

Estimation of body height from spinal length measurements using post-mortem computed tomographic images

ABSTRACT

Introduction: Post-mortem computed tomography (PMCT) provides information that helps in the determination of the cause of death and corpse identification of disaster victims. One of the methods for corpse identification includes assessment of the body stature. There is a lack of post-mortem imaging studies that focus on the anthropometric assessment of corpses. Our aim was to identify the relationship between cadaveric spine length and autopsy length (AL) among and autopsy length (AL) among a Malaysian population and derive a regression formula for the estimation of corpse body height using PMCT. **Materials and Methods:** We retrospectively assessed 107 cadavers that had undergone conventional autopsy and PMCT. We made 5 measurements from the PMCT that included cervical length (CL), thoracic length (TL), lumbosacral length (LS), total column length of the spine, excluding the sacrum and coccyx (TCL), and ellipse line measurement of the whole spine, excluding the sacrum and coccyx (EL). We compared these anthropometric PMCT measurements with AL and correlated them using linear regression analysis. **Results:** The results showed a significant linear relationship existed between TL and LS with AL, which was higher in comparison with the other parameters than the rest of the spine parameters. The linear regression formula derived was: $48.163 + 2.458 (TL) + 2.246 (LS)$. **Conclusions:** The linear regression formula derived from PMCT spine length parameters particularly thoracic and lumbar spine gave a finer correlation with autopsy body length and can be used for accurate estimation of cadaveric height. To the best of our knowledge, this is the first ever linear regression formula for cadaveric height assessment using only post mortem CT spine length measurements.

Keyword: Cadaver; Computed tomography; Autopsy; Regression analysis; Body height