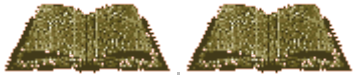
ANIL AGGRAWAL'S
Internet Journal of Forensic Medicine and Toxicology
The world's first online journal devoted entirely to forensic medicine and toxicology · Published 1 January and 1 July

VOL. 3, NO. 2
Downloaded from www.anilaggrawal.com · ISSN 0972-8074 (Online) · https://www.anilaggrawal.com/ij/vol_003_no_002/reviews/tb/page001.html

Book Reviews: Technical Books Section



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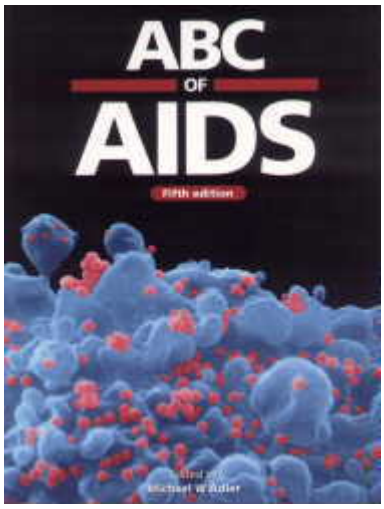
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VALUABLE INFORMATION ON AIDS

ABC of AIDS, 5th Edition *edited by* Michael W. Adler, Softcover, 8" x 12".
(A Book from BMJ Publishing Group)
BMJ Books, (An Imprint of the BMJ Publishing Group), BMA House, Tavistock Square, London WC1H 9JR, UK. Publication Date 2001. viii + 118 pages, ISBN 0-7279-1503-7. Price £17.95 (BMA Members £16.95).

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Nothing has changed the life of a medical doctor as much as AIDS. Clinicians and paraclinicians dealing with every shade of patient care are facing cases of AIDS. Medical doctors try to mitigate their suffering by administering medicines, surgeons perform all kinds of surgeries on them, blood bank officers are involved in blood and bone marrow transfusions, pathologists and microbiologists get biological samples for determination of AIDS tests, counsellors receive AIDS patients needing proper counselling, nurses get to tend them; all of them have learnt to live with this new challenge. Even forensic pathologists like me have had to change their life styles. While at one time, I used to be very enthusiastic about detailed dissection of bodies in every case, now I tend to do as much as required. Frequently I find myself asking colleagues, "What are my chances of getting HIV infection, if I get an inadvertent cut doing an autopsy on an AIDS case", and I have got as varied answers as from "almost nil" to "extremely high". Nobody seems to know the correct answer. In the first issue of this journal, we ran a discussion forum on this issue, and got some helpful responses, but the question remained far from settled. Many other questions haunt doctors from other specialties. What is the pathology of AIDS? How did this epidemic come about? Immunology of AIDS, tumors in HIV, treatment modalities and so on. To be sure, information is available on all these aspects, but rarely in an easily assimilable form, and in an easy-to-read format.

View this book on Amazon

That is why when this book first came to me for review, I read it from cover to cover. Written in simple, easily understandable language, this book appears to give everything from the beginning of the story (how the epidemic started), till the latest treatment modalities and strategies of prevention. The language is extremely easy to understand. So much so, that I would imagine even a medical student can understand it well. Even the more difficult concepts are made to appear very simple.

Take for example the concept of CD4 and CD8 cells which is very well illustrated in this book. Both CD4 and CD8 cells are Thymus derived lymphocytes (hence known as T-cells). CD4 are also known as T Helper Cells, while CD8 are also known as Killer cells or T Suppressor cells. CD4 cells are supposed to orchestrate the whole immunological army. In fact they have been called "the leader of the immunological orchestra" (page 12 of this book). They are also the main target of HIV. While in a normal immuno-competent person, there are about 600 to 1200 CD4 cells per c.c. of blood, in HIV infection they drop down drastically. In fact the CDC definition of AIDS as effective from 1 January

1993 is "all those with confirmed HIV infection with CD4 T lymphocytes count < 200 CD4 cells per c.c. with or without indicator disease" (Page 2).

