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The role of brain CT in altered sympathomimetic poisoning

Shao-Feng Liao, Hsien-Yi Chen
Department of Emergency Medicine, Chang Gung Memorial Hospital, Taoyuan, Taiwan

Objective: We aimed to study if the early brain CT is necessary in patient of sympathomimetics poisoning with altered mental status.

Methods: This is a retrospective chart-review study. All patients who visited emergency department (ED) of Linkou Chang Gung Memorial Hospital during 2010/01/01 ~ 2017/12/31 were screened by the following criteria: (1) Urine drug screen test of amphetamine was ordered, (2) Age>18, and (3) Glasgow coma scale (GCS) <15. Medical records of all patients enrolled from the screening were reviewed independently by two toxicology consultants to determine whether a patient is a sympathomimetics poisoned case or not, and to exclude patients who had head trauma or focal neurologic deficits. In case of a disagreement between two reviewers, a third toxicology consultant reviewed the chart and made the final judgement. Patient's gender, age, initial vital signs, GCS, laboratory data, brain CT report, admission period, outcome, and seniority of attending physician in charge were recorded for further analysis. MWU test was used in continuous variables. Pearson and fisher exact test were used for category variables.

Results: 894 patients were enrolled after screening and were reviewed by three physician toxicologists. Excluding patients with head trauma, 68 patients were finally thought to be sympathomimetics poisoned cases, and 2 of them presented with focal neurologic sign were further excluded. 66 patients were included for statistical analysis. Brain CT was performed in 31 patients and all showed no pathological findings. In the group which brain CT was arranged, patient had worse GCS level, higher intubation rate, longer admission period, and higher mortality rate. (Table.1)

Conclusion: In altered (GCS<15), non-trauma stimulant poisoned patients, brain CT exam seems unnecessary if the patient doesn't present with focal neurological deficits. Stimulant poisoned patients who underwent brain CT exam had more severe clinical presentations.

Table.1 Characteristics analysis

Characteristic	All	brain CT performed	brain CT not performed	P value(applied statistical test)
No. of patients	66	31	35	
Age (y)	66	36.8(±10.6)	33.0±8.2	0.159 (MWU)
Gender(Male/female)	54/12	27/4	27/8	0.352 (Fisher exact test)
BT(℃)	66	37.8(±2.8)	37.1±0.9	**0.014** (MWU)
HR (beats mins)	66	123.3(±33.7)	123.1±28.9	0.743 (MWU)
SBP(mmHg)	66	147.7(±32.2)	136.1±23.6	0.079 (MWU)
DBP(mmHg)	66	86.3(±27.2)	85.3±20.9	0.753 (MWU)
GCS	66	7.4(±4.0)	11.3±2.6	**0.000** (MWU)
RR(per mins)	66	22.4(±5.0)	21.8±3.8	0.594 (MWU)
Amphetamine screen test (positive/negative/miss	55/9/2	27/4/0	28/5/2	0.361 (Pearson $\chi 2$)
First visit (R/VS)	48/18	23/8	25/10	0.800 (Pearson $\chi 2$)
VS seniority (<5,5-10,>10)	29/19/18	13/7/11	16/12/7	0.320 (Pearson $\chi 2$)
Intubation(yes/no)	17/49	15/16	2/33	**0.000** (Fisher exact test)
Admission period(all) (day)	66	10.6(±16.4)	1.8±4.0	**0.003** (MWU)
ICU period(all) (day)	66	5.7(±13.7)	0.3±1.1	**0.000** (MWU)
Survival(yes/no)	60/6	25/6	35/0	**0.008** (Fisher exact test)

BT: Body temperature; HR: Heart rate; SBP: Systolic blood pressure; DBP: Diastolic blood pressure; GCS: glasgow coma scale; RR: Respiratory rate;

MWU:mann-Whitney *U* test. Data are presented as mean value (±SD).