

UNCOMPROMISED UNILATERAL ADRENAL CALCIFICATION FOLLOWING A COMPLICATED BIRTH EVENT IN AN ADULT DEATH DUE TO HANGING

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Introduction

Adrenal gland calcification often indicates a significant pathological process and warrants further investigation to determine the aetiology. This condition could be seen in all the age groups including the neonates, infants and in adults^{1,2}. A variety of causes could cause this condition²⁻¹⁰. However, most of the published literature on this topic based upon radiological findings in clinical cases and autopsy based reports are rare. This communication highlights a rare case of uncompromised unilateral adrenal calcification in an adult with a history of complicated birth events. The study is based upon historical, autopsy and histopathological findings.

Case report

A 31-year-old man with previous suicide attempts and ideation was found hanging partially by an electrical cord in his room. The room was locked from within. The scene was undisturbed and a suicidal note was found.

At autopsy, the deceased was well built and nourished with a body weight of 74 Kg and a height of 173.0 cm. There were multiple bilateral conjunctival petechiae. External examination of the neck revealed a 41.0 cm abraded contusion which was seen right around. It started from the back of the neck. The starting point was 1.0 cm right and lateral to the posterior midline and on the posterior hairline. This went down towards the right side of the neck and became more or less transverse and started to rise from the left side of the neck anteriorly. It then rose on the left side of the neck and ended just above the posterior hairline on the left. The width of the ligature mark was 0.9 cm. The ligature mark was compatible with the electrical cord provided by the police. The dry neck dissection did not show any internal injuries. The lungs were congested and oedematous.

Both adrenal glands were normal in shape and size and no mass was found. However, the right adrenal gland showed a hard gritty nature upon cutting and revealed a 3.0 x 2.0 x 2.5 mm

yellowish brown coloured area of calcification in the medulla. The adrenal cortex appeared normal. There were no hemorrhages, neoplasms, or cysts associated with the adrenal glands.

Histology revealed calcification in the adrenal gland mainly affecting the medulla (*Fig 1*). There were no haemosiderin laden macrophages in the adrenal gland. No other significant histopathological finding was noted in the adrenal gland or in other organs. The cause of death was concluded as hanging.

Supplementary information gained retrospective to the autopsy revealed that the deceased had a complicated birth history. The deceased was born to a diabetic mother with a birth weight of 4120 g. The delivery was complicated by meconium aspiration and managed by forceps extraction and subsequent intensive care unit admission as a newborn.

Discussion

A variety of conditions could cause adrenal gland calcification. They include adrenal haemorrhages², tuberculosis², Addison's disease², Wolman's disease², adrenal neoplasm such as adenocarcinoma², neuroblastoma^{4,5}, pheochromocytoma⁶, ganglioneuroma⁴, Cushing's syndrome⁷, Niemann Pick's disease⁸, adrenal cysts⁹, and adenomas¹⁰.

In the present case, the past medical history, family history or pathological evidence did not suggest tuberculosis, neoplasm, Cushing's syndrome or pheochromocytoma. Niemann-Pick disease is manifested by hepatosplenomegaly and positive family history¹¹, and they were absent in this case. Wolman's disease is characterized by hepatosplenomegaly, lymphadenopathy, and abnormal neurological development with adrenal calcification in the first week of life and is nearly always fatal before the age of one year³. Presence of adrenal gland excludes Addison's disease in this individual.

The deceased was born to a mother who suffered from gestational diabetes during the pregnancy.

As a result, the deceased was 4120 g in birth weight and had an obstructed delivery with meconium aspiration leading to a forceps delivery. Subsequently, he was in the intensive baby care unit for a period of eight days. These events would have caused peri and post natal stress, which could have led to adrenal haemorrhages, followed by subsequent calcification. Neonatal adrenal haemorrhage with subsequent calcification is often attributed to trauma or a stressful situation¹² such as vigorous uterine contractions, difficult labour, prolonged delivery, vigorous resuscitation of the newborn, and forceps delivery². The relatively large size and hypervascular nature of the adrenal glands at birth render it more vulnerable to injury, haemorrhage and subsequent calcification¹². When the adrenal gland is calcified but no mass is found, the calcification is usually assumed to be due to prior adrenal haemorrhage¹³. In the present

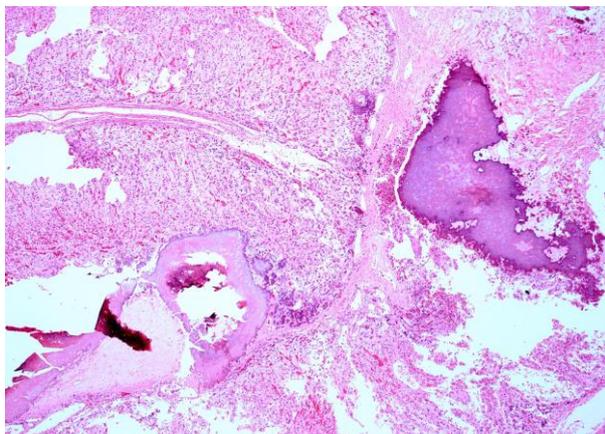


Figure 1: Microscopic appearance of the right adrenal gland showing calcification in the medulla (Haematoxylin & Eosin X 40).

case, the absence of haemosiderin laden macrophages excludes any recent adrenal haemorrhage as the aetiology for calcification.

This individual had an insignificant past medical history although he had a unilateral adrenal calcification. This could be explained by the compensatory function of the other adrenal gland and by the fact that even extensive adrenal calcification may be compatible with completely normal adrenal function¹⁴.

Thus, this communication reports an autopsy case of uncompromised unilateral adrenal gland calcification due to adrenal haemorrhages following complicated birth events. Although rare, adrenal gland calcification often gives a clue to the aetiological pathological process which could be elicited by further detailed investigation.

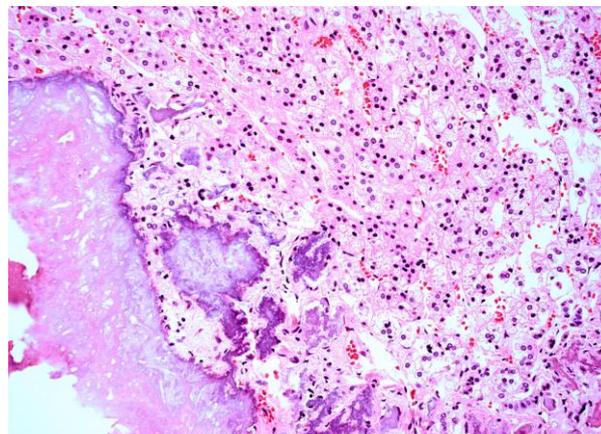


Figure 2: The Microscopic appearance of the adrenal medulla, with a higher magnification (Haematoxylin & Eosin X 200).

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