



Pathology Biology Section – 2010

G105 The Evolving Distribution of Cause and Manner of Death in HIV Positive Medical Legal Cases: Links Between ART and Traditional Categories of Chronic Disease

Sharon M. Derrick, PhD*, Harris County Medical Examiner's Office, Harris County Medical Examiner's Office, 1885 Old Spanish Trail, Houston, TX 77054

The goal of this presentation to describe and evaluate the impact of HIV infection, obesity, and two linked diseases, diabetes mellitus (diabetes), and cardiovascular disease (CVD), on the forensic practice and public health roles of medical examiner/coroners. Attendees will receive an epidemiological analysis of these diseases in medicolegal (ML) cases presenting to a large urban-based medical examiner office. Specific emphasis will be placed on the interrelationships between HIV infection and traditional categories of chronic disease and on the implications of the study results for other medical examiner offices nationally.

This presentation will impact the forensic science community by illustrating the evolving status of HIV infection as a chronic disease and the effects of increased longevity of the HIV positive patient on the composition of medicolegal caseloads. The role of medical examiner offices as guardians of the public health and the practical aspects of public health reporting will be discussed.

In 2009 the Centers for Disease Control and Prevention (CDC) released the results of HIV/AIDS surveillance data collected from thirty four reporting states. An estimated 552,000 adults and adolescents were living with HIV/AIDS in these states in 2007, an increase of 16% over

2004.¹ The increase in persons living with HIV infection is well- documented in the literature and it is associated with the implementation of ART treatment (combined antiretroviral therapy and highly active antiretroviral therapy), prolonging the time interval from HIV infection to development of AIDS, and with increased HIV screening at point of care, which can lead to earlier treatment. HIV positive patients are living longer through better disease management. However, ART produces side effects that increase the HIV positive patient's susceptibility to obesity, (especially visceral fat around the waist), diabetes, hyperlipidemia and CVD.

The population sample for this retrospective study consists of ML cases investigated by the Harris County Medical Examiner's Office (HCMEO), Houston, Texas in 2008-2009 that fall within these parameters: 15+ years old, 60+ inches tall, and weight of 70+ pounds. Size limits are set to exclude young children and decedents in advanced decomposition. The incidence of CVD and diabetes is obtained from the primary and contributing causes of death, and HIV incidence from medical history and HCMEO serology results reported to the local health authority. The data presented here reflect 5794 ML cases received from January 1, 2008 through July 22, 2009. The balance of the 2009 cases and the biostatistics results will be included in the final analysis and presentation.

The population of Harris County, Texas is an ethnically diverse 3.9 million residents, of which 29% are obese (BMI >30) and the average BMI is 27-30. Approximately 8.3% of Harris County residents have been diagnosed with CVD, 7% with diabetes, and 0.5% with HIV.² In concordance with these data, 29% of the ML decedents have a BMI >30, with a range of 10-98 and an average BMI of 27, and in 7% of cases diabetes is the cause or contributing cause of death. Due to the nature of ML cases and the efficacy of autopsy diagnosis, the percentages of CVD and HIV in the sample are higher at 31% and 0.9%, respectively, even though these conditions may be under-reported in a forensic sample.

Among the fifty five HIV positive decedents, 13% (7) have a BMI >30. The average BMI is 24 and the range is 15-55. Examination photographs reveal that 42% (23) have a concentration of visceral fat in the belly area. Review of the medical records is underway to determine the number of these decedents in ART at death. The racial/ethnic composition is 44% black, 42% white, 13% Hispanic, and 2% Asian. The age range is 18-81 years, with a median age of 47, a relatively middle-aged distribution. The leading causes of natural death are complications of AIDS (11) and CVD (11).

As these preliminary results show, improved treatment of HIV infection may lead to a higher number of deaths from CVD, fewer AIDS-related causes of death, and fewer infectious findings at autopsy that result in a request for an HIV serology by the forensic pathologist. Medical examiner/coroners can prevent a negative impact on public health surveillance of HIV infection in forensic cases through awareness of the changing epidemiology of HIV.

References:

¹ <http://www.cdc.gov/hiv/topics/surveillance/resources.htm>

² Texas Department of State Health Services Epidemiology and Surveillance Branch 2008 Annual Report **HIV, Medical Examiner, Epidemiology**