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During hypothermia, alteration of glucose metabolism can result in a hyperglycaemic and ketoacidotic state.¹ Conversely, diabetic ketoacidosis (DKA) can precipitate hypothermia by impaired thermoregulation and autonomic dysfunction.² Both DKA and hypothermia can demonstrate overlapping pathological and biochemical findings.³

Aim: Due to the related pathophysiology between hypothermia and DKA, we hypothesised that there would be a higher number of deaths from DKA in winter than in any other season.

Method: We performed a 12-year retrospective study on all deaths related to DKA at the Department of Forensic Pathology, Auckland City Hospital, New Zealand. The decedents' age and sex, and the season they died, were recorded. Statistical analysis was performed using R statistics.

Results: A total of 35 cases were included. Age and sex were not statistically significant between the seasons. Winter had the highest number of deaths from DKA ($n=12$), followed by summer ($n=9$), autumn ($n=8$) and spring ($n=6$).

Discussion: This study demonstrated that winter months had the highest number of deaths from DKA compared to other seasons. Given the similar pathophysiology and pathologic findings between hypothermia and DKA, this implies that winter may be a factor that can precipitate or exacerbate DKA that may be under recognised.

References

1. Mallet ML. Pathophysiology of accidental hypothermia. *QJM* 2002; 95: 775–85.
2. Gale EA, Tattersall RB. Hypothermia: a complication of diabetic ketoacidosis. *Br Med J* 1978; 2: 1387–9.
3. Clark KH, Stoppacher R. Gastric mucosal petechial hemorrhages (Wischnewsky lesions), hypothermia, and diabetic ketoacidosis. *Am J Forensic Med Pathol* 2016; 37: 165–9.

POST MORTEM COMPUTED TOMOGRAPHY (PMCT) LUNG CHANGES IN SUICIDE HANGING DEATHS: A CASE SERIES

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Hanging is the most common suicide method in New Zealand. Different structures in the neck, such as the airway, vasculature and nerves, are compressed during hanging and can individually or in combination cause death. The ligature characteristics may influence which neck structure is being predominantly compressed. Post mortem computed tomography (PMCT) is commonly included in a post mortem examination of a suspected suicide by hanging, especially when only an external examination is authorised. The majority of literature on PMCT findings in suicide hanging deaths focuses on the neck. We present a case

series from the Department of Forensic Pathology, Auckland City Hospital, New Zealand, illustrating a range of PMCT lung findings in suicide hanging deaths. These include normal or congested lung fields, aspiration, air trapping and pneumomediastinum. We observe that PMCT lung findings appear to correlate with the ligature characteristics. This observation may have useful forensic relevance in matching potential ligatures in death from neck compression and warrants further investigation.

ALCOHOL MEASUREMENT BETWEEN CEREBROSPINAL FLUID AND OTHER BODILY FLUIDS IN ABSORPTIVE AND POST ABSORPTIVE PHASES: TWO ILLUSTRATIVE CASES

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Post-mortem toxicology analysis for alcohol is a common adjunct post mortem biochemical test, although its interpretation can be challenging when establishing whether the presence of alcohol played a role in cause of death. Blood, urine and vitreous humor are commonly analysed for alcohol toxicology post mortem, but despite being a central nervous system depressant, cerebrospinal fluid (CSF) is not routinely analysed for this purpose. We present two deaths in which alcohol was detected in toxicological analysis, one in the excretory phase and one in the absorptive phase. In both cases, CSF alcohol levels lagged behind vitreous (and thus blood) but ahead of urine. This implies that CSF may be another matrix for use in determining the phase of alcohol metabolism, especially where other samples are limited or unavailable.

WISCHNEWSKY LESIONS IN A MORBIDLY OBESE MAN WITH CIRRHOSIS, LIVER FAILURE AND CARDIOMEGALY: CAN THIS BE HYPOTHERMIA?

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Obesity is an increasingly prevalent co-morbidity that is associated with sudden unexpected death and is commonly encountered in post mortem practice. Due to the effects of increased body-habitus it is, however, uncommon to encounter a death in an obese individual from hypothermia, especially during