Student’s Corner

Letter to the Editor

Bronchial Thermoplasty: A Novel Approach to Asthma Treatment

Madam, Bronchial Thermoplasty is a novel approach aimed at alleviating the painful symptoms associated with asthma. Bronchial Thermoplasty is done using the Alair® system which consists of a single catheter and a controller that delivers radio frequency energy to apply controlled heat on the smooth muscles of the airway to relieve asthma symptoms.1 As the procedure requires only light anaesthesia, it can be performed on an outpatient basis. A small, flexible tube called a bronchoscope is inserted through the nose or mouth and guided into the lungs and then into the airway on which Bronchial Thermoplasty is to be performed. After placing a bronchoscope in the desired airway, an Alair® catheter is inserted through the bronchoscope. This catheter has an expandable wire basket with four arms that securely fit against the airway wall. Consequently the tip of the catheter is inflated until it touches the sides of the airway wall. Radio frequency energy is then sent through the catheter, heating the smooth muscle walls of the airway to approximately 65°C (149°F) for a period of 10 seconds.2 Studies in animals2 and humans3 have shown that this temperature is sufficient to reduce the smooth muscle mass in the airway wall while it can also result in epithelial damage which usually resolves over time.

Clinical trials carried out by McMaster physicians Dr. Gerard Cox and Dr. John Miller are very promising. Initially 16 patients who suffered from mild to moderate asthma underwent Bronchial Thermoplasty after which they were assessed at 12 weeks, 2 months and 2 years following treatment.4 Participants underwent three thirty-minute sessions treating all accessible airways.

All in all, Bronchial Thermoplasty has certainly added a new chapter in asthma treatment; while it is not intended to serve as a cure it will certainly complement conventional treatment.

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References

Letter to the Editor

Severe metabolic acidosis secondary to zinc phosphide poisoning

Madam, we want to attract attention on, acute distal renal tubular acidosis (type 1) caused after zinc phosphide poisoning. A 25-year-old man was admitted to our emergency room 1 h after he had attempted to commit suicide by ingesting zinc phosphide powder. The ingested amount was estimated at about 7 g. He suffered from depression which had been diagnosed 3 years earlier. The patient had no history of diabetes mellitus, chronic renal failure, ureterosigmoidostomy operation, chronic diarrhea and alcohol intake. On admission he was confused and had tachypnea. He complained of nausea, abdominal pain and vomiting. His blood pressure was 110/75 mmHg and pulse rate 96/min. Electrocardiography showed normal sinus rhythm. Chest radiography was normal. Gastric lavage and activated charcoal was administrated via a large nasogastric catheter. A urethral catheter was administered for monitoring patient's urine output. Laboratory tests at admission included: sodium level 139 mmol/L, potassium 3.8 mmol/L, chloride 116 mmol/L, blood urea nitrogen 18 mg/dL, blood glucose 157 mg/dL, serum creatinine, 0.9 mg/dL, arterial blood gas analysis revealed pH 6.973, Paco2 24.2 mm Hg, Pao2 91 mm Hg, and HCO3 9.3 mEq/L, lactate 2 mEq/L and urine Ph 6. Serum anion gap was calculated 13, 7 (normal anion gap between 8-16). According to laboratory results acute distal renal tubular acidosis (type 1) was diagnosed. Sodium bicarbonate as a bolus of 80 mEq and continuous infusion 25 mEq/h was administered. Metabolic acidosis was resistant to IV sodium
bicarbonate therapy. In the emergency room he developed cardio-pulmonary arrest. His trachea was intubated, and he was transferred to the intensive care unit for further management. Respiratory support and intravenous fluid resuscitation were done; but despite all measures, the patient died in the intensive care unit after five hours of admission.

Zinc Phosphide is an inorganic chemical that is used to control rats, mice, voles, ground squirrels, prairie dogs, nutria, muskrats, feral rabbits and gophers.\textsuperscript{1} Zinc Phosphide doses of the order of 4000 to 5000 mg have been fatal. It can enter the blood stream causes pulmonary oedema and severe liver, kidney, CNS, and myocardial injury.\textsuperscript{2} Distal Renal Tubular Acidosis is an inability to maximally acidify the urine due to reduce H\textsuperscript+ secretion in the distal nephron. The diagnosis of type 1 RTA is suggested by finding a hyperchloraemic normal anion gap metabolic acidosis associated with a urine pH > 5.5 despite plasma [HCO3] < 15 mmol/L.\textsuperscript{3}

We suggest, specific recommendations for patients with zinc phosphide poisoning with tachypnea. They should be screened for metabolic acidosis (especially renal tubular acidosis) with arterial blood gas analysis. Respiratory support and intravenous fluid resuscitation with sodium bicarbonate treatment should be considered.

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References

Letter to the Editor

Skeletal Age Assessment; Are We Being Fair To Our Children?

Madam, Assessment of Skeletal age is an important tool that forms the basis of decision making in various clinical and medico-legal scenarios. It can be used as a measure of growth and maturity in the paediatric population. It also finds application in endocrinology, orthopaedics, orthodontics, and forensics.\textsuperscript{1,2} Various methods are available for measuring skeletal age, such as comparison with the Greulich-Pyle (GP) atlas\textsuperscript{3} and Tanner-Whitehouse scoring system. Among these, the GP atlas is most widely used owing to its greater ease of application and reduced assessment time.\textsuperscript{1,4}

The GP atlas is based on data derived in the middle of 20th century from children of North European descent residing in Ohio, USA. Almost all of these children belonged to high socio-economic status families.\textsuperscript{3} Explorations into anthropometric measurements of Pakistani children have demonstrated the linear growth patterns of our children to be different from the references of norms developed in foreign populations with a dissimilar socio-economic status (SES) and ethnic background.\textsuperscript{5,6} It follows logically that the patterns of skeletal maturity may also vary across populations. In fact, there is some evidence suggesting that the tempo of skeletal maturity varies with the ethnic background, SES and nutritional status.\textsuperscript{1} Understandably, reservations regarding the applicability of the GP atlas for an accurate assessment of skeletal maturity in populations different from the original one have been raised from various quarters of the world.\textsuperscript{4,7} Even in USA, where this reference was developed, a cautious approach towards the use of GP atlas in the face of changing ethnic profile has been recommended.\textsuperscript{1} Recognizing the importance of accurate assessment of bone age, endeavors to establish the applicability of GP atlas to the local population have been made in various countries and adaptations of the GP atlas befitting for specific populations have been recommended on their basis.\textsuperscript{1,4,7}

Unfortunately, there is a dearth of literature from Pakistan on this important subject. Few limited explications suggest that the pattern of skeletal maturity in the local children may be different from the currently used foreign standards; with differences of up to six months between chronological age and skeletal age being reported.\textsuperscript{2} However, the results of these explorations may not be generalized to the whole Pakistani population owing to certain limitations.

In conclusion, an inaccurate measurement of bone age may arguably lead to a sentence inappropriate for age, an unfair advantage over the competitors in sports or sub-optimal care in a clinical scenario. It is imperative to