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Preface

Endocrine disease in HIV infection

Why, one might ask, is a journal dedicated to endocrinology and metabolism focusing on an infectious disease? In this issue of Best Practice and Research in Clinical Endocrinology and Metabolism, leading international experts inform us as to how HIV infection and its treatment affects the breadth of endocrinology and metabolism.

World Health Organisation data shows that there were 33 million people living with human immunodeficiency virus-1 (HIV) in 2009 and that AIDS was responsible for 1.8 million deaths that year.[1] The development and availability of highly active antiretroviral therapy (HAART, also referred to as combined antiretroviral therapy (cART)) has transformed the natural history of this life-threatening infection, at least in nations able to afford these life-saving drugs. By reducing the replication of the virus and viral burden, immunological and malignant sequelae are reduced or prevented. Life expectancy and quality of life are substantially improved. The clinical objective with timely, appropriate treatment is to restore a near-normal life expectancy. As such, the common endocrine diseases associated with ageing will occur in otherwise-well individuals with co-existing treated-HIV. In addition, cART impacts upon almost all aspects of the endocrine system and can induce endocrine disease in its own right. The general and sub-specialised endocrinologist benefits from understanding the unique pathophysiology and special considerations of endocrine disease induced or exacerbated by cART.

In this issue, Brown reviews how the virus itself affects different endocrine systems and describes the endocrine diseases found in settings where there is little or late access to treatment. Martinez reminds us that HIV-associated lipodystrophy is now the most common form of lipodystrophy and reviews the mechanisms and factors promoting its development, as well as treatment. Dube reviews the clinical trial data for treatment of the often marked lipid disorders that can characterize HIV-treatment, summarizing important drug interactions with commonly prescribed lipid lowering therapy. Feeney and Mallon review the human studies on insulin resistance induced by antiretroviral therapy. Hruz examines the molecular science that has elucidated the mechanisms by which insulin resistance is induced by different antiretroviral agents, with clear class and sub-class effects. Paik and Kotler review the prevalence and pathogenesis of diabetes mellitus in the individual with treated-HIV infection. Worm and Lundgren examine the evidence for metabolic syndrome in treated-HIV and its cardiovascular sequelae, with particular reference to the most informative prospective studies. Giralt and colleagues describe the unique ways by which HAART affects adipose tissue biology. The impact of HIV infection and its treatment on androgen and bone physiology are reviewed by Cotter and Powderley. The effect of HIV infection and its treatment on the growth hormone axis and the effects of recombinant growth hormone and growth hormone analogues on whole body physiology in treated-HIV are reviewed by Falutz.

The contribution of endocrine diseases to the health burden of people living with HIV infection can be significant. I hope this volume provides an overview of this fascinating area of medicine and encourages endocrinologists to work in close liaison with our infectious diseases, immunology and cardiology colleagues, to contribute positively and proactively to the health and care of people with treated-HIV infection.

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An endocrinologist's thumbnail introduction to HIV therapy

Antiretroviral drugs used to treat HIV infection and viral treatment targets.

With the greatest respect to the endocrinologist reader, the following summary is offered for endocrinologists not familiar with the different drug classes used in the treatment of HIV, plus current treatment goals applied in HIV medicine. (Apologies to our immunologist and infectious diseases colleagues for reductionism.)

Protease inhibitors	Nucleoside reverse transcriptase inhibitors	Non-nucleoside reverse transcriptase inhibitors	Entry inhibitors	Integrase inhibitors
atazanavir	abacavir	efaviranz	Fusion inhibitor	raltegravir
darunavir	didanosine	nevirapine	enfurvitide	
indinavir	emtricitabine			
fosamprenavir	lamivudine		CCR5 inhibitor	
nelfinavir	stavudine		maraviroc	
ritonavir	tenofovir			
saquinavir	zidovudine			
tipranavir				

Viral eradication is not yet possible. With the broader general aims of improving quality of life and reducing or preventing HIV-related morbidity and mortality, drug therapy utilizes multiple drugs from different antiretroviral drug classes to:

- suppress viral replication,
- suppress viral load, and
- restore and preserve immune function.

Viral load is measured by standardized quantification tests and the aim is to suppress to below the level of detection, a level associated with the greatest improvements in clinically defined outcomes and mortality.

Multiple drugs are used to maximize benefit, but also to prevent viral drug-resistance. Drug regimens are generally tailored, based on appropriate selection of drugs to maximize future treatment options. Pill burden, drug toxicities and dosing are important considerations.

References

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Further reading

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3. Thompson MA et al. Antiretroviral Treatment of Adult HIV Infection 2010 Recommendations of the International AIDS Society–USA Panel. J Am Med Assoc 2010; 304:321–333.
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