

Glycaemic control, diabetic complications, and mortality in HIV-infected individuals with diabetes

Executive summary

Aim and Objectives

This study aims to compare glycaemic control, incidence of diabetic complications and mortality between diabetes patients in Hong Kong with and without HIV infection.

Project design

We performed a retrospective case-control study. Diabetes-related complications (including cardiovascular diseases, end-stage renal failure, retinopathy, peripheral neuropathy and cancers) and mortality were compared between HIV-infected individuals and HIV-uninfected controls.

Target population

HIV-infected individuals with diabetes followed up in designated HIV clinics in Hong Kong were identified. Controls without HIV infection were matched in a 2:1 ratio by age, gender, and year of diagnosis of DM from a large cohort of patients with DM followed up in a territory-wide diabetic complication screening programme (JADE programme).

Main achievements

Three hundred and thirty-three HIV-infected patients and 666 matched controls were included in this study. Among the whole cohort, 873 (87.4%) were male, mean (\pm standard deviation) age at the time of diagnosis of DM was 50 ± 11 years, and they were followed for a median (interquartile range [IQR]) of 11 (6 – 16) years. A lower proportion of HIV-infected patients were Chinese (88.6% vs. 97.6%, $p < 0.001$). Smoking status did not differ between the two groups.

Among the HIV-infected patients, 44.7% had history of AIDS-defining illness, transmission of HIV was mostly due to heterosexual route (65.5%), nadir CD4 count was 87 (IQR 23 – 201) cells/mm³, current CD4 count was 533 ± 282 cells/mm³, and current HIV RNA was 20 (19-34) copies/mL.

HIV-infected patients had higher prevalence of hypertension (87.8% vs. 77.5%, $p < 0.001$), but lower prevalence of chronic hepatitis B infection (8.1% vs. 12.8%, $p = 0.027$). At baseline, HIV-infected patients had lower body weight, lower body mass index, lower fasting glucose level, and lower HbA1c. Fewer HIV-infected patients were receiving anti-diabetic drugs.

At a median (IQR) follow-up duration of 11 (6 – 16) years, HIV-infected patients had lower incidence of coronary artery disease (10.5% vs. 15.6%, $p = 0.028$), peripheral artery disease (0.9% vs. 3.8%, $p = 0.008$), congestive heart failure (1.2% vs. 4.1%, $p = 0.014$), proteinuria (4.8% vs. 16.1%, $p < 0.001$), end-stage renal failure (0.6% vs. 5.9%, $p < 0.001$), and retinopathy (7.2% vs. 20.9%, $p < 0.001$). The hospitalization rate was also lower in HIV-infected patients (38.7% vs. 74.3%, $p < 0.001$). Mortality rate did not differ between the two groups (8.7% vs. 6.6%, $p = 0.299$).

On multivariate analysis, adjusting for hypertension, hepatitis B infection, and baseline body weight, glucose and HbA1c, HIV infection was found to be associated with lower incidence of coronary artery disease (adjusted odds rate [aOR] 0.46, 95% confidence interval [CI] 0.29 -0.72), cerebrovascular disease (aOR 0.51, 95% CI 0.29 – 0.89), congestive heart failure (aOR 0.29, 95% CI 0.10 – 0.83), peripheral artery disease (aOR 0.29, 95% CI 0.08 – 0.96), and retinopathy (aOR 0.31, 95% CI 0.18 – 0.51).

Conclusion

HIV-infected patients with diabetes had lower risk of diabetes-related complications. This is possibly due to earlier diagnosis of diabetes in HIV-infected patients, as reflected by the lower fasting glucose and HbA1c level at the time of diagnosis of diabetes.

患有糖尿病的愛滋病病人之血糖控制、糖尿病並發症及死亡率之研究

目標及宗旨

我們希望透過這項研究，可以比較糖尿病患者中，愛滋病病人和非感染者的血糖控制、糖尿病並發症及死亡率之分別。

研究設計

這是一項回顧性病例對照研究。我們比較了糖尿病患者中，愛滋病病人和非感染者的糖尿病並發症 (包括心臟血管病、末期腎病、視網膜病變、神經線病變及癌症)及死亡率之分別。

服務對象

我們確認了在指定愛滋病門診被隨訪的患有糖尿病的愛滋病病毒感染者。對於沒有愛滋病病毒感染的對照組人群，我們在一個大型的、全港的糖尿病並發症篩查項目 (JADE 項目) 的糖尿病隨訪人群中確認。對照組按照年齡，性別，和糖尿病的診斷時間與實驗組 2:1 的比例匹配。

所得的成果

在這項研究中，我們納入了三百三十三位愛滋病病毒感染者和 666 個對照組個體。整個研究隊列中，873 人 (87.4%) 是男性，診斷糖尿病時的平均年齡 (\pm 標準差) 是 50 ± 11 歲。被隨訪的時間的中位數是 11 (四分位數範圍 6-16) 年。相對於對照組，愛滋病病毒感染者中的中國籍患者較低。兩組的吸煙狀況沒有差別。

在愛滋病病毒感染者中，44.7% 的患者有愛滋相關疾病的歷史。大部分患者的傳播方式是通過異性接觸途徑 (65.5%)。患者 CD4 細胞計數的最低值為 87 (四分位數範圍 23-201) 個/立方毫米。患者當前的 CD4 細胞計數為 533 ± 282 個/立方毫米、當前的愛滋病病毒核糖核酸的計數為 20 (四分位數範圍 19-34) 拷貝/毫升。

相對於對照組，愛滋病病毒感染者的高血壓流行率更高，但慢性乙型肝炎的流行率更低。在基線時，愛滋病病毒感染者的體重、體重指數、空腹血糖、糖化血紅蛋白均低於對照組。很少的愛滋病病毒感染者在研究時服用降糖藥物。

在中位數為 11（四分位數範圍 6-16）年的隨訪中，愛滋病病毒感染者有更低的冠脈疾病、外周動脈疾病、充血性心力衰竭、蛋白尿、終末期腎衰竭和視網膜病變的發病率。愛滋病病毒感染者的住院治療率也低於對照組。兩組的死亡率沒有統計學意義的差別。

在多元分析中，調整了高血壓、乙肝病毒感染、基線體重、血糖和糖化血紅蛋白後，愛滋病病毒感染被發現和冠脈疾病（比值比為 0.46）、腦血管疾病（比值比為 0.51）、充血性心力衰竭（比值比為 0.29）、外周動脈疾病（比值比為 0.29）還有視網膜病（比值比為 0.31）的低發生率有關。

總結

患有糖尿病的愛滋病病毒感染者相較於對照組有更低的風險發生糖尿病相關並發癥。這可能與愛滋病病毒感染者所患糖尿病的早期診斷有關，反映在診斷時的更低的空腹血糖和糖化血紅蛋白。