OBJECTIVE:

We sought to further examine the relationship between tympanometry and mortality after noting an unexpected association on assessment of baseline data of a study whose primary aim was to investigate the utility of noninvasive tympanic membrane displacement measurement for monitoring intracranial pressure in childhood coma.

METHODS:

We recruited children who presented with acute nontraumatic coma to the high-dependency unit of Kilifi District Hospital on the rural coast of Kenya. We excluded children with sickle cell disease, epilepsy, and neurodevelopmental delay. We performed tympanometry on the right ear before tympanic membrane displacement analyzer measurements. All children were managed according to standard World Health Organization guidelines.

RESULTS:

We recruited 72 children with a median age of 3.2 years (interquartile range [IQR]: 2.0-4.3 years); 31 (43%) were female. Thirty-eight (53%) had cerebral malaria, 8 (11%) acute bacterial meningitis, 4 (6%) sepsis, and 22 (30%) encephalopathy of unknown etiology. Twenty (28%) children died. Tympanometry was normal in 25 (35%) children. Adjusting for diagnosis and clinical features of increased intracranial pressure, both associated with death on univariable analysis, children with abnormal tympanometry had greater odds of dying than did those with normal tympanometry (adjusted odds ratio: 17.0; 95% confidence interval: 1.9-152.4; $P = .01$). Children who died had a lower compliance (0.29 mL; IQR: 0.09-0.33 mL) compared with those who survived (0.48 mL; IQR: 0.29-0.70 mL) ($P < .01$).

CONCLUSIONS:

Abnormal tympanometry appears to be significantly associated with death in children with acute nontraumatic coma. This finding needs to be explored further through a prospective study that incorporates imaging and intensive physiologic monitoring.

KEYWORDS:

child, encephalopathy, infectious disease, outcome, tympanometry