

used in diagnosis there is no need to mention 'serological comparative diagnosis' as in serological tests the identity of the unidentified virus is invariably compared with that of known viruses.

Most of the illustrations in the book are carefully selected and are of good quality. However, the printing errors are too numerous, even for a handbook of 944 pages. The price of the book is not within the means of all those people for whom this handbook, according to the editor, has been written, viz. actively working virologists and phytopathologists both in the field and the laboratory and students in virology especially in developing countries.

J. Dijkstra

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*The Human Herpesviruses: An interdisciplinary perspective*

A.J. Nahmias, W.R. Dowdle, R.F. Schinaz (editors)

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The *herpesvirus* family is the most intriguing in medical virology. Latency and recurrence are phenomena which challenge the adventurous virologist. The best candidates for human tumor viruses are to be found in this virus family, but their oncogenic action is still poorly understood. For the molecular biologically oriented virologists, the genomic complexity of this kind of virus is quite interesting. By the use of bacterial restriction enzymes, the various isolates can be easily distinguished and interesting detective stories can be produced in this way (Roizman). By use of this technique, it has become established that individuals carrying one variant of herpes simplex virus type 2 can be superinfected with another variant.

It was certainly a good idea to organize a meeting on the many aspects of human herpesviruses. Despite the very poor editorial organization, the proceedings of that conference will be a gem in a medical virologists' library. Objections are, among others, that there are several superficial papers such as that by Baringer, who in 1973 demonstrated the presence of herpes simplex virus type 1 in trigeminal ganglia, but who has not much to say in his paper included here. On the other hand, the book contains a 30-page highly technical paper by Niza Frenkel on the molecular biological characterization of defective viruses. That paper could have been considerably condensed. The summaries of 15 workshops are not of much value to the non-specialist reader. Also the addition of 200 short abstracts to the book does not contribute much to the readability. It was quite

interesting, however, to scan the published accounts of the open discussions at the end of each session. One finds not only the amusing clash of opinions but also remarkable worthwhile information.

In Part I, 'Clinical Spectrum' the papers on varicella-zoster virus (Zaia) and cytomegalovirus (Weller) are of great interest. The expression of the viruses is usually more inhibited than in the case of both herpes simplex virus types. However, several serious clinical syndromes due to VZV or CMV can be found in immunosuppressed patients.

Genetics of only HSV (Schafer) is presented in Part II, 'Molecular and Genetic Aspects'. The structure of the genomes of VZV, CMV and Epstein-Barr virus (EBV) has been studied in great detail by the use of bacterial restriction enzymes. It seems that the transforming region of EBV can be mapped at about a fifth of the distance from the left hand side, by comparison with the DNA of non-transforming variants (Dambaugh).

In Part III, 'Comparative Epidemiology', Rawls presents an interesting mathematical treatise on the incidence of HSV-2 infections in various populations on the basis of serological and clinical data. Such infections tend to occur at a younger age and are more often subclinical in lower socioeconomic classes. The often reported and debated association between HSV-2 and cervical cancer would fit a model in which the virus is one of the possible etiological agents of this disease.

A fascinating phenomenon is the congenital infection with CMV which occasionally leads to severe disease. By molecular typing it could be established in a few cases that such an infection is due to reactivation of latent virus in the urogenital tract, despite maternal immunity (Alford). Quite amusing is Evans' contribution on the epidemiology of EBV. The very high rate of perinatal infections in developing countries is thought to be due to such customs as the prechewing of infant food. At the West Point Military Academy in the U.S.A., the cadets with an overachieving father seem to be at a high risk for clinical infectious mononucleosis.

In Part IV, 'Latency and Oncogenesis', Pagano makes a clear distinction between latency and persistence of a virus, realizing that this difference is more easily stated than established in the clinical situation. Latency would imply limited replication and no virion production, while persistence would mean a low rate of virus production in the absence of clinical symptoms. The latency of EBV in B lymphocytes and nasopharyngeal carcinoma cells could be explained by the occurrence of the viral genome as a plasmid. Such a mechanism does not seem to exist in the case of CMV in epithelial cells of the parotid, cervix and renal tubules.

The oncogenic transformation of rodent cells by HSV as discussed by Rapp is a neat introduction to the possible role of these viruses in cervical cancer (McDougall). In most intraepithelial neoplastic lesions, virus-specific RNA can be found by *in situ* hybridization, but in none of the invasive carcinomas. Perhaps, a 'hit and step aside' hypothesis is applicable in this disease, as in several viral tumors in animals.

Part V, 'Immunology', is introduced by a lengthy paper of Shore and Feorino on primary infections. They think that cell-mediated immunity is the main mechanism in recovery but antibodies might play a supportive role by reducing the spread of virus.

The combination of persistence of herpesviruses and aberrations in humoral immunity seem to evoke autoimmune diseases.

Herpesvirus diagnosis as described in Part VI is still a tedious job despite improvements in serological reagents and techniques. Herrmann cautions against the hasty diagnosis of genital herpes on the basis of direct assays such as immunofluorescence. Cell cultures in which typical CPE can be detected within a few days are recommended to be performed before serological identification. Exfoliative cytology can be of great help in diagnosis, for instance, by taking scrapings from the surface of a herpetic vesicle (Naib).

As chairman of Part VII, 'Prevention and Treatment', Melnick warns against the danger of vaccination: instead of children, many more young adults might be infected and with grave consequences. Another danger would be the introduction of oncogenic material. Plotkin makes a plea for the use of an attenuated CMV strain as vaccine material for renal transplant patients. Various possible objections, such as the ones mentioned above, against such a vaccine could be overruled. Its protective effectiveness remains to be established, however. Takahashi reports favorable effects of an attenuated VZV strain, which is also suitable as a vaccine for children with malignancies who are on chemotherapy.

Most chemotherapy studies on HSV infections have been carried out in a very unsuitable way, according to Overall. Patients have not been randomized, no placebo controls were included, and monitoring of the effects was poor. According to Whitley and Alford, antiviral chemotherapy of HSV is coming of age. The often applied chemicals IdUrd and Ara-C seem to be of limited use; acyclovir seems to be very promising, as also mentioned by Overall. A very interesting paper is that by Kaufman on ocular HSV infections. For more than 10 years, trifluorothymidine has been his choice for treatment of HSV-induced keratitis. Prolonged treatment with corticosteroids can alleviate the highly unpleasant manifestations of disciform edema of the cornea caused by HSV.

Even though it may be really worthwhile for a medical virologist to scan this book, the time has come for a few experts to write a more integrated review of the various aspects of human herpesviruses.

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