

Comparison between Brain CT findings and methanol concentration in severe acute methanol intoxication

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Objective: In acute intoxication methanol may result in a wide range of damage to the central nervous system. The peculiarity of methanol poisoning is the latency period between its ingestion and the appearance of manifestations (1). Our previous study showed that methanol concentration was not useful in patients in predicting death (2). The present study was done to evaluate methanol concentration and brain CT findings in severe poisoning cases. **Materials:** The project included patients ≥ 12 years, hospitalized in 2006 in Loghman-Hakim Poison Hospital for acute methanol poisoning, showed visual disturbances or CNS problems and had nonenhanced CT of the brain and S-methanol level in their file. The diagnosis of methanol poisoning was based on the typical clinical presentation, elevated anion and osmolar gaps. To express the relationship between methanol concentration and brain CT findings, McNemar's test was used to determine whether the row and column marginal frequencies are equal (Table 1). Also different main brain CT features of the patients recognized and categorized. **Results:** Totally 42 male patients met inclusion criteria. The marginal frequencies calculated by McNemar's test showed marginal homogeneity and no significant correlation ($\chi^2=0.1$, $P=0.7518$). From 28 (66.7%) positive CT findings the most common features were: bilateral hypodensity lesions in putamen ($N= 18$, 64.2%), low attenuation in the subcortical white matter ($N=6$, 21.4%), bilateral hemorrhagic necrosis of the putamen and low attenuation in the subcortical white matter ($N=2$, 7.1%) and bilateral hypodensity lesions in globus pallidus ($N= 2$, 7.1%). **Conclusion:** It seems that brain CT findings are as important as methanol concentration in severe and probably late methanol poisoning presentations. While measurement of toxic methanol and particularly formic acid cannot be performed by most hospital laboratories, the use of CT findings and elevated anion and osmolar gaps can be helpful when specific levels are not available.

References:

- Barceloux B, Bond GR, Krenzelok EP, et al. American Academy of Clinical Toxicology practice guidelines for the treatment of methanol poisoning. *J Toxicol Clin Toxicol* 2002; **40**: 415-446.
- Hassanian-Moghaddam H, Pajoumand A, Dadgar SM, et al. Prognostic Factors in Methanol Poisoning. *Hum Exp Toxicol* 2007; **26**(7):583-6.

Table 1 *Comparison of S-methanol and brain CT in severe acute methanol cases (N=42)*

	Positive <i>S-methanol</i>	Negative <i>S-methanol</i>	Total N (%)
Positive CT Findings	22	6	28(66.7)

Negative CT Findings	4	10	14(33.3)
Total N (%)	26 (61.9)	16 (38.1)	42(100)
