites remains an enigma. In clinical settings the estimate of intracranial temperatures in feverish, post-operative patients is critical since the prognosis for these hyperthermic patients is often very poor. The best indicator of intracranial temperatures from an extracranial core temperature site is needed to allow appropriate monitoring and care of these patients. Very few direct intracranial measurements of humans have been reported in the literature. As such the purpose of the present investigation was to assess the degree of association between intracranial temperatures and both tympanic and esophageal temperatures. In addition, the effects of face fanning on these continuously measured intracranial and extracranial temperatures were assessed. The subjects included 14 post-operative patients following surgery and all patients had intact and closed craniums. The patient group included feverish, non-feverish and normothermic patients. The patients' were followed in three conditions. First their temperatures were recorded prior to face fanning. Next, their faces were fanned for 20 to 30 min with a small fan at an air speed of $3.25 \text{ m}\cdot\text{s}^{-1}$. Subsequently the patients' temperatures were followed after the fanning period. The results demonstrated that intracranial temperature changes measured in the subdural space (T_{sd}) and epidural space (T_{ed}) were highly correlated ($r=0.93$, $p < 0.05$) to changes in tympanic temperatures (T_{ty}) and uncorrelated to changes in esophageal temperatures. The drop in tympanic temperature of $0.18 \pm 0.03^\circ\text{C}$ was also not significantly different than the mean drop of intracranial temperature of $0.15 \pm 0.05^\circ\text{C}$ during the face fanning period. In this study the face fanning of patients with intact craniums demonstrated changes of intracranial temperatures that followed tympanic temperatures more closely than esophageal temperatures.

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