Notification rates of cancers in the ANRS CO4 FHDH cohort

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Background

In France, there is no cancer registry covering the whole country. A previous study showed underreporting of non-AIDS-defining cancers, and to a lesser extent of AIDS-defining cancers in ANRS CO4 FHDH in 2006 (1).

→ We aimed to evaluate the cancer notification rates in adults with HIV infection (PWH), in the ANRS CO4 FHDH cohort over the period 2008-2018, using a representative sample (1/97th) of French health insurance beneficiaries (EGB), as reference.

Patients selection

From EGB

PWH were identified using the following algorithm (2):

- An HIV ICD-10 code (B20-B24,Z21,F02.4) listed in the 100% healthcare coverage program (**100% HCP**) or during hospitalisation (**Hosp**)
- and/or at least 3 deliveries of antiretroviral drug except emtricitabine /tenofovir disoproxil alone
- and/or an HIV resistance test or an ARV concentration level measurement

Then, the following inclusion criteria were applied:

Adults (≥18 years) alive from 01/01/2008, identified as PWH before 01/01/2019 and living in mainland France

From ANRS CO4 FHDH

Adults (≥18 years) with HIV-1 infection, followed between 2008 and 2018 in mainland France.

Data Sources

- **EGB the permanent beneficiary sample (Echantillon Généraliste des Bénéficiaires):** representative cohort of the population covered by health insurance schemes in France (sample of 1/97th of the insured individuals), monitoring since 2004 health care expenditures and long-term illness status providing 100% healthcare coverage (**100% HCP**).

- **The French Hospital Database on HIV (ANRS COA FHDH):** nationwide open hospital cohort, created in 1989 and representative of the adult PWH receiving medical care in France.

Methods

- The **incidence rates** (IR) of **AIDS-defining cancers** (Kaposi Sarcoma, non-Hodgkin's lymphoma (NHL), cervix) and some **non-AIDS defining cancers** (Hodgkin's lymphoma, liver, anal canal, lung, prostate, breast, colorectal) were estimated using cancer ICD-10 code listed below in EGB and in FHDH. For EGB, the codes were listed either in the healthcare coverage program (**100% HCP**) or during hospitalisation (**Hosp**).
  For a given cancer, individuals with a history of studied cancer were excluded from analyses both in EGB and FHDH.

- The **notification rates** were estimated by the ratios of the IR of each cancer in ANRS CO4 FHDH to those in EGB -> **Ratio : IR_{FHDH}/IR_{EGB}**

- **Cancer ICD-10 codes**:
  - Kaposi sarcoma: C460-C469
  - NHL: B211,B212,C833,C834,C837-C839,C85,C851-C859
  - Cervix: C530, C531, C539
  - Hodgkin's lymphoma: C81,C810-C819
  - Liver: C22, C220-C229
  - Anal canal: C210, C211, C218
  - Lung: C33,C34,C340-C349
  - Prostate: C61   • Breast: C50,C501-C509   • Colorectal: C18-C20

Results

Population study

ANRS CO4 FHDH

154,383 individuals

Men
- Proportion : 66%
- Median age: 43.2 [36.0-49.9]

Women
- Proportion : 34%
- Median age: 39.2 [32.5-46.3]

EGB

1,566 individuals

Men
- Proportion : 69%
- Median age: 44.5 [36.5-51.5]

Women
- Proportion : 31%
- Median age: 39.8 [31.5-51.5]

Table 1: Proportion of incident cancers between 2008-2018 in EGB retrieved only in Hosp, only in 100% HCP or both

	N	only HOSP n	only HOSP %	only 100% HCP n	only 100% HCP %	Both n	Both %
AIDS-defining cancers							
Kaposi Sarcoma	12	11	91.7%	0	0.0%	1	8.3%
LNH	13	10	76.9%	0	0.0%	3	23.1%
Cervix	2	2	100.0%	0	0.0%	0	0.0%
Non-AIDS def. cancers							
Hodgkin's Lymphoma	5	2	40.0%	1	20.0%	2	40.0%
Lung	12	8	66.7%	0	0.0%	4	33.3%
Prostate	12	5	41.7%	1	8.3%	6	50.0%
Breast	7	1	14.3%	0	0.0%	6	85.7%
Liver	12	9	75.0%	0	0.0%	3	25.0%
Anal canal	13	13	100.0%	0	0.0%	0	0.0%
Colorectal	18	7	38.9%	8	44.4%	3	16.7%

Table 2: Incidence and notification rates of cancers over 2008-2018 in ANRS CO4 FHDH

	ANRS CO4 FHDH (n=154 383) n	PY	IR_{FHDH} [95 % CI]*	EGB (n=1 566) n	PY	IR_{EGB} [95 % CI]*	Notification rate Ratio=IR_{FHDH}/IR_{EGB} [95 % CI]
AIDS-defining cancers							
Kaposi Sarcoma	840	982,285	85.6 [79.8 - 91.4]	12	12,575	95.4 [54.2 - 168.0]	0.90 [0.51 - 1.58]
NHL	900	1,002,947	89.7 [83.9 - 95.6]	13	12,477	104.2 [60.5 - 179.4]	0.86 [0.50 - 1.49]
Cervix	135	345,031	39.1 [32.5 - 45.7]	2	3,962	50.5 [12.6 - 201.8]	0.78 [0.19 - 3.13]
Non-AIDS defining cancers							
Hodgkin's Lymphoma	432	1,010,931	42.7 [38.7 - 46.8]	5	12,688	39.4 [16.4 - 94.7]	1.08 [0.45 - 2.62]
Lung	773	1,014,794	76.2 [70.8 - 81.5]	12	12,714	94.4 [53.6 - 166.2]	0.81 [0.46 - 1.43]
Prostate	529	666,878	79.3 [72.6 - 86.1]	12	8,650	138.7 [78.8 - 244.3]	0.57 [0.32 - 1.01]
Breast	326	343,612	94.9 [29.9 - 37.0]	7	3,913	178.9 [85.3 - 375.2]	0.53 [0.25 - 1.12]
Liver	496	1,015,351	48.8 [44.5 - 53.1]	12	12,674	94.7 [53.8 - 166.7]	0.52 [0.29 - 0.91]
Anal canal	343	1,013,725	33.8 [30.2 - 37.4]	13	12,632	102.9 [59.8 - 177.2]	0.33 [0.19 - 0.57]
Colorectal	333	1,014,756	32.9 [29.4 - 36.4]	18	12,651	142.3 [89.6 - 225.8]	0.23 [0.14 - 0.37]

* Per 100,000 PY

Discussion

- The level of cancer reporting in ANRS CO4 FHDH was the highest for AIDS-defining cancers. For non-AIDS defining cancers, colorectal, anal canal, liver, breast and prostate cancers were underreported while Hodgkin's lymphoma and lung cancer had a high rate of reporting
- EGB sample size was too small to allow analyses per sex, age or period. Additional variables such as chemotherapy, immunotherapy, radiotherapy or surgery could be used to better identify cancers in EGB (3)

Conclusion

In cohorts of PWH that cannot be linked to cancer registries, there can be a huge underreporting for cancer, in particular those that are not treated in the wards caring for PWH, mainly non-AIDS defining cancers. For future studies, we plan to match FHDH with the French health insurance data, to overcome under notification of comorbidities.

References

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