letters

Severe hypoglycemia as a presenting feature of aluminum phophide poisoning

To the Editor: Aluminium phosphide (AlP) is a highly effective insecticide. It is known as a suicide poison because of high mortality and easy over-the-counter availability. It has no specific antidote. Fatal dose for an average-sized individual is 150 to 500 mg. The mortality rate is very high varying from 60% to 80%.[1] Death occurs due to toxic myocarditis, multi-organ failure, and profound shock. Its toxicity is due to the release of phosphine (PH_3), which occurs when it comes in contact with moisture or gastric juice. PH_3 is a mitochondrial toxin. Hyperglycemia following AIP ingestion has been described as poor prognostic factor.[2] Mild hypoglycemia has already been reported, but severe hypoglycemia as presenting feature of AlP poisoning is extremely rare.[3]

We report a case of a 19 year-old male who came to our emergency in deep coma and profound shock, about 7-and-a-half hours after ingestion of 1 (3 g) tablet of AlP. On investigation, he had severe metabolic acidosis with pH 6.86, blood sugar of 15 mg/dL, oxygen saturation of 70%, and serum lactate of 13 mmol/L. The electrocardiogram revealed T-wave inversion in leads II, III, and aVF with ST elevation in VI with sinus tachycardia. His Troponin I level was 0.36 μg/L.

The patient was immediately intubated for mechanical ventilation and was treated with 2 boluses of 50% dextrose (50 mL each) intravenously, followed by 10% dextrose as a continuous infusion. His repeat blood sugar level was 110 mg/dL and continued to remain normal thereafter. Despite normalization of blood glucose, there was no change in neurological status of the patient. After initial stabilization, the patient received gastric lavage with aliquot of 50 mL sodium bicarbonate and 50 mL coconut oil through nasogastric tube. He was also given 4 g magnesium sulphate intravenously as a bolus followed by 2 g magnesium sulphate intravenously at every every 6 hours, adequate fluid boluses and 100 mL of 8.4% sodium bicarbonate along with double inotropic support. The patient also received N-acetylcysteine. Despite extensive supportive care, patient died after 30 hours of ED presentation.

PH_3 poisoning following AlP ingestion develops rapidly, and the majority (95%) of deaths occur within 12 to 24 hours because of cardiovascular dysfunction, intractable hypotension, and multi-organ dysfunction. Changes in blood glucose levels are well known following AIP ingestion. It has been previously observed that elevation, reduction, and lack of effect on blood glucose level can occur in AlP poisoning.[4] Mild hypoglycemia is common in AlP poisoning; however, severe hypoglycemia is extremely rare. A probable relation exists between AlP and severe hypoglycemia based on Naranjo Scale. Several mechanisms have been suggested for hypoglycemia in AlP poisoning. Inhibition of hepatic gluconeogenesis and glycogenolysis, damage to adrenal cortex along with decreased cortisol, and glucagon and epinephrine production may precipitate hypoglycemia. Release of insulin-like growth factor in response to severe shock also contributes to hypoglycemia.[5] Studies have shown that non-survivors in AlP poisoning had significantly higher blood glucose level than survivors, and these studies concluded that hyperglycemia prognosticates higher mortality. AlP causes rapid onset of shock, severe metabolic acidosis, cardiac dysrhythmias, and ARDS. Various studies have concluded that hyperglycemia, high SAPS II and high APACHE II score, hypotension, acidosis, leukocytosis, hyperuricemia, ECG abnormalities, low Glasgow coma scale, acute renal failure, low prothrombin time, methemoglobinemia, use of vasoactive drugs, lack of vomiting after ingestion, and use of mechanical ventilation are markers of poor prognosis. However, instead of hyperglycemia, which is a poor prognostic factor, severe hypoglycemia was present in our case, which could be one of the poor prognostic factors.

To conclude severe hypoglycemia is extremely rare following acute AIP poisoning. Similar to hyperglycemia, hypoglycemia could also be a predictor of mortality and should be included in the poor prognostic marker in AIP poisoning.

Nayer Jamshed, Meera Ekka, Praveen Aggarwal, Shivlok Narayan

From the Department of Emergency Medicine, All India Institute of Medical Sciences, New Delhi, India

