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ANALYSIS OF CONGENITAL ADRENAL HYPERPLASIA WITH CHOLESTATIC JAUNDICE IN PAKISTAN

[1]Dr Zarka Batool, [2]Dr Imama Jamal, [3]Dr Qamar Abbas

[1]Women Medical Officer at DHQ hospital, Layyah, [2]Women Medical Officer at RHC Chak 110, Layyah, [3]Medical Officer at RHC Chak 110, Layyah

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Abstract:

Introduction: *The term Congenital Adrenal Hyperplasia (CAH) describes a group of autosomal recessive disorders with a defect in the biosynthesis of Cortisol, and presents with consequent over production of adrenocorticotropic hormone (ACTH) and secondary adrenal hyperplasia.*

Aims and objectives: *The basic aim of the study is to analyze the cases of congenital adrenal hyperplasia with cholestatic jaundice in Pakistan.*

Material and methods: *This case study analysis was conducted in DHQ hospital, Layyah during October 2018 to December 2018. The data were collected from 10 infants from the hospital. All were full-term babies of consanguineous parents with normal birth weights. The postnatal period was uneventful apart from jaundice that started during the first week. The neonate was an outcome of consanguineous marriage, born at term through a normal vaginal delivery, with a birth weight of 3.15 kg.*

Results: *The data was collected from 10 infants from which 4 males and 6 females. On examination, child was noticed to have a dark complexion in comparison to the parents and was icteric. Weight at the time of presentation was 2800 gm, length 54 cm and Occipital Frontal Circumference of 36 cm; blood pressure was 68/46mmHg (90th centile). Systemic examination showed some dehydration, but was otherwise normal with no visceromegaly appreciated. External genitalia were darkly pigmented, with normal phallus (3cm in length) and bilaterally descended testis.*

Conclusion: *It is concluded that AH may present itself with persistent conjugated hyper-bilirubinaemia leading to difficulty in its diagnosis, with an extensive workup or even surgical intervention required.*

Corresponding author:

Dr. Zarka Batool,

Women Medical Officer at DHQ hospital, Layyah.

QR code

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INTRODUCTION:

The term Congenital Adrenal Hyperplasia (CAH) describes a group of autosomal recessive disorders with a defect in the biosynthesis of Cortisol, and presents with consequent over production of adrenocorticotropic hormone (ACTH) and secondary adrenal hyperplasia. An enzymatic defect in 11-beta-hydroxylase is the second most common variant of CAH, and accounts for less than 5% of cases [1]. During the neonatal and early infancy period, the liver is vulnerable to injury by different mechanisms because of the relative immaturity of the synthetic and excretory functions of bile acid and bilirubin. As a result, injury to the neonatal liver by infectious, metabolic, endocrine, storage, or hypoxic/ischemic diseases results ultimately in cholestatic hepatitis [2]. Multiple hormonal deficiencies (cortisol, growth hormone, thyroxin), associated with congenital panhypopituitarism, caused around 50 cases of cholestasis in neonates and young infants, as reported in the literature [3].

The identity of the hormone whose deficiency causes such derangement of the liver is not clear. Some authors suggested that growth hormone deficiency is the major cause of cholestasis. Only a handful of cases have been reported about the possible role of isolated cortisol deficiency in inducing neonatal cholestasis [4]. Patients with this enzymatic defect present with features of androgen excess, which include virilization in females and precocious puberty in male children [5]. Approximately two thirds of the patients also present with hypertension, which may or may not be associated with mineralocorticoid excess, hyperkalaemia and metabolic alkalosis [6].

Congenital adrenal hyperplasia (CAH) comprises a family of autosomal recessive disorders involving impaired synthesis of cortisol. Similar to other chronic pediatric conditions, CAH has drawn the attention of clinical researchers interested in the psychological sequelae of the condition and factors contributing to variability in both physical health and quality of life outcomes of affected persons [7].

