NEW CHALLENGES FOR HIV INFECTION

Prevention and treatment of HIV infection in the future

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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, with- out 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 appli- cation.

Healthcare professionals are also responsible for develop- ing 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 insti- tutions and their leaders are responsible for ensuring that our knowledge of the treatment and prevention of HIV in- creases 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 re- searchers in each of the topics examined in this supple- ment for their contribution, in the form of reviews, to ar- eas 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.gesidaesm.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 eradi- cate HIV infection, such an advance could represent a funda- mental milestone in future HIV therapy, as Dr. García et al report in their review on immunotherapy and therapeu- tic 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 Reguero highlight the enormous poten- tial of gene therapy in the control of HIV infection. The recently reported mechanism of post-transcriptional speci- fication 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 anti- retroviral therapy. Physicians, who for years have had to stand by and watch patients suffer due to a lack of suit- able therapy, welcome the advances made in antiretrovir- al therapy during the last ten years. In most cases, HIV infection has become a chronic illness which allows an ac- ceptable quality of life, thanks to the availability in clini- cal practice of more than twenty antiretrovirals belonging to four different families. Nevertheless, we need new drugs to improve antiviral activity, toxicity, ease of ad- ministration 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 re- view by Dr. López-Aldeguer et al.

Many strategies enable us to optimise the efficacy and tolerance of antiretrovirals, such as adherence pro- grammes, evaluation of interactions between antiretrovi- ral 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 anti- retroviral 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-
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.