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Case Report

Hypoglycaemic seizure in a child following ingestion of *Coccinia grandis*

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Introduction

Ivy gourd or *Coccinia grandis* L.Voigt [1], known as 'Kowakka' in Sinhala, is a plant with multiple medicinal properties including an anti- hyperglycaemic action [2]. The three main mechanisms for this action, proposed by current studies. comprises triterpenes, pectin and enzyme modulation involving inhibition of glucose-6-phosphatase and fructose-1,6-bisphosphatase in gluconeogenesis [3]. Herein, we report the first case of a child presenting with a hypoglycaemic convulsion following ingestion of *Coccinia grandis.*

Figure 1: *Coccinia grandis* plant

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Case report

A 4-year-old, previously healthy girl with no family history or past history of seizures; not on any medications; presented following a generalised tonic clonic seizure lasting for 10 minutes. According to the parents, the convulsion had settled spontaneously. Prior to this event, the child had complained of a chill and became pale and drowsy and had subsequently perspired. She had taken her last meal 10 hours prior to the convulsion, and it had consisted of a salad of 'Kowakka' leaves which she had not consumed before. The salad was also consumed by her grandfather who had type 2 diabetes mellitus.

On admission to the ward, the child was afebrile and there were no neurocutaneous manifestations or neck stiffness. Her Glasgow coma scale was 14/15 and bilateral pupils were equal and reactive to light. Haemodynamic parameters were normal. There was no dysmorphism or hepatosplenomegaly. Other system examinations were normal. Her random blood sugar was 49 mg/dl. Critical blood sampling and several other blood investigations were performed and are presented in Table 1 .

Table 1: Blood and urine investigations and the results of the patient

Investigation	**Results**	**Normal range**
Serum insulin	0.5uIU/ml	2.2 -25 uIU/ml
Serum sodium	139 mmol/l	137-145 mmol/l
Serum potassium	3.6 mmol/l	3.5-5.1 mmol/l
Serum magnesium	2.1 mg/dl	1.7-2.2 mg/dl
AST	33U/l	0-35 U/l
ALT	23 U/l	0-40 U/l
S.Creatinine	20.5 umol/l	70-115 umol/l
Arterial blood gas		
pH	7.399	7.35-7.45
pCO2	30.9 mmHg	35-45mmHg
HCO3-	22 mEq/l	22-28 mEq/l
Lactate	1.3 mmol/l	<2mmol/l
Urine ketone bodies	negative	
Urine organic acid profile	normal	

Immediately after blood investigations were taken, the child was given 10% dextrose 2 ml/kg intravenous bolus followed by an infusion containing dextrose. Child recovered soon after initiation of treatment. Random blood sugar was monitored hourly for six hours during which no further hypoglycaemia was reported. Seizure activity was confirmed by an electroencephalogram (EEG) done 2 hours afterwards. However, no evidence of epileptic syndrome was seen. The child was discharged 24 hours after admission upon normal blood sugar values and complete resolution of neuroglycopaenic features. Repeat EEG performed 6 weeks later revealed normal findings.

Discussion

Hypoglycaemia is defined as the presence of a plasma glucose concentration below 60 mg/dL along with central nervous system or catecholamine-based symptoms with

resolution of symptoms when glucose concentration is restored to normal [4]. Fasting hypoglycaemia in a child can be ketotic or non ketotic and the latter can occur in the presence or absence of hyperinsulinaemia [4]. Critical blood sampling is performed on any child with unexplained hypoglycaemia and this includes glucose, lactate, insulin, c peptides, ketones, cortisol, growth hormone, amino acids, ammonia, venous blood gas and acyl carnitine profile which are done along with urine for ketone bodies and organic acids [5]. The reported child had non ketotic hypoglycaemia presenting with both central nervous symptoms and catecholamine-based symptoms which rapidly improved on correction of hypoglycaemia. This is the first reported case of a child with a hypoglycaemic convulsion following ingestion of *Coccinia grandis* and no other discernible cause was evident.

Studies show improved glycaemic control with *Coccinia grandis* in adults with type 2 diabetes mellitus [6]. Randomized control studies have shown that adults who ingest *Coccinia grandis* developed a level of blood glucose lower than controls [6] although the exact cause of hypoglycaemia remains to be elicited. The possible causes for hypoglycaemia due to *Coccinia grandis* includes increased glucose tolerance, reduction of sugar absorption from the gut, increased insulin production from the pancreas, reduction of release of glucose from the liver and increased glucose uptake by fat and muscle cells. (6). The potential toxic effects of *Coccinia grandis* on children have not been described previously. The authors of this report suggest further studies in children to study the pathophysiology of *Coccinia grandis* induced hypoglycaemia in children as there is no published safety data. It is important to create public awareness regarding the risk of hypoglycaemia following intake of *Coccinia* as efficacy and safety in children remains to be evaluated.

References

1. Bunkrongcheap R, Hutadilok-Towatana N, Noipha K, Wattanapiromsakul C, Inafuku M, Oku H. Ivy gourd (Coccinia grandis L. Voigt) root suppresses adipocyte differentiation in 3T3-L1 cells. Lipids in health and disease. 2014 Dec;13(1):1-0. https://doi.org/10.1186/1476-511X-13-88
2. Niranjan S, Ranju G, Sharma UK, Sharma US, Jana GK, Abhishek S. Evaluation of anti-inflammatory activity of Coccinia indica leaves extracts. Journal of Pharmacy Research. 2010;3(9):2172-3.
3. Kuriyan R, Rajendran R, Bantwal G, Kurpad AV. Effect of supplementation of Coccinia cordifolia extract on newly detected diabetic patients. Diabetes care. 2008 Feb 1;31(2):216-20.https://doi.org/10.2337/dc07-1591
4. Behrman, R. E., Kliegman, R., Schor, N. F., W., S. G. J., Stanton, B., & Nelson, W. E. (2020). Chapter 111. In Nelson Textbook of Pediatrics. essay, Elsevier Inc.
5. NHS. (n.d.). Prolonged fast test. NHS choices.
6. Munasinghe MA, Abeysena C, Yaddehige IS, Vidanapathirana T, Piyumal KP. Blood sugar lowering effect of Coccinia grandis (L.) J. Voigt: path for a new drug for diabetes mellitus. Journal of Diabetes Research. 2011 Jan 1;2011. Available at: https://pubmed.ncbi.nlm.nih.gov/21822423/.