The leading cause of death for people with Down syndrome is Alzheimer’s disease and its complications (Fortea). Down syndrome is the most common genetic condition in the United States and nearly all the individuals with Down syndrome will develop Alzheimer’s disease (Hartley). Over the last 30 years the life expectancy for people who has Down syndrome has more than doubled. With the life expectancy rising for this particular group of people, their risk for developing Alzheimer’s disease increases by default. Individuals with Down syndrome represent the largest group who develop early onset Alzheimer’s disease under the age of 65 (Hartley).

Medical professionals have been able to identify people who have Down syndrome before they’re born or shortly after. This may make it possible for prevention of Alzheimer’s disease or early intervention. Fortea and his team did a dual-centre cross-sectional study of adults with Down syndrome in Barcelona, Spain. They used adults who had mild to moderate disability were included in this study and one of the Alzheimer’s diseases measures (Fortea). To determine the order and age at onset of the biomarker changes they used first-order scatterplot. They gave the caregivers of the participants a semi-structured adapted health questionnaire for the purpose of dementia diagnosis that covers seven different cognitive domains. They assessed the differences in baseline characteristics between their diagnostic groups using the Kruskal-Wallis test. The determined the order of the biomarker changes, which was the information using in the scatter plot (Fortea).

The study recruited 388 adults with down syndrome. The number of adults with down syndrome varied with each different biomarker. Fortea and his team observed no clinical evidence of dementia in 66% or 257 of the 388 participants in this study (Fortea). The remaining participants had either prodromal Alzheimer’s disease or Alzheimer’s disease dementia. The median ages were 50 years old for prodromal Alzheimer’s and 53 years for dementia. This study showed that symptoms of Alzheimer’s disease started increasing exponentially from 40 and upwards and getting to 90-100% prevalence by the time they are 70 (Fortea). The strengths of this study were the population size and the wide age rage.

This was the first large multimodal biomarker study that looked at the natural history of Alzheimer’s disease in adults with down syndrome (Fortea). The results of this study support the idea the down syndrome is a form of genetically determined Alzheimer’s disease (Fortea). Their findings of this study support the consideration that individuals with down syndrome are a suitable group of people to participate in the clinical trials of Alzheimer’s disease. The participants of the study were capable and willing to do all the multimodal studies that is needed in clinical trials as well (Fortea). Individuals with down syndrome have not been included in yet in the preventative clinical trials for Alzheimer’s disease.

 Diagnosing dementia in people who have Down syndrome can be difficult because of the baseline functioning of the brain of people who have pre-existing mental disabilities. To help diagnose Alzheimer’s disease activities of daily living (ADLs) are assessed and it can be difficult to evaluate in people with Down syndrome because some of the activities they may have never performed before. To properly determine ADLs of individuals with Down syndrome it needs to be compared to the specific unique intellectual baseline of the person. Because there has been a growing acceptance of individuals with Down syndrome, the care has been improving greatly with education opportunities, medical treatment, and social support because of this their lifespan is also growing which put them at a disadvantage of developing Alzheimer’s. Although the awareness of this is low is has still been recognized.

Works cited

Fortea, Juan et al. Clinical and biomarker changes of Alzheimer's disease in adults with Down syndrome: a cross-sectional study. Lancet (London, England) vol. 395,10242 (2020):1988-1997.

Hartley, Dean et al. down syndrome and Alzheimer’s disease: Common pathways, common goals. Alzheimer’s & dementia: the journal of the Alzheimer’s Association 11, 6, 700-709 (2015)