The incidence and presentation of congenital adrenal hyperplasia

T.A. Conlon1,2, CP Hawkes1,4, J.J. Brady2,4, NP Murphy 1,2

1Department of Paediatric Endocrinology, Children’s Health Ireland at Temple Street, Dublin 1, Ireland.
2School of Medicine, University College Dublin, Dublin 4, Ireland.
3Division of Endocrinology and Diabetes, The Children’s Hospital of Philadelphia, Philadelphia, USA.
4Pennian School of Medicine, University of Pennsylvania, Philadelphia, USA.

The authors are grateful to colleagues nationally who supported the data collection for this study.

Correspondence to: Dr Tracey Anne Conlon, Clinical Research Fellow, Department of Endocrinology, CHI at Temple Street.
Tracey.conlon@cuh.ie

INTRODUCTION

- Worldwide, the reported incidence of congenital adrenal hyperplasia (CAH) ranges from 1:1,000 to 1:2,000 live births and it is more prevalent in small, genetically isolated populations [1].
- A wide spectrum of severity of illness at presentation ranging from life-threatening salt-wasting in infancy to milder simple virilisation and non-classical presentations [2].
- Diagnosis of CAH may be delayed in an unscreened population, for more than 95% of cases [1].
- Hydroxylase deficiency (caused by mutations in CYP21A2) is prevalent in small, genetically isolated populations [1].
- 21 worldwide, the reported incidence of congenital adrenal hyperplasia is 1:14,754 or 0.07 cases per 1000 births giving an overall annualised incidence of 69 children born in this period were diagnosed with CAH, cases per 1000 births or 0.07 [3,4,5].
- The severity of illness in infants at diagnosis of CAH in the Republic of Ireland over a 15-year period.

RESULTS

Overall incidence of CAH
- There were 1,018,056 live births in the Republic of Ireland between January 2005 and December 2019.
- 69 children born in this period were diagnosed with CAH, giving an overall annualised incidence of 1:14,754 or 0.07 cases per 1000 births.

Flow diagram of case notifications, excluded cases and early clinical presentations

Infants diagnosed before six months of age
- Of the 47 early presentations, 39 (83%) presented in the first thirty days and 24 (51%) before day ten.
- Females presented at a median of 0 days (IQR 0-1) and males at 14 days (IQR 9-21) (p=0.001).

The median time to 17OHP result from sampling was 6 days (IQR 4-10) and the median age at 17-hydroxypregesterone (17OHP) result was 15 days (IQR 9-26). Only 17 infants had received a definitive diagnosis by day 10. Electrolyte abnormalities were more commonly seen in infants presenting later.

The diagnosis of CAH may be delayed in an unscreened population, for more than 95% of cases [1].

CAH is a treatable genetic condition, which is associated with significant morbidity at the time of presentation in an unscreened population.

In the absence of universal newborn screening (NBS), rapid access to 17OHP testing is required to ensure prompt diagnosis when a clinical suspicion of CAH is raised. CAH screening has been recommended [1,4], as it reduces mortality and adverse outcomes from late diagnosis and is cost effective [5].

We recommend that NBS for CAH should be added to the Irish National Newborn Screening Programme to identify children prior to the development of the clinical complications described in this study.