Correspondence:
Dr. Nayer Jamshed,
All India Institute of Medical Sciences, Aurobindo Marg, New Delhi 110029, India
T: 01126929639
jamshednayer@gmail.com

letters

REFERENCES

1. Chug SN, Dushayant K, Ram S, Arora B.Incidence and outcome of aluminum phosphide poisoning in a hospital study. Indian J Med Res 1991; 94:232-35.
2. Mehrpour O, Alfred S, Shadnia S, Keyler DE, Soltaninejad K, Chalaki N, Sedaghat M. Hyperglycemia in acute aluminium phosphide poisoning as a potential prognostic factor. Hum Exp Toxicol 2008; 27:591-595.
3. Mehrpour O, Aghabiklooei A, Abdollahi M, and Singh S. Severe hypoglycemia following acute aluminium phosphide(Rice Tablet) poisoning; A case report and review of literature. Acta Medica Iranica 2012; 50:568-571.
4. Abder-Rahman H. Effect of aluminium phosphide on blood glucose level. Vet Hum Toxicol 1999; 41:31-32.
5. McCornick SD, Shrimpton JM, Carey JB, O'dea MF, Sloan KE, Moriyama S, Bjornsson BT. Repeated acute stress reduces growth rate of Atlantic salmon parr and alters plasma growth hormone, insulin-like growth factor 1 and cortisol. Aquaculture 1998; 168:221-35.

RE: Oligoarticular juvenile idiopathic arthritis among Saudi children

To the Editor: With reference to the interesting study by Moued et al,[1] uveitis is a potentially vision-threatening extra-articular manifestation of oligoarticular juvenile idiopathic arthritis (JIA) that manifests in approximately 13% of all patients. Oligoarticular JIA–associated uveitis can lead to serious ocular complications such as synechiae, band keratopathy, cataract, glaucoma, macula edema, and blindness.[2] Moued et al[1] stated that 2 (5.4%) out of 37 oligoarticular JIA patients presented with uveitis, while only 1 patient subsequently developed uveitis. Apart from the 2 limitations addressed by Moued et al[1] namely, small sample size and retrospective nature of the study, I presume that the following 3 points can additionally explain the markedly low prevalence of oligoarticular JIA–associated uveitis: (1) There might be a delay in access to appropriate care for children presenting with musculoskeletal symptoms and ultimately diagnosed with JIA.

Delay in access to pediatric rheumatology assessment is common with complex pathways of referral. Many children were found to be subjected to inappropriate invasive investigations and many had prolonged untreated active disease at the initial assessment. This delay is likely to affect the long-term outcome of the disease.[3] (2) Moued et al[1] stated that the mean age of the studied patients was 10.9 years. Also, the mean age of the patients at presentation was 6.9 years, while the mean age at diagnosis was 7.2 years. However, they neither addressed the frequency distribution of the studied cohort according to age groups nor mentioned the age of uveitis patients. This is important to be considered because an age-associated risk of uveitis has been observed in children younger than 3 years at the time of JIA onset.[4,5] (3) Moued et al[1] stated that the erythrocyte sedimentation rate (ESR) was performed in 26 (70.3%) of the 37 patients. The ESR values ranged from 8 to 96 mm/hour (reference range, 0-20 mm/hour). A total of 19 patients (51.4%) had a high ESR at the presentation (mean, 41.8 [25.4] mm/hour); the results were normal in 7 patients (18.9%). However, they did not mention the ESR of uveitis patients. Again, this is important to be considered because ESR values at arthritis onset higher than 22 mm/hour has been noticed to be related to uveitis development.[5] In spite of the low reported prevalence of oligoarticular JIA—associated uveitis in the study by Moued et al,[1] close collaboration between ophthalmologist and pediatric rheumatologist is needed. Ophthalmologic examination ought to be done immediately after the diagnosis of oligoarticular JIA and regularly repeated during the follow-up.

Mahmood D. Al-Mendalawi

Al-Kindy College of Medicine, Baghdad University, Baghdad Iraq

Correspondence:
Prof. Mahmood D. Al-Mendalawi
Al-Kindy College of Medicine, Baghdad University,
PO Box 55302
Baghdad 1111, Iraq
mdalmendalawi@yahoo.com

REFERENCES

1. Moued MM, Al-Saggaf HM, Habib HS, Muzaffer MA. Oligoarticular juvenile idiopathic arthritis among Saudi children. Ann Saudi Med 2013; 33: 529-32.
2. Minden K, Mingels A, Niewerth M, Heiligenhaus A, Ganser G. Juvenile idiopathic arthritis and uveitis: epidemiology including data from a national database. Klin Monbl Augenheilkd 2007; 224: 469-72.
3. Foster HE, Eltringham MS, Kay LJ, Friswell M, Abinun M, Myers A. Delay in access to appropriate care for children presenting with musculoskeletal symptoms and ultimately diagnosed with juvenile idiopathic arthritis. Arthritis Rheum 2007; 57: 921-7.
4. Heiligenhaus A, Heinz C, Edelsten C, Kotaniemi K, Minden K. Review for disease of the year: epidemiology of juvenile idiopathic arthritis and its associated uveitis: the probable risk factors. Ocul Immunol Inflamm 2013; 21: 180-91.
5. Pelegrín L, Casaroli-Marano R, Antón J, Carmen García de Vicuña M, Molina-Prat N, Ignacio Aróstegui J, et al. Predictive Value of Selected Biomarkers, Polymorphisms, and Clinical Features for Oligoarticular Juvenile Idiopathic Arthritis-associated Uveitis. Ocul Immunol Inflamm 2013 Oct 16. [Epub ahead of print].

