Oral Abstracts

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NEUROCOGNITIVE CHANGES IN SURVIVORS OF ALUMINIUM PHOSPHIDE POISONING IN ACUTE PHASE AND FOLLOW UP TILL 3 MONTHS

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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 AlP3 poisoning were included in the study. The diagnosis of AlP3 poisoning was based on history of ingestion or accidental exposure to AlP3 compounds and the characteristic clinical features . Severity of poisoning was based on the PGI scoring system which included three variables [ph< 7.2 , systolic BP < 90 , GCS < 12]. Patients with unknown compound poisoning and h/o cognitive dysfunction prior to poisoning were excluded. 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 for that age, sex and education matched population. 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 mena time of 110.91(±27.278) seconds. (p = 0.027).

PGI memory scale to test memory was administered to 23 patients at base line and the measured values in the individual components were significantly lower than that of the normative data except in immediate recall, verbal retention for similar pairs, and visual recognition, which were similar to the normative data. At 3 months follow-up, significant difference was achieved with that of the baseline results in all the components except visual recognition, in which the results were similar to normative values at baseline itself. At 3 months, measured values were significantly lower than the normative data in remote memory, mental balance and visual memory. In all the other components, they were similar to standardized normative data. The score of all the individual components was summed up and the percentile calculated at baseline, 6 weeks and 3 months duration. The mean(±SD) were then compared with the baseline value using the paired t-test.(Table 6). The percentile at baseline was significantly lower than the normative value, at 6 weeks it improved to more than 50%.

Verbal fluency test was administered at baseline, the mean(±SD) no. of words in each group 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. The most common Errors noted were abbreviation(82.6%) followed by perseveration(65.2%), point of contact(47.8%), angle closure(30.4%), separation of lines(21.7%), distortion(21.7%), absence of erasure(17.4%), added angles(17.4%), embellishment(13%), partial rotation(8.7%), omission(4.3%) and rotation/reversal(4.3%)

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.
- Immediate recall, verbal associative learning, and visual recognition were relatively spared.
- Deficits in mental balance and delay recall improved and normalized earlier at 6 weeks. No residual deficits were observed in them.
- Recent memory, semantic memory, speech/language showed a trend towards improvement at 6 weeks, however they were still abnormal as compared to the normative data even at 3 months.
- Although attention, executive functioning, remote memory, verbal new learning, visual retention and visuospatial kills improved later at 3 months, there were significant residual defects persisting.