In most patients with classic congenital adrenal hyperplasia (CAH), both cortisol and aldosterone production are impaired while adrenal androgen production is excessive. As a result of the lack of the vital hormones cortisol and aldosterone, patients are susceptible to potentially lethal adrenal insufficiency if untreated [8]. Thus, emergency and critical care personnel must consider the diagnosis in patients presenting in shock. Excess androgen production, a side effect of 21-hydroxylase deficiency, causes genital ambiguity in females along with various endocrinologic, gynecologic, and reproductive complications [9]. Men with CAH may also have reproductive and endocrine problems, most notably testicular adrenal rest tumors and oligospermia.

Aims and objectives

The basic aim of the study is to analyze the cases of congenital adrenal hyperplasia with cholestatic jaundice in Pakistan.

MATERIAL AND METHODS:

This case study analysis was conducted in DHQ hospital, Layyah during October 2018 to December 2018. The data were collected from 10 infants from the hospital. All were full-term babies of consanguineous parents with normal birth weights. The postnatal period was uneventful apart from jaundice that started during the first week. The neonate was an outcome of consanguineous marriage, born at term through a normal vaginal delivery, with a birth weight of 3.15 kg. He developed persistent jaundice since the third day of life and vomiting at the end of second week of life. He was exclusively breastfed and contents of vomitus were only ingested milk, it was non projectile and non-bilious. The child was afebrile throughout with normal appetite, but progressively decreased activity. There were no complaints of diarrhoea but his stools were intermittently clay colored. On the 25th day of life he developed reluctance to feed, for which he was referred to the hospital. No similar presentation or family history of other features of liver or endocrine disease was reported.

Statistical analysis

The data was entered manually into the SPSS Statistics, version 17.0 (IBM SPSS Inc., Chicago, IL).

RESULTS:

The data was collected from 10 infants from which 4 males and 6 females. On examination, child was noticed to have a dark complexion in comparison to the parents and was icteric. Weight at the time of presentation was 2800 gm, length 54 cm and Occipital Frontal Circumference of 36 cm; blood pressure was 68/46mmHg (90th centile). Systemic examination showed some dehydration, but was otherwise normal with no visceromegaly appreciated. External genitalia were darkly pigmented, with normal phallus (3cm in length) and bilaterally descended testis. On laboratory workup his septic screening was negative and the infant had persistent hyponatraemia (123mEq/L) and hyperkalaemia (7.5mEq/L) with normal urea and creatinine values hence adrenal work up was done that is shown in Table-1.

Table 01: adrenal test workup in patients

Test Name	Test Result	Normal Value
ACTH	237pg/ml	Normal upto 46pg/ml
Plasma Renin	2.9ng/ml/h	Normal upto 3.5ng/ml/h
Serum Aldosterone	59ng/ml	Normal upto 31ng/ml
Cortisol	2.8µg/dl	Normal A:M: 3.7-19.4 µg/dl
17 hydroxy progesterone	20 ng/ml	Normal 0.03-0.90ng/ml

DISCUSSION:

Congenital Adrenal Hyperplasia is a rare disease with an incidence of common variety of CAH of only 1:16000 to 1:20000 live births. Five kinds of various enzyme deficiencies are recognized for CAH, we present one of the rarer forms; 11-beta hydroxylase deficiency. With an incidence of 1: 100,000 live births this is due to the mutation of the CYP 11 beta 1 gene on the 8q21-q22. 11-beta hydroxylase mediates the final step in the glucocorticoid pathway and the conversion of 11-deoxycorticosterone (DOC) into corticosterone [8]. Deficiency of the enzyme results in excessive levels of 11-deoxycorticosterone and Dehydroepiandrosterone (DHEA) causing hypertension and virilization in females and precocious puberty in males. The mineralocorticoid manifestations are biphasic [9]. Salt wasting in early infancy followed later by hypertension in mid childhood, due to extreme over production of deoxycorticosterone. To the best of our knowledge, this is one of the first case reports of CAH with cholestatic jaundice, from Pakistan, with only one case of "Lipoid Congenital Adrenal Hyperplasia Presenting with Cholestasis" reported from Iran [10]. Neonatal cholestasis is defined as prolonged conjugated Hyperbilirubinemia, typically lasting more than two weeks and affects approximately 1 in 2500 births [11]. The evaluation of neonatal Cholestasis may appear complicated because of the large number of potential diagnosis such as, biliary atresia, congenital panhypopituitarism, congenital adrenal hyperplasia, neonatal lupus and pseudohypoaldosteronism [12].

