

NEUROCOGNITIVE CHANGES AFTER EXPOSURE TO A SINGLE LARGE DOSE OF ALUMINIUM PHOSPHIDE

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Objective:

To determine the neurocognitive function in survivors of acute aluminium phosphide poisoning after stabilisation in the acute phase and at 3 months follow up

DESIGN: Prospective cohort study

SETTING: Medical Emergency, Department of Internal Medicine, PGIMER Chandigarh, tertiary care centre in North India.

Methods: 23 cases of acute Aluminium phosphide poisoning presenting to the emergency/wards/ICU with acute AIP₃ poisoning were included in the study. The diagnosis was based on history of ingestion or accidental exposure and the characteristic clinical features. Brain SPECT and perfusion MRI were performed on these patients after stabilisation. Patients having a MMSE of more than 23 were subjected to tests selected for determining the neurocognitive function were like, trail making test, PGI memory scale, Verbal fluency test, Bender visual motor gestalt test.

RESULTS :

Test for cognitive functions like **Trail making test A** : (Test for attention) at baseline was abnormal in 20 patients with the mean time of 115.45(±54.496) seconds, which was significantly more than the normative value with statistically significant improvement ($p < 0.000$) At 3 months with a mean of 95.67(±49.058).

Trail making test B : (Test for executive function) was abnormal in 16 patients at baseline with a mean time of 139.06(±44.618) seconds, which was significantly more from that of the normative data. With a statistically significant improvement to mean time of 110.91(±27.278) seconds. ($p = 0.027$).

Verbal fluency test was significantly lower than that of standard controls. This difference persisted till 3 months.

Bender Visual Motor Gestalt test was administered in 22 patients at base line. The mean(±SD) Errors and DR and at 3 months were significantly more than that of standard control population.

Conclusions:

Our study showed that

- Cognitive functions involving the domains of attention, executive function, remote memory, recent memory, mental balance, attention and concentration, delayed recall, verbal new learning, visual retention, semantic memory, language/ speech and visuospatial functions were impaired in the acute phase of poisoning, when assessed immediately after stabilization.
- Although attention, executive functioning, remote memory, verbal new learning, visual retention and visuospatial skills improved later at 3 months, there were significant residual defects persisting.

