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AN EPIDEMIOLOGICAL PERSPECTIVE ON HEART AND LUNG WEIGHT IN CARDIAC AND INTOXICATION DEATHS

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Akademisk avhandling

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Abstract

The main purpose of a medico-legal autopsy is to determine the cause and manner of death. A forensic pathologist makes assessments of this using several sources of information, one of which is the discrepancy between measured organ weight and reference values. Of particular interest is the heart weight in heart disease and the weight of the lungs in fatal intoxications.

In this thesis, a linear model of lung weight was created, but the model could at best explain only 13% of the variation in combined lung weight (Paper I). Unsurprisingly, this meant that the model was a poor definition of “normal” lung weight and could not be used to identify intoxication cases (Paper II). A ratio of lung weight to heart weight (LWHW ratio) also failed to differentiate intoxication cases from controls. The poor performance of these methods could plausibly have been due to fatal intoxications with only some substances being associated with increased lung weight, but an analysis showed that many common intoxicants were associated with heavier lungs than hanging deaths (Paper III).

To establish heart weight references more applicable in a medico-legal autopsy population, a model of heart weight accounting for undiagnosed cardiac hypertrophy was created (Paper IV). The model showed that for a decedent of average the evidence that a was hypertrophic reached, substantial support at around 470 g.

In conclusion, a definition of “heavy lungs” remains elusive. However, it seems to be a finding compatible with fatal intoxications with many substances and the low predictive value found may be due to study design. The heart weight model presented allows pathologists to assess the evidence of cardiac hypertrophy more easily than previously published models.

Keywords

heart weight, lung weight, organ weight, autopsy, forensic pathology, Bayesian analysis, cardiac hypertrophy, fatal intoxication

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