

Preface

The idea of a book focusing on the infectious diseases and assisted reproductive technologies (ART) was born 3 years ago because reproductive assistance in subjects infected with blood viruses is still a complex issue. When we sat down to plan the first edition of this book, we were determined to make it innovative, comprehensive and accessible. We contacted the most important researchers in infectious diseases and ART in the world, and we asked them if they would be interested in participating in this project.

The infectious diseases involved in ART are various, but we decided to concentrate our attention on only some of them, and we chose the viral infections. Viral infections are the most interesting infections because the viruses are changeable, unpredictable, and most are untreatable. The word *virus* has a much longer history than the study of what we now call by that name. It comes directly from the Latin *virus*, a term meaning, “poison, sap of plants, slimy liquid”. Its earliest known use in English to denote a disease-causing agent was in 1728, although for the rest of the eighteenth century, throughout the nineteenth and for several decades beyond, there was no clear distinction between virus as a vague term, applicable to any infectious microbe, and the very particular group of entities we know as viruses today. Moreover, some viruses create chronic infectious diseases: the most important are human immunodeficiency virus-1 (HIV-1), hepatitis C virus (HCV) and hepatitis B virus (HBV) infections. All of these chronic infections are ubiquitous and very dangerous because each of these viruses can lead to a widespread outbreak. Some outbreaks of viral disease quickly escalate, depending on viral transmissibility and virulence. These are the

crucial parameters. For the blood-borne viruses, transmission is more complicated than for other types of virus. Generally, it depends on a third party: a vector. The viruses have to replicate in the blood of the host to produce severe viraemia. The vector—an insect, for example—must arrive for a meal, bite the host, slurp up the virions along with the blood, and carry them away. The yellow fever virus transmits this way. However, blood-borne viruses can also spread to new hosts by way of needles. Ebola, HIV and HCV, three viruses of very different characters and very different adaptive strategies, all happen to move well via needles. Sexual transmission is a good scheme for viruses with a low degree of hardiness in the external environment. Transmission during coitus is a conservative strategy, avoiding the risk of air or sun contact. Whatever the case, the sexually transmitted viruses tend towards patience. They cause persistent infections and endure long periods of latency (e.g. the herpes virus), or they replicate slowly (as with HIV and HBV).

In the last few years, clinicians have learned to treat an HIV infection with drugs, an HBV infection with a vaccine, an HCV infection with some drugs, and this situation has opened the door for the patient's desire to have children. Even in the presence of a chronic infection, or probably because the infection is chronic and well controlled, people need to have progeny. For this reason, clinicians have to address the patient's requests regarding pregnancies, and they have to try to save pregnancies and newborn babies. HBV infection seems to have minor relevance because a vaccine is available, but in the very near future the HBV virus will be able to change; if that happens, clinicians will be able to assist their infected patients. For the HIV virus, we have to consider that three quarters of individuals infected with it are in their reproductive years and may consider pregnancy planning. Techniques have been developed that can minimise the risk of HIV transmission in these couples, and ART programmes should be integrated into global public health services against HIV.

Regarding the HCV virus, the debate on HCV-discordant couples requiring ART is still open. Sexual transmission of HCV is a controversial issue, whereas the presence of the virus in the sperm has already been demonstrated. In ART, HCV transmission raises

some questions. One of these is that specific guidelines regarding the behaviour of physicians in reproductive medicine have not yet been established. Thus, this book will try to answer many of the questions about these issues, obtaining a picture of the biological aspects of HIV, HCV and HBV infections and the real data presented in the literature regarding reproductive aspects in their presence. Finally, there is a chapter discussing the reproductive possibilities in poorer countries in Africa and South America, where these infectious diseases are more prevalent.

It is our hope that this resource will be of assistance to physicians and scientists engaged in this exciting field of medicine.

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