The time-dependant post-mortem redistribution of antipsychotic drugs

Eva Saar, Jochen Beyer, Dimitri Gerostamoulos & Olaf H Drummer

The post mortem redistribution of ten commonly prescribed antipsychotic drugs (APs) was investigated. Femoral blood was collected from 273 cases at admission to mortuary (AD) and at post-mortem (PM). The PM samples were collected at various times up to nine days after admission and the sample pairs analysed using LC-MS/MS. The drugs included in this study were 9OH-risperidone (paliperidone), amisulpride, chlorpromazine, clozapine, haloperidol, olanzapine, promethazine, quetiapine, risperidone, and zuclopenthixol. Haloperidol, quetiapine and risperidone showed minimal changes between AD and PM specimens, whereas the majority of drugs showed significant changes between the sample pairs collected at different time points post mortem (p<0.01) in addition to an average concentration change greater than the uncertainty of measurement of the applied method. Average increases in blood concentrations after admission to the mortuary ranged up to 112% (chlorpromazine and olanzapine) but also decreases up to -43% (9OH-risperidone) were seen. There were large standard deviations between sample pairs and substantial day-to-day unpredictable changes that highlight the difficulty in the interpretation of drug concentrations post-mortem. Based on the presented data, we recommend that specimens for toxicological analysis should be taken as soon as possible after admission of a deceased person to the mortuary in order to minimise the effects of the PM interval on the drug concentration in blood.