This book is full of color pictures such as this. This picture depicting Classical Kaposi's sarcoma appears on page 23



With HIV infection the CD4:CD8 ratio is said to reverse. What does this mean?

In people without HIV infection, there are usually more CD4 cells than CD8 cells. This is expressed as a ratio of CD4 to CD8 cells. The ratio in normal immune-competent people is around 2.0, i.e. there are twice as many CD4 cells as there are CD8 cells. But during the course of HIV disease this ratio inverts (becomes upside down) as the number of CD8 cells increases while that of CD4 cells drops. As an example, in an uninfected adult, the CD4/CD8 ratio would be, say, 1000 cells per ml/500 cells per ml (2.0), but with HIV this reverses, say 450 CD4 cells per ml /900 CD8 cells per ml which equals 0.5 or 1/2. This reversal of CD4/CD8 cells is a sign that the person might be having HIV infection.

It might be well to recapitulate a little basic hematology here. In a normal 21 year old, there are about 59% neutrophils (or 4.4 x 10^9 cells/L). It is useful to remember that 10^6 cells/L is the same as 1 cell/c.c. So the figure 4.4 x 10^9 cells/L translates as 4400 cells/cc. There are 34% Lymphocytes (or 2.5 x 10^9 cells/L), 4% monocytes, 2.7% eosinophils and 0.5% basophils. Of the lymphocytes about 40% are CD4 cells. When they drop below 15% serious infections begin to occur.

A little mathematics would allow us to have some actual numbers. WBC count in a normal person is between 4000-11000/cc. If we take the count in a person arbitrarily as 7000 cells/cc, the number of lymphocytes per cc would be 2380 (34% of 7000). The number of CD4 cells would be 952 (40% of 2380). This is the number of CD4 cells in a normal person (the range is actually 600-1200 cells as we have seen earlier). If the number of CD4 cells fall below 15% of the total lymphocytes, serious infections begin to occur. 15% of 2380 is 357. So if the number of cells starts hovering around this figure per cc, he would begin having serious infections. If the number falls below 200, he would be said to be suffering from AIDS. If the number is persistently below 50, cytomegalovirus (CMV) infections begin to occur (page 50).

A common clinical presentation of advanced HIV disease in African countries is with marked wasting, known in Uganda as "slim" disease. This picture appears on page 59 of this book



Too much is being talked about HAART therapy these days. What exactly is HAART? This book explains it quite succinctly. To begin with, the acronym stands for **H**ighly **A**ctive **A**nti **R**etroviral **T**herapy. It is a therapy, composed of multiple anti-HIV drugs, that is prescribed to many HIV-positive people, even before they develop symptoms of AIDS, or sometimes when the CD4 count drops below 200. It involves the use of a cocktail of drugs to treat HIV, usually including one or more drugs from several families of drugs, each of which acts at a different stage of replication of virus. Quite frequently, the use of this therapy helps to bring the CD4 count above the 200 mark. The cocktail includes a protease inhibitor, a NRTI (Nucleoside Reverse Transcriptase Inhibitor), and a NNRTI (Non-Nucleoside Reverse Transcriptase Inhibitor). Since three drugs are taken together, the therapy is sometimes known as "triple drug cocktail". And since each drug acts at a different point of the virus's reproductive cycle, this therapy is deemed very significant and useful.

While HAART does not cure AIDS or HIV, it helps, in many cases, to prevent the virus from overtaking the patient, and in others, HAART renders the virus all but undetectable by even the most sophisticated testing equipment.

We get to read the mechanism of actions of these drugs in chapter 9 entitled "Treatment of infections and antiviral therapy". Inhibitors of the HIV reverse transcriptase enzyme were the first drugs made available for clinical use. NRTIs act both as competitive inhibitors of Reverse Transcriptase (RT), as well as DNA chain terminators. They make use of the fact that HIV has to make a pro-viral DNA first. It does this by the use of the enzyme Reverse Transcriptase. If somehow one could prevent the HIV to form a DNA copy, the viral RNA genome becomes susceptible to destruction by cellular enzymes.

