Biological vulnerability to alcoholism in children of alcoholics

Ratsma, J.E.

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Preface

The child depicted on the cover of this thesis could potentially be exposed to two major risk factors for alcoholism. One such factor is an environment in which alcohol is presented to young children. Another is the presence of an alcoholic mother, who may have passed on a genetic risk of alcoholism to her child. Both an individual’s genes and their environment are involved in the development of alcoholism. Furthermore, the roles of these two factors interact. The pathophysiology of alcoholism deals with inherited pathophysiologic abnormalities that may cause an individual to become an alcoholic. When taking this approach, one has to take into account both an individual’s genes and their environment. The present thesis represents an attempt to increase our understanding of the pathophysiology behind the development of alcoholism. Trait markers or vulnerability markers were studied, because these are the characteristics of an individual that represent a genetic risk of alcoholism. This biological vulnerability to alcoholism may even be present in young children. Thus trait markers are present in an individual long before a disorder, an illness or symptoms have developed. The main subjects of the four studies reported in this thesis are the children of alcoholic parents. This is because these individuals are at increased risk of developing alcoholism, relative to the children of non-alcoholic parents. The benefit of studying trait markers in young high-risk children is that the picture is not distorted by the toxic effects of alcohol. In adult alcoholics, on the other hand, the regular consumption of alcohol may well have an adverse effect on trait markers. However, our interest in the children of alcoholics was not limited to their participation in experimental trait marker
studies. We were also interested in the possible occurrence of psychiatric disorders in these children. In addition, there were the possible environmental and genetic influences that parental alcoholism may have had in terms of psychiatric disorders in these children.

Chapter one, the introduction of this thesis, which takes the form of a review, is an attempt to determine whether indices of changes in neurotransmitter systems could fulfil three specific criteria for trait markers. The second chapter describes the occurrence of psychiatric disorders in the children of alcoholics. There is also an assessment of the influences that parental variables, gender, parental psychiatric co-morbidity and a family history of alcoholism might have on the occurrence of such psychiatric disorders in their children. In the third chapter, stimulated adenylyl cyclase activity in blood platelets was investigated as a possible trait marker. Here, the children of alcoholics were compared to control children. In addition, adenylyl cyclase activity in the children of alcoholics with a multigenerational family history of alcoholism was compared to that in children without any such family history. The fourth chapter contains details of an investigation of P3 (an event-related potential), the A1 allele (a polymorphism of the dopamine D2 receptor gene) and sensation-seeking behaviour in young adult, non-alcoholic children of alcoholics. The aim was to determine whether these three factors represent a single, common risk factor for alcoholism. Finally, an overview was presented in the general discussion to integrate the four chapters of this thesis and the four studies described therein, and to put forward recommendations for further studies.