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Editorial

Introduction to Cardiovascular Issues in HIV

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To a degree not seen with other medical conditions, HIV infection is entwined with the culture, politics, and history of its time. Let us tell you a story about that.

The San Francisco Gay Men's Chorus (SFGMC) held its first rehearsal on October 30, 1978.[1] The first public performance of the SFGMC took place less than a month later, on November 27, at an impromptu memorial at San Francisco City Hall for supervisor Harvey Milk and mayor George Moscone, who had been assassinated earlier that day. The SFGMC performed "Thou, Lord, hast been our refuge" ("Herr Gott, du bist unsre Zuflucht") by Mendelssohn at the event, which was attended by at least 25,000 to 40,000 mourners who had marched to City Hall from Castro Street, which Milk represented on the Board of Supervisors.

SFGMC was an instant success and, in 1981, embarked on a national tour of 9 US cities. On July 3 of that year, a story buried on page 20 of the *New York Times*, entitled "Rare Cancer Seen in 41 Homosexuals," brought news to the world of the beginning of the AIDS epidemic.[2] At that time, AIDS was terrifying because the cause and the mode of transmission were unknown, it appeared to be uniformly fatal, and the only available treatment was directed at secondary infections.

On July 25, 1983, the first ward dedicated to the treatment of AIDS patients, 5B, opened at San Francisco General Hospital. The model of care pioneered by 5B—including a holistic, patient-centred perspective; community involvement; a relaxation of usual hospital rules; and integrated clinical research—formed a blueprint that was emulated by other AIDS units around the world. The nurses, physicians, and other health care workers who cared for patients with AIDS demonstrated bravery and altruism in the face of very difficult conditions. On 5B and similar hospital units across North America and Europe, patients with AIDS, mostly young gay men, withered and died. "You feel a lot of anger seeing young people cut down," said the head nurse, Alison Moed. "But there is such a sense of love and basic human sharing here. It's a place where a disease has brought out the best in people."[3]

AIDS punched a huge hole in the fabric of life in San Francisco. Everyone lost friends and coworkers to the disease. "The patients had gone to the same schools that you did, listened to the same music, went to the same restaurants, so they were really us. So it made it really impossible to separate oneself."[4] SFGMC members visited other members and friends in the hospital and attended their funerals. By the mid-1990s, effective antiretroviral therapy (ART) became available, and the death rate plummeted.

HIV has now become a chronic disease. Yet survivors of the AIDS epidemic face a variety of new threats to their health, including an increased risk of diabetes, chronic kidney disease, cancer, bone diseases, neurocognitive disorders, and cardiovascular disease (CVD)[5] caused by the cumulative effects of exposure to the HIV virus, prolonged immune suppression, chronic inflammation, and the adverse effects of ART. Expecting to die of AIDS, many HIV-infected people from that era abandoned their life plans, and many entirely lost their social network.[6]

The risk of CVD is increasing among subjects living with HIV as the population with HIV ages. Unfortunately, HIV specialists may not have the expertise to manage risk of CVD, and cardiologists do not have expertise in HIV or appreciation of the risk of CVD in this unique population. Thus, those living with HIV tend to fall through the cracks and not receive optimal cardiovascular care.

This issue of the *Canadian Journal of Cardiology* addresses the major cardiovascular topics related to HIV infection. In the first article, Hsue discusses mechanisms of CV disease in the setting of HIV.[7] Inflammation plays an important role in atherosclerosis, and chronic inflammation is a prominent feature of HIV infection, even when completely suppressed by ART. This is followed by a review of lipid abnormalities associated with HIV infection, the most prevalent of which is hypertriglyceridemia.[8] HIV increases cardiovascular risk to a degree similar to that seen with other major risk factors such as diabetes or hypertension,[9] and cholesterol lowering therapy is presumed to reduce this risk, based upon extrapolation from studies in other groups.

Sinha and Feinstein describe the clinical features of acute coronary syndromes (ACS) in HIV.[10] Patients with HIV and ACS are, on average, more than a decade younger and are more likely to be men, to be current smokers, and to have low HDL-cholesterol levels compared with uninfected patients who have ACS. They are more likely to have single- rather than

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multiple-vessel coronary artery disease (CAD), and their short-term prognosis is good. Triant discusses stroke in persons with HIV.[11] HIV is associated with an increased risk of both ischemic and hemorrhagic stroke, and the mechanisms for ischemic stroke share features with the mechanisms for acute coronary events. Ryan and colleagues discuss vascular imaging in HIV and how various imaging modalities can be incorporated into risk assessment of persons living with HIV.[12]

