

Prevention and treatment of HIV infection in the future

Ferrán Segura Porta^a and Juan González-García^b

^aDirector of the Infectious Diseases Healthcare Programme. Corporació Sanitaria Parc Taulí. Sabadell. Barcelona. ^bHIV Infection Unit. Internal Medicine Service. Hospital La Paz. Madrid. Spain.

Human immunodeficiency virus (HIV) infection is one of the greatest public health problems of the last twenty-five years and has an enormous influence on the mortality of young people during the most productive periods of their lives. Furthermore, aids-associated stigma implies that the severe biological disorders caused by the disease are further complicated by the psychological prejudices which affect both patients and their social circle.

As in all catastrophes, this disease is answered by a common human response and the effort of many people and institutions in combating it. We would like to make particular mention here of healthcare professionals, without whom the enormous advances in the prevention and treatment of HIV infection would never have been made. Only twenty years ago, our knowledge of HIV infection was extremely limited and we had few resources to control it. Nowadays, although we still have much to learn, our fund of information on this disease is huge. Nevertheless, the fact that the scientific knowledge generated is of public domain does not prevent some restriction in its application.

Healthcare professionals are also responsible for developing knowledge for future prevention and treatment of HIV infection and for ensuring that it is made available to the scientific world and society as a whole. Social institutions and their leaders are responsible for ensuring that our knowledge of the treatment and prevention of HIV increases the well-being of as many people as possible.

Specialists in HIV infection are constantly overwhelmed by the volume and speed of scientific advances. Therefore, we are grateful to an expert committee of Spanish researchers in each of the topics examined in this supplement for their contribution, in the form of reviews, to areas which will undoubtedly affect prevention and treatment of HIV infection in the future. The reviews of the subjects covered here are the result of contributions made by the Aids Study Group of the Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica (SEIMC) (GESIDA) at the XI Congress of this society held in May 2004 in Bilbao, available on the group's web page: <http://www.gesidaseimc.com>.

Prevention of HIV is currently based on the control of exposure, as no vaccine is available. The development of an efficacious anti-HIV vaccine presents great scientific, social and ethical difficulties which make it one of the main healthcare challenges of the future. There is no

doubt that, as Dr. Alcamí et al analyse in their review of the development of a preventive HIV vaccine, a greater basic knowledge of the virus, the immune response and HIV immunological escape mechanisms will enable us to design vaccines with an acceptable degree of protection. This research may also benefit people infected by HIV. Some of the active immunization strategies currently being researched could help reduce HIV replication to leave a more benign infection. While it is not possible to eradicate HIV infection, such an advance could represent a fundamental milestone in future HIV therapy, as Dr. García et al report in their review on immunotherapy and therapeutic vaccines.

"Immunization" in its widest sense can also be applied to the prevention of infection at cell level. In this field, gene therapy, which is currently being researched, could play a role in future therapeutic strategies. The review by Drs. Delgado and Regueiro highlight the enormous potential of gene therapy in the control of HIV infection. The recently reported mechanism of post-transcriptional specific silencing of gene expression using double-helix RNA fragments –RNA interference– forms part of this potential therapy.

Therapy with drugs which inhibit HIV replication by acting on different targets is the basis of current antiretroviral therapy. Physicians, who for years have had to stand by and watch patients suffer due to a lack of suitable therapy, welcome the advances made in antiretroviral therapy during the last ten years. In most cases, HIV infection has become a chronic illness which allows an acceptable quality of life, thanks to the availability in clinical practice of more than twenty antiretrovirals belonging to four different families. Nevertheless, we need new drugs to improve antiviral activity, toxicity, ease of administration and, in particular, to overcome the resistance generated by HIV in patients with virological failure. The future of antiretroviral therapy lies in the inhibition of new targets of the HIV cycle and in improved generations of currently available antiretrovirals, as shown in the review by Dr. López-Aldeguer et al.

Many strategies enable us to optimise the efficacy and tolerance of antiretrovirals, such as adherence programmes, evaluation of interactions between antiretroviral drugs and between these and other drugs commonly used in HIV-infected patients, the selection of regimens according to HIV sensitivity studies, etc. In some cases, therapeutic drug monitoring could help optimise antiretroviral therapy. Protease inhibitors and non-nucleoside reverse transcriptase inhibitors share characteristics which make monitoring of their plasma concentrations useful in future clinical practice. The report by Dr. Ribera et al provides us with a state of the art review on the use-

Correspondence: Dr. J. González-García.
Cuatro (Ciudad Pegaso), 3, 1.º dcha.
28022 Madrid. Spain.
E-mail: med008050@saludalia.com

fulness of therapeutic drug monitoring and the inhibitory quotient of antiretroviral drugs.

Finally, future prevention and treatment of HIV infection also depends on scientific research in areas other than those examined in this supplement, such as the role of microbicides in prevention, management of secondary

effects or associated comorbidity, etc. Undoubtedly, the reviews included in this supplement show that HIV research is active, persistent in its main objectives and that future results will provide us with a better response to one of the greatest public health problems we have ever had to face.