Asymptomatic carotid occlusion in a young HIV-infected patient receiving HAART

The discovery of an asymptomatic and spontaneous internal carotid occlusion in a young HIV-infected patient, without atherosclerosis, asks the question of cardio-vascular disease's mechanism. A pro-atherogenic profile HAART-associated does not fully explain the high cardio-vascular disease's incidence among the HIV infected population. Carotid stenosis and/or thrombophilic conditions are emergent problems among HIV-infected persons.

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Case study

In mid-January 2003, a caucasian man of 34 years, HIV-infected since 1987, was successively included in a cross sectional study (SHIVA study) then in a prospective cohort study (NEVI study) regarding the cardiovascular impact of a highly active antiretroviral therapy (HAART). He had received zidovudine, lamivudine and indinavir boosted by ritonavir baby-dose since April 2001 with regards to his HIV/AIDS C status with 9 CD4/mm^3. On 1st April 2004, indinavir and ritonavir were replaced by nevirapine because of an interstitial indinavir-induced nephritis. The viral load has been undetectable (<50 copy/mL) since the onset of HAART and the CD4 count was upper 200/mm^3 since January 2003. For cardiovascular status appraisal, a carotid intima-media thickness (IMT) was performed by ultrasound twice a year. An asymptomatic whole occlusion of the left internal carotid was discovered in November 2004, 6 months after nevirapine initiation (Figure 1). The Framingham index was stationery at the low-level of one (Total Cholesterol: 5.59, LDL-c: 2.89, Triglycerides: 2.79 mmol/L; HOMA-R: 1.44, PAS 110 Hg mm, waist circumference 72 cm; BMI 18.51 kg/m^2 associated to current and past smoking of about 7 pack-years). Our patient did not have any prior vein thrombosis and his haemostasis status was normal (protein C, protein S, AntiThrombin III, factors VIII; IX, XI, no factor V Leiden, prothrombin G20210A polymorphisms or anti-phospholipid antibodies).

Discussion

Although the prevalence of an asymptomatic carotid occlusion in the common population remains unknown, the discovery of a clinically silent occlusion on the opposite side of a symptomatic stenosis has been reported in 0.45 to 3.2 %.[1,2,3] A retrospective study of 3965 consecutive cases using magnetic resonance imaging performed for non-vascular indications, has estimated the prevalence at 0.43%.[4] In these studies, no patient under 50 years had thrombosis.

A possible impact of HIV status is possible because, since the first symptomatic report of carotid occlusion in a 37 year old HIV-infected man,[5] the neurovascular clinical events have occasionally been reported in HIV patients.

The data are less profuse than for cardiovascular diseases[6,7] but they also reflect the presence of a premature atherosclerosis[8] which is perhaps linked to the HIV virus infection itself,[9] usual risk factors[10] and/or the use of protease inhibitors.[11,12] The previous ultrasonographic examination of the patient did not respond to plaque definition (IMT <1 mm without wall haematoma) and the examination of the upper limbs, aorta and renal arteries was normal. It is note-worthy that, occlusions of the carotid artery by thrombi have already been reported with no recognized wall lesion before surgery.[13]

The HIV-related vasculitis mainly concerned the small vessels, the cerebral posterior circulation and/or the immune reconstitution phase.[14] It was not the case for this patient. Nevertheless, in black HIV-infected population, the large-vessels infarcts are predominant among the stroke events.[15]

Figure 1. Bidimensional (A) and Doppler (B, C) ultrasonography on an ATL HDI 5000 apparatus (Philips, Eindhoven, the Netherlands) of common and internal left carotid artery; and change of right and left intima-media thickness (in mm) between 2003 and 2005.

On the other hand, a carotid stenosis is an emergent problem among HIV-infected young persons[16,17] but the ultrasonographic follow-up pleads against these hypothesis, even though the thickness of the left carotid had increased more rapidly then on the opposite side (0.096 mm/year vs -0.048 before thrombosis and 0.13 vs 0.03 after) (Figure 1).

An association with a haemostasis dysfunction could be evoked. Besides, a two fold prevalence of thrombo-embolism events is described in chronic HIV infection and estimated at 2.6/1000 person-year.[18,19] Nevertheless a link between thrombo-embolism events and cardio-vascular diseases has never been proved. A carotid intraluminal clot without parietal lesion has frequently been associated with cancer or severe iron-deficiency anaemia[20, 21] but this was not obvious in our case after a one year follow up.

At last, an impact of *Cytomegalovirus* infection has been reported in few cases[23] but, specially, venous or mesenteric[24] thrombosis. In addition, a carotid intima-media thickening without thrombosis has been shown in a young woman with acute cytomegalovirus infection.[25] Consequently, in our patient, despite any symptom of viral infection and a CD4 count upper 300/mm^3 in the 6 previous months, the hypothesis of a *Cytomegalovirus* infection can not be rule out.

In conclusion, each HIV-infected person receiving HAART should, independently of sex or age, be considered as at high cardiovascular risk cases. Nevertheless, the choice of a prevention is very difficult because an atherogenic profile leads either to the prescription of a corrective therapy inducing drugs interaction and poor compliance or to a modification in HAART regimen. If, as for this patient, atherosclerosis does not explain the whole cardiovascular impact of HAART, the decision is then even more complex. In our case, an antiplatelet therapy is started without modification in HAART regimen. Further studies should be performed to explicit the physio-pathology of the growth in cardiovascular diseases.

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