Research in Developmental Disabilities 53-54 (2016) 115–126

Contents lists available at ScienceDirect

Research in Developmental Disabilities

A 3-year follow-up study on cardiovascular disease and mortality in older people with intellectual disabilities

C.F. de Winter [a,b,*], A.P.J. van den Berge [a], J.D. Schoufour [a], A. Oppewal [a], H.M. Evenhuis [a]

[a] Intellectual Disability Medicine, Erasmus Medical Center Rotterdam, Department of General Practice, Rotterdam, The Netherlands
[b] Reinaerde, Den Dolder, The Netherlands

ARTICLE INFO

Article history:
Received 23 July 2015
Received in revised form 21 January 2016
Accepted 28 January 2016
Available online 11 February 2016

Keywords:
Intellectual disability
Cardiovascular disease
Risk factors
Myocardial infarction
Stroke
Heart failure
Epidemiology

ABSTRACT

Background: With increasing longevity and a similar or increased prevalence of cardiovascular disease risk factors (as compared to the general population), people with intellectual disabilities (IDs) are at risk of developing cardiovascular disease. However, prospective studies on incidence and influencing factors of cardiovascular disease and mortality are lacking.

Methods: A three year follow-up study was undertaken to study the incidence and symptoms at presentation of myocardial accident, stroke and heart failure in older people with ID. Furthermore, the predictive value of cardiovascular disease risk factors on myocardial accident, stroke and heart failure and on all-cause mortality were studied. The baseline group consisted of the 1050 participants, aged 50 years and over, in the Dutch Healthy Ageing and Intellectual Disability (HA-ID) study. Baseline measurements were conducted between November 2008 and July 2010. Three years after baseline, medical files of 790 participants were studied.

Results: Cardiovascular disease (myocardial infarction, stroke and heart failure) occurred in 5.9% of the population during 3 year follow-up, and 32% of them died due to the condition. Incidence of myocardial infarction is 2.8 per 1000 personyears, for stroke 3.2 per 1000 personyears and for heart failure 12.5 per 1000 personyears. Incidence of these conditions is probably underestimated, due to atypical symptom presentation. The use of atypical antipsychotics and a history of heart failure were predictive for myocardial infarction. Heart failure was predicted by abdominal obesity, chronic kidney disease and a history of heart failure. A total of cardiovascular disease (myocardial infarction, stroke or heart failure) was predicted by abdominal obesity, a history of stroke and a history of heart failure. A low body-mass index, peripheral arterial disease, chronic kidney disease and inflammation were predictive for 3-year all-cause mortality.

Conclusion: Incidence of cardiovascular disease in older people with ID is similar to that in the general population. A pro-active assessment and treatment of the presented cardiovascular disease risk factors may reduce cardiovascular disease and mortality in older people with ID.

* Corresponding author at: Reinaerde, Dolderseweg 170, 3734 BP Den Dolder, The Netherlands.
E-mail address: channadewinter@hotmail.com (C.F. de Winter).

http://dx.doi.org/10.1016/j.ridd.2016.01.020
0891-4222/

1. Introduction

With increasing longevity, people with intellectual disabilities (IDs) reach almost the same age as the general population. Age related health problems thus become an increasing burden of disease (Dixon-Ibarra & Horner-Johnson, 2014). Cardiovascular disease (CVD) is now one of the most important causes of death among people with ID (Patja, Molsa, & Iivanainen, 2001; Tyrer & McGrother, 2009). Apart from congenital heart disease, related to the cause of the ID, most CVDs are caused by lifestyle related risk factors. We have established that these CVD risk factors occur at least as often in people with ID as in the same aged general population (de Winter, Magilsen, van Alfen, Penning, & Evenhuis, 2009; de Winter, Magilsen, van Alfen, Willemsen, & Evenhuis, 2011; de Winter, Bastiaanse, Hilgenkamp, Evenhuis, & Echteld, 2012a, 2012b; Dixon-Ibarra & Horner-Johnson, 2014). Especially people with a more mild level of ID, who live more independently and can make their own lifestyle decisions are at risk of developing obesity, hypertension, hypercholesterolemia, diabetes and the metabolic syndrome (de Winter, Bastiaanse, Hilgenkamp, Evenhuis, & Echteld, 2012a), which can cause CVD. Only in people with Down syndrome a lower prevalence of cardiovascular disease risk factors has been found (de Winter et al., 2012a), probably due to a protective mechanism as part of the genetic syndrome (Coppus et al., 2008). Another influencing factor is that people with IDs and challenging behaviour are often treated off label with antipsychotic drugs (de Kuijper et al., 2010). Especially the atypical (new generation) antipsychotics cause obesity and the metabolic syndrome (de Kuijper et al., 2013). In the general population it has been established that people who use atypical antipsychotics have an increased risk of CVD (Bhuvaneswar, Baldessarini, Harsh, & Alpert, 2009; Newcomer, 2007). People with ID have been shown to develop peripheral arterial disease (atherosclerosis distal from the aortic bifurcation) early in life (from age 40) (Zaal-Schuller et al., 2014). When they are older (50 years and over) have a significant higher prevalence than people from the same aged general population (de Winter, Bastiaanse, Hilgenkamp, Evenhuis, & Echteld, 2013). When peripheral arterial disease is present, it is not only a first sign of atherosclerosis in the body, it also indicates a significant risk of developing atherosclerosis in other vessels, which can result in myocardial infarction or stroke.

