

The epidemiology of growth hormone deficiency – a nationwide study

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ABSTRACT

This PhD dissertation was carried out at Medical Department M, Aarhus University Hospital.

In this registry study, we aimed to describe the incidence, the prevalence, the mortality and the morbidity of GHD in Denmark.

Using three national registries we identified a primary cohort of 9,131 cases with an increased risk of growth hormone deficiency (GHD). All available records (N=8,233) were studied at the respective hospitals. The criteria of GHD were fulfilled for 2,205 patients. During 1980-1999 1,823 patients were considered incidents.

We divided the patients into childhood onset (CO), children younger than eighteen years of age; and adult onset (AO), patients eighteen years of age or more at onset of GHD. The incidence rates (IR) of CO, both genders, and AO males increased significantly during the study period, whereas it was constant for AO females. The average IR were 2.6 (2.3-2.9) for CO males, 1.7 (1.5-2.0) for CO females, 1.9 (1.8-2.0) for AO males, and 1.4 (1.3-1.5) for AO females, all per 100,000 citizens. Furthermore, we identified a significantly increased IR in males compared to females, this applied to CO and AO GHD.

We identified 8,014 controls matched on age and gender. We identified all causes of deaths before 31st December 2001 for patients and controls. The HR was 8.3 (4.5-15.1) for CO males, 9.4 (4.6-19.4) for CO females, for AO males 1.9 (1.7-2.2), and for AO females 3.4 (2.9-4.0). We divided the causes of deaths into twenty ICD-10 chapters to analyze cause specific mortality. For AO the increased mortality was especially due to the cardiovascular system, cancer, and endocrine diseases; for CO the increased mortality was especially due to cancer. Mortality was significantly higher in AO females vs. males both relative to controls, whereas there was no difference when comparing AO female and male patients.

We identified all diagnoses at discharge during 1980-2004. We used lag-time from the date of onset of GHD until first relevant admission to a hospital as a measure of morbidity. The HR was 3.1 (2.7-3.7) for CO males, 3.3 (2.7-4.1) for CO females, 2.9 (2.6-3.2) for AO males, and 3.2 (2.8-3.6) for AO females. We divided the diagnoses into twenty ICD-10 chapters to identify specific causes of morbidity. In eighteen chapters we identified significantly increased morbidity for at least one of the four subgroups of GHD patients. In the following chapters all four subgroups showed significantly increased morbidity: Infections, cancer, endocrine diseases, the CNS, the eye, the ear, the circulatory system, the respiratory system, the genitourinary system, due to trauma, and "observations". HR was significantly decreased due to pregnancy and childbirth for CO and AO females.