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Ahmed S. Teebi, Talaat I. Farag (eds)

Genetic Disorders among Arab Populations

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This book dedicated to 'The whole Arab family', is definitely of great interest to medical geneticists and related specialists of the whole world. It comprises 19 chapters by 28 contributors mostly from the Arab world, and a foreword by Victor A. McKusick. The book falls in 499 pages.

The text is conveniently classified into five homogeneous sections or parts. Each chapter is provided with its own references.

The main aim of this book was to collect the most commonly reported genetic disorders in Arabs. Therefore it is the first attempt to focus on such an important community genetics topic. The Arab world extends from the Arabian/Persian Gulf in the east to the Atlantic ocean in the west, an area exceeding 4.6 million square miles and more than 240 million people in 22 countries.

The first section comprises 3 chapters summarizing demographic features of Arabs, including population dimensions in the Arab world, its health sector and the endogamy commonly observed in this culture. This section is an asset to a book mainly addressed to physicians who rarely devote their time to digging into community factors which largely influence the genetic pool such as ethnic origin, dynamics of population change, population size, structure, patterns of fertility, mortality, migration, attitudes towards consanguineous marriages, their disadvantages and possible social benefits and their relation to local political and economic trends. Unavoidably, there was some overlap and repetition in the points discussed in the 3 different chapters. Highlighted aspects were not only the similarities but also the differences both within and across the 22 countries of the Arab world.

The second section deals with selected disease entities prevalent among the Arabs. It comprises chapters on hemoglobinopathies in Arab countries, familial paroxysmal polyserositis or familial Mediterranean fever, neuromuscular disorders among Arabs and new syndromes first reported among the Arabs. Each of the chapters provides an overview of the epidemiologic, clinical, genetic and molecular biology of the discussed disorders. Important explanations that account for the high gene frequency of some of these disorders are discussed, such as selective advantage of the heterozygotes and founder effects with subsequent genetic drift.

The relatively high frequency of autosomal recessive disorders, particularly the rare ones, is not unexpected in Arab countries where parental consanguinity is highly prevalent. This was quite evident when available disease frequencies were compared with those from North America and Europe.

Part II Appendix, which lists 115 new single gene syndromes first reported among Arabs, is of particular interest to clinical geneticists and dysmorphologists.

Some of these syndromes may be 'private', but their recognition is essential for proper genetic counseling, particularly of sporadic cases. The markedly high frequency of autosomal recessive (100) relative to autosomal dominant (10) and X-linked syndromes (5) also points to the deleterious health effects of consanguinity.

Some of the reviewed disorders in this section represent important clinical and public health problems in some countries of the Arab world, like hemoglobinopathies and familial Mediterranean fever. Geography rather than common ancestry appears to determine the high frequency of such disorders.

Epidemiological studies in each of the Arab populations are needed for control and preventive programs at the regional level.

The third section 'Genetic Disorders in Arab Countries and Geographic Regions' is divided into the following 7 chapters: genetic disorders among the Egyptians, genetic disorders in Iraq, genetic disorders in Jordanians and Palestinians, genetic disorders in North African populations of the Maghreb, Morocco, Algeria and Tunisia, genetic disorders in Lebanon, genetic disorders in Sudan, genetic disorders in the United Arab Emirates. It is clear that many Arab countries were not included because of the paucity of published information.

The section provides useful reviews of genetic disorders commonly reported from these countries. Each chapter provides a map as well as a pertinent historical background of the discussed country. It is clear from those chapters that genetic disorders have a significant health impact on the Arab community. In the review of genetic disorders among the Egyptians, I would like to clarify that some of the limb malformations quoted by the author, as described in Egyptians, were in fact reported by me in Americans, a notable example is my first identification of Carpenter syndrome as a new genetic entity [Temtamy, 1966], which I described in an American child. This review also lacks numerous local publications and personal observations which were included in reviews of other countries. In the review of genetic disorders in Iraq, table 9-1, there is a mistake where the 2 categories were labelled consanguineous. I think the intended comparison was between consanguineous and nonconsanguineous. In the review of genetic disorders in Lebanon, I think that the proper place for table 11-1 p. 261 would have been on p. 273 where diseases were discussed.

From the available country reviews, it is possible to conclude that all Arab countries suffer from a high burden of autosomal recessive diseases due to the common consanguineous marriages. However, such rare disorders, in large families, provide unique research opportunities for gene mapping of autosomal recessive disorders.

Part four is concerned with genetic studies in isolated and semi-isolated communities. It includes genetic disorders among the Bedouins, the Egyptian Nubian people of Kom Ombo and genetic disorders among Jews from Arab countries. The review of genetic disorders among the Bedouins focuses on conspicuous features like clustering of chromosomal abnormalities and reported mendelizing dis-

orders of which 27 were autosomal dominant, 92 autosomal recessive and 19 X-linked, again with an evident high frequency of autosomal recessive, some of which are new or rare.

The report of the Egyptian Nubian people is of particular interest to craniofacial geneticists, orthodontists and physical anthropologists. The review of genetic disorders among Jews of Arab countries emphasizes that intercommunity differences regarding the occurrence of genetic diseases are probably due to the founder effect and to the role of historical and cultural factors which have contributed to similarities or differences between the various Jewish and Arab populations. In addition, this chapter summarizes, in table form, first and only descriptions of genetic variants, mutations, clinical entities and rare disorders among Jews from Arab countries according to their community of origin. In general, genetic disorders that are quite prevalent among European (Ashkenazi) Jews are extremely rare or virtually absent among Jews from the Arab countries and vice versa.

Part five entitled 'Cultural and Religious Attitudes towards Genetic Issues', discusses Islamic views of some reproductive issues, and psychological and medical aspects of genetic counseling among Arabs, with the example of Kuwait.

The chapter on Islamic views in reproductive issues summarizes the views of Islam on marriage and family relations, stating clearly, as many are not aware, that consanguinity in Muslim communities is a

feature of local culture but not of religion. It also summarizes the Islamic views towards family planning, abortion, artificial insemination, in vitro fertilization, fetal rights, adoption and genetic engineering.

The chapter dealing with the psychological and medical aspects of genetic counseling among the Arabs throws more light on the different role of medical genetics in various societies because of cultural, religious and socioeconomic factors.

In conclusion, I thoroughly enjoyed reading all chapters of this comprehensive and systematic book, which conveniently collects in one place, for the first time, commonly reported genetic diseases among the Arabs. However, as pointed out by McKusick in his foreword, 'the surface may have only been scratched'.

I strongly recommend this book to medical geneticists and anthropologists from all over the world.

I also recommend it to physicians and health providers in the Arab world to appreciate the urgent need for genetic services and research in these countries.

Reference

Temtamy SA: Carpenter's syndrome: Acrocephaly-polysyndactyly, an autosomal recessive syndrome. *J Pediatr* 1966;69:111-120.

Samia A. Temtamy, Cairo