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MEETING ABSTRACT

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Forensic significance of determination of the alcohol elimination rate through analysis of blood samples at two times

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Background: Determination of the relevant blood alcohol concentration (BAC) at the time of incriminating events is a constant challenge in the daily work of forensic experts. It is indirectly related to the alcohol elimination rate, which is used to calculate the relevant BAC at the time of critical events.

Methods: In this regard, taking blood samples at two times to determine the elimination rate of alcohol is a medico-legal doctrine. The present study was conducted with eighty-eight subjects whose blood samples were taken at two times. Then, the alcohol concentration was determined and also the value of the elimination rate and its correlation with the following variables: gender, age, body weight, height, body mass index, level of the BAC, disease, injury, bleeding, infusions.

Results: The correlation of beta elimination rate and these variables was determined in order to facilitate understanding of the given values of elimination rate and also greater objectivity. In the phase of alcohol elimination there were eighty subjects (10 women and 70 men), in which the alcohol elimination rate and its correlation with the observed parameters was observed. The minimum rate of elimination of the subjects was 0.09 g/kg/h, while the maximum elimination rate was 0.55 g/kg/h; the average elimination rate was 0.18 g/kg/h. The results showed a strong positive correlation between anthropometric parameters (weight, height, BMI) of patients and the elimination rate of alcohol from the blood. The body weight had the largest impact on the rate of alcohol elimination with a value of variance of 61%. Also, there was a statistically significant effect BAC on the alcohol elimination rate, as well as a strong correlation between elimination rate and whether the subjects had received infusions or had injuries and bleeding. There was no statistically significant relationship between beta elimination rate and other variables (gender, age and disease).

Discussion: Taking blood sample twice to determine the individual alcohol elimination rate can significantly increase the precision of retrograde calculation of alcohol levels at the time of an event for forensic purposes.

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