CONCLUSION:

It is concluded that AH may present itself with persistent conjugated hyperbilirubinaemia leading to difficulty in its diagnosis, with an extensive workup or even surgical intervention required. However, apt identification can lead to the treatment, which is uncomplicated and results in rapid recovery of the patient.

REFERENCES:

1. Sparrow R: Gender eugenics? The ethics of PGD for intersex conditions. *Am J Bioeth.* 2013;13(10):29–38. 10.1080/15265161.2013.828115
2. Miller WL, Witchel SF: Prenatal treatment of congenital adrenal hyperplasia: risks outweigh benefits.*Am J Obstet Gynecol.* 2013;208(5):354–9. 10.1016/j.ajog.2012.10.885
3. Hirvikoski T, Nordenström A, Wedell A, et al. : Prenatal dexamethasone treatment of children at risk for congenital adrenal hyperplasia: the Swedish experience and standpoint. *J Clin Endocrinol Metab.*2012;97(6):1881–3. 10.1210/jc.2012-1222
4. Verma S, Vanryzin C, Sinaii N, et al. : A pharmacokinetic and pharmacodynamic study of delayed- and extended-release hydrocortisone (Chronocort) *vs.* conventional hydrocortisone (Cortef) in the treatment of congenital adrenal hyperplasia. *Clin Endocrinol (Oxf).* 2010;72(4):441–7.
5. Mallappa A, Sinaii N, Kumar P, et al. : A phase 2 study of Chronocort, a modified-release formulation of hydrocortisone, in the treatment of adults with classic congenital adrenal hyperplasia. *J Clin Endocrinol Metab.* 2015;100(3):1137–45.
6. Muthusamy K, Elamin MB, Smushkin G, et al. : Clinical review: Adult height in patients with congenital adrenal hyperplasia: a systematic review and metaanalysis. *J Clin Endocrinol Metab.*2010;95(9):4161–72.
7. Falhammar H, Frisén L, Norrby C, et al. : Increased mortality in patients with congenital adrenal hyperplasia due to 21-hydroxylase deficiency. *J Clin Endocrinol Metab.* 2014;99(12):E2715–21.
8. Arlt W, Willis DS, Wild SH, et al. : Health status of adults with congenital adrenal hyperplasia: a cohort study of 203 patients. *J Clin Endocrinol Metab.* 2010;95(11):5110–21.

9. Gilban DL, Alves Junior PA, Beserra IC: Health related quality of life of children and adolescents with congenital adrenal hyperplasia in Brazil. *Health Qual Life Outcomes.* 2014;12:107.
10. Strandqvist A, Falhammar H, Lichtenstein P, et al. : Suboptimal psychosocial outcomes in patients with congenital adrenal hyperplasia: epidemiological studies in a nonbiased national cohort in Sweden. *J Clin Endocrinol Metab.* 2014;99(4):1425–32. 10.1210/jc.2013-3326 [PubMed] [CrossRef] F1000 Recommendation
11. 18. Nordenström A, Frisén L, Falhammar H, et al. : Sexual function and surgical outcome in women with congenital adrenal hyperplasia due to *CYP21A2* deficiency: clinical perspective and the patients' perception. *J Clin Endocrinol Metab.* 2010;95(8):3633–40.
12. Berenbaum SA, Bailey JM: Effects on gender identity of prenatal androgens and genital appearance: evidence from girls with congenital adrenal hyperplasia. *J Clin Endocrinol Metab.* 2003;88(3):1102–6.