Butler and Kalogeropoupos address the topic of heart failure in the setting of HIV.[13] Left ventricular hypertrophy is more common in patients with HIV than in controls, both with and without hypertension. Again, treatment of heart failure in people with HIV is based upon trials in uninfected subjects. Pulmonary hypertension is more common in HIV than in the general population, as discussed by Basyal and colleagues.[14] As with idiopathic pulmonary hypertension, no single cause of HIV-associated pulmonary hypertension has been identified, but many potential contributing factors have been implicated. Brouillette and colleagues elucidate the mechanisms of arrhythmias in the setting of HIV, an important aspect of care because sudden cardiac death is increased in this population.[15]

Giguère and colleagues address the important topic of drug−drug interactions between ART and CV drugs.[16] ART includes nearly 2 dozen drugs from 8 different classes, and most people living with HIV require 3 to 4 drugs to attain viral suppression. This article provides an encyclopedic description of potential drug−drug interactions relevant to cardiology. Finally, Yanagawa and colleagues discuss cardiac surgery in people living with HIV, including procedures to protect surgical personnel from exposure to HIV.[17]

Today, SFGMC has a membership of more than 300 voices and continues to present a wide range of music and perform for many different kinds of audiences. Worldwide, there are now more than 250 LGBT choruses.[1] SFGMC has received many awards and honors and has performed across the United States and Canada, including Carnegie Hall in New York, Kennedy Center in Washington, and Salle Wilfred Pelletier in Montréal.

SFGMC holds a traditional holiday concert in San Francisco in December. Last year, the program was entitled "Elfstravaganza: Making the North Pole Gay Again!" The mood was festive, and the theater was packed. The conductor, in his introduction, mentioned that each singer had, in his pocket, a piece of paper with the name on it of a SFGMC member who died of AIDS. Then the music began.

Someone said, "At least now we get to die from other things."

Disclosures

Dr Waters has received remuneration from pharmaceutical companies for participating in clinical trial committees of investigational cholesterol drugs. Dr Hsue has received honoraria from Gilead and Merck.

References

1. Wikipedia. San Francisco Gay Men's Chorus, accessed November 23, 2018, https://en.wikipedia.org/wiki/San_Francisco_Gay_Men%27s_Chorus.
2. Altman LK. Rare cancer seen in 41 homosexuals. New York Times, July 3, 1981, https://www.nytimes.com/1981/07/03/us/rare-cancer-seen-in-41-homosexuals.html. Accessed November 27, 2018.
3. Bishop K. Ward 5B: A model of care for AIDS. New York Times, December 14, 1985, https://www.nytimes.com/1985/12/14/us/ward-5b-a-model-of-care-for-aids.html. Accessed November 27, 2018.
4. Volberding P. Life before the lifeboat: San Francisco's courageous response to the AIDS outbreak, https://www.youtube.com/watch?v=rOauL9VDpSk. Accessed November 23, 2018.
5. Guaraldi G, Orlando G, Zona S, et al. Premature age-related comorbidities among HIV-infected persons compared with the general population. Clin Infect Dis 2011;53:1120-6.
6. Allday E. Last man standing, https://projects.sfchronicle.com/2016/living-with-aids/story/. March 2016. Accessed November 26, 2018.
7. Hsue PY. Mechanisms of cardiovascular disease in the setting of HIV infection. Can J Cardiol 2019;35:238-48.
8. Waters DD, Hsue PY. Lipid abnormalities in persons living with HIV infection. Can J Cardiol 2019;35:249-59.
9. Hsue PY, Waters DD. Time to recognize HIV as a major cardiovascular risk factor. Circulation 2018;138:1113-5.
10. Sinha A, Feinstein MJ. Coronary artery disease manifestations in HIV: what, how, and why. Can J Cardiol 2019;35:270-9.
11. Bogorodskaya M, Chow FC, Triant VA. Stroke in HIV. Can J Cardiol 2019;35:280-7.
12. Ryan T, Affandi JS, Gahungu N, Dwivedi G. Noninvasive cardiovascular imaging: emergence of a powerful tool for early identification of cardiovascular risk in people living with HIV. Can J Cardiol 2019;35:260-9.
13. Savvoulidis P, Butler J, Kalogeropoulos A. Cardiomyopathy and heart failure in patients with HIV infection. Can J Cardiol 2019;35:299-309.
14. Basyal B, Jarrett H, Barnett CF. Pulmonary hypertension in HIV. Can J cardiol 2019;35:288-98.
15. Brouillette J, Cyr S, Fiset C. Mechanisms of arrhythmia and sudden cardiac death in patients with HIV infection. Can J Cardiol 2019;35:310-9.
16. Giguère P, Nhean S, Tseng AL, Hughes CA, Angel JB. Getting to the heart of the matter: a review of drug interactions between HIV antiretrovirals and cardiology medications. Can J Cardiol 2019;35:326-40.
17. Yanagawa B, Verma S, Dwivedi G, Ruel M. Cardiac surgery in HIV patients: state of the art. Can J Cardiol 2019;35:320-5.