RE: Steroid-resistant nephrotic syndrome: impact of genetic testing

To the Editor: Corticosteroids remain the mainstay of treatment of idiopathic nephrotic syndrome (INS) in children, and about 80% of children respond to this first-line therapy for this disease.[1] A significant number of cases, varying from 20% to 30%, however, fails to respond to corticosteroids, either from the outset (primary resistance) or later on during the course of the disease (secondary resistance). This subset of INS, known as steroid-resistant nephrotic syndrome (SRNS), represents a diagnostic and therapeutic dilemma for pediatric nephrologists.[1] The mechanism of steroid resistance in INS still remains elusive. Histology does not appear to be predictive, and the clinical features are also not helpful. Importantly, a subset of SRNS is caused by mutations in a number of podocyte genes.[2] Thus, the role of genetic factors in the etiopathogenesis of SRNS is being actively investigated throughout the world. Kari et al,[3] in a recent issue of your esteemed journal, have explored the frequency of disease-causing mutations in 3 commonly implicated genes in SRNS in a cohort of Saudi children. The authors merit compliments on this important contribution on the topic from this part of the world. Their results are more or less similar to those observed by our group and provide support to our conclusions regarding the role of genetic factors in the routine diagnosis and management of SRNS in children from this region of the world.[4]

We take this opportunity to highlight a few points related to the aforementioned paper and the subject of genetic testing in SRNS. First, Kari et al[3] did not give the mean or median age of the study cohort or still better, the stratified age groups. It is well known and also apparent from Table 1 in their paper that the age of onset of INS is an important determinant factor for the frequency of genetic mutations. In general, the younger the age, the higher the prevalence of genetic abnormalities although there could be exceptions.

Second, the authors have not mentioned the timing of the genetic testing in their children, but we assume that this was done late in the course of the disease, as these children received immunosuppressant drugs for 3 to 6 months. In this regard, Santín et al[5] recommend genetic testing before renal biopsy in children because according to them it is a noninvasive procedure and the histopathology is not a determinant criterion.

Third, the authors have also included 2 cases each of membranoproliferative GN and IgA nephropathy. In essence, these are distinct disease processes and are not typically caused by the genetic abnormalities tested in this study. Although minute in degree, the inclusion of these cases did decrease the overall frequency of genetic abnormalities in the study.

Finally, it seems that much of the wide discrepancy in the reported results is caused by methodological variations, different inclusion and exclusion criteria, and the different genes tested in different studies. Moreover, the definition of SRNS in itself is also fraught with problems and varies widely. All these factors may contribute to the real differences in the prevalence of genetic abnormalities in different races or populations and different regions. There is a need for more studies of larger scale and prospective nature, ideally involving multiple centers to standardize the methodology of genetic testing of children with SRNS and ultimately to develop international consensus guidelines on the clinical utility of genetic testing in childhood SRNS.

Muhammed Mubarak,[a] Aiysha Abid[b]

From the SIUT [a]Histopathology and [b]Molecular Genetics, Dewan Faruque Medical Complex, Civil Hospital, Karachi, Pakistan

Correspondence:
Muhammed Mubarak
SUIT-Histopathology, Dewan Faruque Medical Complex, Civil Hospital, Karachi, Sindh 74200, Pakistan
T: 922199215752
F: 922132726165
drmubaraksiut@yahoo.com

REFERENCES

1. Mubarak M, Kazi JI, Shakeel S, Lanewala A, Hashmi S. The spectrum of histopathological lesions in children presenting with steroid-resistant nephrotic syndrome at a single center in Pakistan. ScientificWorldJournal 2012;2012:681802.
2. Joshi S, Andersen R, Jespersen B, Rittig S. Genetics of steroid-resistant nephrotic syndrome: a review of mutation spectrum and suggested approach for genetic testing. Acta Paediatr 2013;102:844-56.
3. Kari JA, El-Desoky SM, Gari M, Malik K, Vega-Warner V, Lovric S, et al. Steroid-resistant nephrotic syndrome: impact of genetic testing. Ann Saudi Med 2013;33:533-8.
4. Abid A, Khaliq S, Shahid S, Lanewala A, Mubarak M, Hashmi S, et al. A spectrum of novel NPHS1 and NPHS2 gene mutations in pediatric nephrotic syndrome patients from Pakistan. Gene 2012;502:133-7.
5. Santín S, Bullich G, Tazón-Vega B, García-Maset R, Giménez I, Silva I, et al. Clinical utility of genetic testing in children and adults with steroid-resistant nephrotic syndrome. Clin J Am Soc Nephrol 2011;6:1139-48.