Case Study

A Toddler With Adrenal Calcification Caused By Enterovirus

Dr Chandima De Alwis, Dr Choong Wong, Dr Thankappan Sham Kumar
Bathurst Base Hospital, Howick Street, Bathurst, NSW, Australia.

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ABSTRACT

A 22 month old boy was incidentally found to have unilateral adrenal calcification. He has had a severe enterovirus infection at 13 months. We postulate severe enterovirus infection on the verge of infancy caused adrenal calcification.

Keywords:
Adrenal calcification, Enterovirus

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Corresponding Author: Chandima De Alwis, Department of Paediatrics, Bathurst Base Hospital, Howick Street, Bathurst, NSW, 2795, Australia.
INTRODUCTION:
A 22 month old boy presented to the emergency department with a history of ingesting two button batteries. He was asymptomatic. Plain radiograph of the chest and abdomen showed an irregular, spiculated opacity in the right upper abdomen, between the 11th and 12th ribs (fig 1). The opacity did not resemble button batteries. Subsequent radiographs continued to show the opacity at the same location, hence an abdominal ultrasound was performed. It showed right adrenal gland calcification. A low dose computed tomography of upper abdomen confirmed that the entire right adrenal gland is calcified. The left adrenal gland was normal and no mass was encountered in both adrenal glands and abdomen. (fig 2).

He was born via a normal vaginal delivery and neonatal period was unremarkable. The developmental milestones were reached in an age-appropriate manner. There was no overseas travel; no contact with a patient with tuberculosis and nil significant health issues in the family. At the age of 13 months, he had been admitted to the hospital with a fever, severe generalised maculo-papular rash and persistent tachycardia. The swabs from the rash were positive for Enterovirus (fig 3).
Fig: 3

At 7 months of age he developed bronchiolitis and a plain radiograph showed peri-bronchial shadows but no calcification in the upper abdomen. Anthropometry at 22 months, showed a weight of 14.7 kg (at 97th centile) and the height was 87 cm (at 50th centile). Vitals signs including blood pressure were normal and no abnormal physical examination finding was encountered.

The laboratory investigations demonstrated normal renal and liver functions, blood glucose, full blood count and early morning cortisol. Spot urine for Vanillylmandelic Acid (VMA) and Homovanillic Acid (HVA) were normal.

DISCUSSION
Calcification of the adrenal gland could be caused by a broad variety of causes and it is an indication of a pathological process and requires further evaluation. The finding of adrenal calcification in this child was incidental.

The commonest cause of adrenal calcification in children is neonatal adrenal haemorrhage following a perinatal insult\(^1\). Our patient’s perinatal history was unremarkable. He had an abdominal ultrasound in his fourth week of life to monitor renal pelvi-calyceal dilatation noted in the antenatal period. Reviewing the ultrasound scan pictures the radiologist confirmed that there was nil enlargement nor haemorrhage of the adrenal glands at the age of four weeks and his kidneys were normal. During his admission for bronchiolitis at the age of seven months, a plain chest radiograph had been performed. Peribronchial shadows were noted on the radiograph, however, there were no calcifications in the abdomen. Absence of perinatal complications, normal adrenal glands noted on an ultrasound at 4 weeks and absence of calcification on a plain chest radiograph at 7 months makes neonatal adrenal haemorrhage an unlikely cause of adrenal calcification in this case.

If there is a mass associated with the calcification of the adrenal gland, various benign and malignant adrenal tumours including neuroblastoma, ganglioneuroma and phaeochromocytoma should be considered. Our patient did not have an associated mass on the computer tomography. Further his blood pressure, VMA and HVA were normal.

Other rare causes of adrenal calcification are Addison’s disease, Wolman disease, Nieman- Pick Disease and bacterial and viral infections\(^3,4\). Normal blood pressure, blood glucose, electrolytes and early morning cortisol makes Addison’s disease unlikely. Wolman disease and Niemann –Pick disease are metabolic disorders associated with severe developmental delay and hepato spleno megaly. Our patients neuro-development was normal and there was no organomegaly. Granulomatous infections like tuberculosis and viral infections like neonatal Herpes simplex virus and cytomegalovirus infections could cause adrenal calcification\(^3,4\). There was no history of...
overseas travel, no contact with a patient with tuberculosis and no evidence of HSV or CMV excluding the possibility of those infections. Our patient had a severe enterovirus infection with fever, extensive maculo-papular rash and persistent tachycardia suggestive of an enteroviraemia at 13 months of age. Enterovirus infection of the neonate is known to affect the adrenal gland. It could cause an adrenalitis or adrenal haemorrhage which could possibly lead to calcification. We would postulate that our patient had a severe enterovirus infection on the verge of infancy affecting adrenal gland leading to adrenal calcification which was accidentally detected at 22 months. An extensive literature search could not find that this has been reported before.

LEARNING POINTS
Adrenal calcification needs careful evaluation. Enterovirus infection should be considered as an etiological agent.

REFERENCES:
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