The normal substrates for DNA synthesis are 2' deoxynucleosides. Drugs like zidovudine (an NRTI) act as a substrate. However once inserted in the chain, the normal 5' to 3' links will not occur, and this at once brings a stop to the DNA chain elongation. These drugs thus act as DNA chain terminators.

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NNRTI are a group of structurally diverse agents which bind to RT bringing about a confirmational change in the enzyme and inhibition of the enzyme activity. Protease inhibitors inhibit protease which is required by the virus just before budding. Inhibition of this enzyme results in the production of immature virus particles.

Other chapters in the book touch upon such varied subjects as immunology of AIDS, AIDS testing, natural history, tumors in HIV, neurological, gastrointestinal, hepatic and pneumonic manifestations, HIV infection in children, control of infection policies and so on.

The book rounds off with two very moving chapters, written by sufferers of AIDS. Chapter 17 entitled "Being HIV antibody positive" has been written by Jonathan Grimshaw (a male), and chapter 18 entitled "Having AIDS" is written by Caroline Guinness (a female). The latter is particularly moving. She tells us how she got HIV way back in 1986. After she got separated from her husband, she was very vulnerable and slept with a gay male. When she was diagnosed with HIV, she had a three year old daughter. She was told she had about 5 years to live. But in 2001 she was alive and well (i.e. when this book went to press). Not only did she face the disease courageously, she rose to the position of Director of a support group *Positive Women*.

She is sure she would be well for a very long time and invites us to "watch this space" (in future editions of this book). Some excerpts from her moving account. . .

I was diagnosed in 1986 when there was very little knowledge of HIV. I had just been diagnosed as having precancer of the cervix, but I felt there was something else wrong - just an instinctive feeling -

there was nothing in particular. So I went to my GP, and in fact saw a locum who was very young and enthusiastic. He felt my neck and said my glands were up, which I suppose alerted him to HIV, although he didn't say anything, suggesting it might be glandular fever. He took some blood, and said I should return three days later.

When I went back for the results he said they were negative for glandular fever, but that he had also requested an "AIDS test". I remember feeling really cold when he said that. I knew that maybe that was what it was, because two years beforehand, shortly after my husband left me and I was very vulnerable, I had slept with a bisexual man. I told the doctor that I thought he should have talked to me about it first, and that I wanted the test stopped. He said it was too late as it had already gone to the laboratories. I said in that case I didn't want to know what the result was.

...About two weeks later, my own doctor who was back, just turned up at my house. He knew that I didn't want to know the result of the test, but he thought that, as an intelligent woman, I should know that it was positive. Even though I had some suspicions, I found that being told for definite was a different thing altogether. I went into shock. My first reaction was to ask how long I had to live, and he said probably about five years...

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This is what she writes a moment later.. . .

...In 1987, about a year after my diagnosis, through the Terrence Higgins Trust (THT) I finally found out about GUM clinics and I attended James Pringle House, Middlesex Hospital, which made a huge difference to me. I really wanted to meet other HIV positive women I'd never met any, and still felt as if I was the only woman who had the virus. Someone at THT told me about a support group called Positively Women, who met once a week, so I went along to the group and met a couple of other positive women which helped a lot. I eventually became the Director of Positively Women, and the next three years were really hard work. There was nothing for women at all, so we tried to produce leaflets and information. Despite doing interviews and media work, I never went public about my HIV status. Although our slogan said "For positive women, run by positive women", people never seemed to twig with me; I think they had some vision of what someone with HIV should look like, which I didn't really fit into. Positive women were very much seen as drug users or prostitutes, and most of the women were keeping quiet, usually to protect their families...

Chapters like this make me believe even a general reader might enjoy reading this book. Certainly the last two chapters.

All in all, a very good book on AIDS. One which should adorn the bookshelf of every doctor, paramedical staff and medical students. The simple style and language are the two strongest points of this book.

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