age his mental age was evaluated as being 5 months.

His feeding difficulty continued and he suffered frequently from dehydration. His abdomen, lumbar region, and pelvis remained remarkably underdeveloped. His maximum lifetime weight was 6.9 kg aged 6 years 2 months. Subsequently, he suffered repeatedly from fever, vomiting, and dehydration and died at the age of 8 years 7 months. His height (crown to rump) at death was 90 cm, weight 4.96 kg, and head circumference 48.2 cm. At necropsy, regurgitant oesophagitis, a poorly developed small intestine, a small, thick walled (approximately 9 mm) urinary bladder, and small undescended testes were found.

The ethics of keeping such a child alive for eight years may seem to be questionable. However, passive euthanasia of such a case as this patient would not be readily acceptable in Japan.

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BOOK REVIEWS

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In the latter part of last century many held the view that alcoholism was inherited. The pendulum of opinion swung, and by the 1960s there was little doubt in the minds of the great majority of its investigators that the origin of alcoholism was psychosocial. Today, with the developing knowledge in genetics, especially in the genetics of behaviour, it is possible to contemplate some genetic contribution to its aetiology. For this several factors are responsible. Numerous diseases are known which result from a combination of genetic and environmental elements. For example, one parallel to alcoholism is cancer of the lung, where the environmental factor is clear but only a proportion of heavy smokers develop the disease. Genetic studies have become possible, and the phenomenon has been better defined, and there are many genetic markers which allow a search for the location of genes producing susceptibility to any disease.

The authors of this book have drawn together almost all the accessible publications on genetic studies of alcoholism and have reviewed them critically. Their object is to make a balanced and present knowledge of the field. They envisage alcoholism as a complex behavioural feature, and apply to it the methods of genetic analysis of behaviour.

Immediately in chapter 1 the principal problems that hinder genetic analyses are squarely faced: problems of definition, measurement of the phenotype, lack of clarity of the underlying biological mechanisms, and therefore of possible functional markers. It concerns types of alcoholics, aetiologic models, measures of alcoholism, and the several hypotheses involving neurobiology. The chapters that follow summarise the different types of study.

Chapter 2 is devoted to family studies, of which there are approximately 200, comparing relatives of different degrees sharing similar family environments. They show familial concentration of alcoholism, so that the risk is greater for a person, particularly for a male, who has numerous alcoholic relatives, and they suggest an aetiological heterogeneity manifesting in variations in the precocity and severity of the condition. The authors identify topics on which future research could most profitably concentrate.

Chapter 3 draws together the numerous twin studies, 34 published in the period 1939 to 1991. These do not exclude genetic influence and indeed strongly suggest to the authors a multifactorial aetiology, the genetic contribution to which is most apparent in male twins who are alcoholic dependent.

The next chapter is devoted to adoption studies, usually considered essential for distinguishing genetic from environmental effects. There have been about a dozen such studies, though the authors show that most of these are biased and use research designs that are not very informative. For example, there is clear evidence from the subgroup of studies which are less open to criticism, namely a link between the biological father and his son brought up by adoptive parents. These sons knew nothing of the behaviour of their biological fathers; their biological mothers as well as their two adoptive parents were effectively non-alcoholic. These findings do not of course provide formal proof, but they favour the hypothesis of a transmission of some genetic factor from the father to the son. The result supports the suggestion from the family and twin studies that there is a dominating male influence.

The studies in chapter 5 complement these classical approaches, for they deal with sibs and half sibs brought up apart and unrelated children brought up together. There are only four studies of this type. Criticisms can be levelled at all, especially in the small number of variables considered or the lack of rigour in their specification, so their findings can only be taken as indications. But despite their drawbacks they support the interpretation from the investigations in the previous chapters that there is some genetic influence on alcoholism.

The crucial proof that there is a genetic contribution to the aetiology of alcoholism will come from the discovery of one or more markers, genes, or DNA segments. The searches for these have been numerous and the authors restrict their surveys to those studies of characters whose chromosomal locations are known. There are 140 such studies, covering more than 50 markers, the majority being searches for association (to establish linkage) and others using other methodologies (to establish location). The studies as a whole, dealt with in chapter 6, show that to date there is no certainty that any of the characters analysed is associated with alcoholism. But there are studies give valuable pointers to the methodological precautions to be taken and the paths to be followed in future investigations. The book closes with a series of 14 appendices, dealing in detail with key topics mentioned in earlier chapters but where fuller consideration would have interrupted the flow of the argument. These topics include for example the principal definitions of alcoholism, its classification, its epidemiology, clinical and biological indicators, and aetiological models of alcoholism proposed in the period 1972 to 1988, ending with those of Donovan and of Duyme and Sonoda. The list of some 850 references covers only those published in English or French.

The conclusions of the authors after their critical examination of hundreds of published works is that it is not yet definitely established that genetic differences between persons account for their variation in behaviour regarding the pathological taking of alcohol. Nevertheless there are strong indications that at least there is a genetic vulnerability to the abuse, or dependence on, alcohol, especially males whose father and several ascendant relatives were alcoholic. The task now for genetic epidemiologists is to find the genes that predispose to the different types of alcoholism.

This book is positively written. From its critical appraisal of existing works, and their lack of conclusive findings, it draws lessons as to the point that future studies should attack and the methodological weaknesses that should be avoided. It is moreover carefully written, well balanced, well organised, and a must for students, research groups involved in the isolation and characterisation of the genes responsible for diverse neuromuscular disorders. This publication is an invaluable compendium of numerous works examined by the authors. It is the most comprehensive survey of the subject yet produced, and one which any investigator of the subject cannot afford to ignore.

D F ROBERTS


As Research Director for the European Neuromuscular Centre (ENMC), Baarn, The Netherlands, A E H Emery has participated in around 30 workshops designed to provide information and standardisation. As a result of those workshops research groups involved in the isolation and characterisation of the genes responsible for diverse neuromuscular disorders. This publication is an invaluable compendium of numerous works examined by the authors. It is the most comprehensive survey of the subject yet produced, and one which any investigator of the subject cannot afford to ignore.