The predictive value of CVD risk factors on CVD morbidity and mortality in people with ID has not been studied before. Retrospective file studies suggest that incidence and prevalence of atherosclerotic CVD in older people with ID are equal to that in the general population (Jansen, Rozeboom, Penning, & Evenhuis, 2013; van den Akker, Maaskant, & van der Meijden, 2006). There are indications of underdiagnosis of particularly myocardial infarction, which may suggest that the actual prevalence and incidence are higher than found in a comparative study (Jansen et al., 2013). But symptoms at presentation have not been studied before, and prospective research with well-defined outcome measures on CVD in older people with ID is lacking. This information is needed to determine whether risk profiles differ in people with ID, and if current CVD prevention guidelines for the general population can be followed or if they should be adjusted for people with ID. Besides CVD morbidity, prevention guidelines and policy on treatment of risk factors are also based on calculations of all-cause mortality (NHG, 2012b; Perk et al., 2012). Therefore, we designed a prospective study on CVD and all-cause mortality in a representative population of older people with ID. There were four main aims of the study. The first was to study the 3-year incidence of cardiovascular morbidity (myocardial infarction, stroke, heart failure). Secondly, we studied the reported symptoms of cardiovascular events and which interventions had been undertaken. Third, we studied which cardiovascular disease risk factors or patient characteristics (gender, age, level of ID, Down syndrome, living arrangement, mobility, physical activity, hypertension, hypercholesterolemia, diabetes, obesity, smoking, peripheral arterial disease, use of atypical antipsychotics, chronic kidney disease, metabolic syndrome, c-reactive protein, history of cardiovascular disease) were predictive for 3-year incidence of cardiovascular morbidity. The fourth aim was to study which cardiovascular disease risk factors were predictive for 3-year all-cause mortality.

2. Methods

2.1. Design and participants

This was a three year prospective follow-up study to the 'Healthy ageing and intellectual disabilities' (HA-ID) study. The HA-ID study is an observational study on physical and mental health in older people with ID using formal care in The Netherlands, which included cardiovascular disease and disease risk factors (Hilgenkamp, Bastiaanse, et al., 2011; Hilgenkamp, Reis, van Wijck, & Evenhuis, 2011). Details about recruitment, design, inclusion criteria and representativeness have been previously published (Hilgenkamp, Bastiaanse, et al., 2011). All clients of three care organisations from different parts of The Netherlands aged 50 years and over were invited to participate ($N = 2322$). Those capable of understanding the available information signed the consent form themselves. Legal representatives were approached for those who were not able to make this decision. Written informed consent for participation and publication was provided for 1050 clients, forming a nearly representative study population for the Dutch population of older adults (aged 50 and over) with ID who use formal care. Cross-sectional baseline assessments were performed between February 2009 and July 2010.

This paper consists of two parts. The first part is on the 3-year follow-up study on incidence of cardiovascular morbidity (study question 1, 2, 3). The second part is on the effect of cardiovascular disease risk factors on all-cause mortality (study question 4). For the follow-up study on incidence of cardiovascular morbidity, the participants, or their legal representatives, who still received care of the care providing organisations, were asked again to provide written informed consent. Only those