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CITATION:

Odinaka K, Edelu B. et al. "Temporal Artery Thermometry in Children Younger Than 5 Years: A Comparison With Rectal Thermometry" Pediatric Emergency Care. Dec 2014;Vol 30, Num 12:867-870.

CLINICAL QUESTION:

Can temporal artery thermometry accurately replace rectal thermometry in the pediatric patient under 5 yrs old?

BACKGROUND:

Temporal artery (TA) thermometry has come as one of the new methods for temperature measurement, especially in children in whom accurate temperature monitoring can save lives. The device is convenient and simple to use, however there are conflicting reports of its accuracy. This study compares the accuracy of the TA thermometry in children younger than 5 years using the rectal thermometry as the gold standard.

METHODS:

This was a cross-sectional study conducted at the Department of Pediatrics, Federal Medical Centre, Owerri, Nigeria. The temperatures of a total of 156 children younger than 5 years were measured during the 6 months the study was conducted from the forehead and rectum using the TA thermometer and standard mercury in glass rectal thermometer, respectively. The difference between the mean temperatures obtained by the 2 thermometry methods was tested using the paired t-test. Pearson correlation coefficient, linear regression, and Bland-Altman plot were also used to test the relationship and agreement between the 2 instruments. The sensitivity, specificity, and positive and negative predictive values were also calculated.

RESULTS:

Overall, the mean TA temperature ($37.80^{\circ}\text{C} \pm 1.07^{\circ}\text{C}$) was significantly lower than the mean rectal temperature ($38.07^{\circ}\text{C} \pm 0.95^{\circ}\text{C}$), $P < 0.001$. In neonates, however, the mean difference was not significant, 0.02 ± 0.59 ($P = 0.810$). There was a significant positive correlation between the rectal and the temporal temperatures ($r = 0.80$, $P < 0.01$). The Bland-Altman plot showed wide variation in the limit of agreement between the rectal and the TA temperatures which ranged from -1.02°C to $+1.56^{\circ}\text{C}$. The sensitivity of the TA thermometer was 64.6% and 83.5%, respectively, at a TA fever cutoff of 38.0°C and 37.7°C .

CONCLUSIONS:

Temporal artery thermometer is not accurate enough for the measurement of core body temperature in children younger than 5 years. However, it may be used as a tool for screening for fever in the emergency room at a fever cutoff of 37.7°C .

LIMITATIONS:

Small sample size, only had 156 patients over a 6 month time interval. Children who were critically ill were excluded from the study. Only measures right sided temporal artery temperature and did not compare to left side. Would have liked to see comparisons in children > 5 yrs.
