



Are frailty, precariousness and comorbidity related in HIV-infected aging patient?

P. Enel, F. Retornaz, N. Petit, A. Darque, S. Brégigeon, I. Ravaux, K. Baumstarck and the VISAGE study group



Why, Who, What, Where are we ?

- **VISAGE**: french pluridisciplinary medical doctors engaged in HIV and gerontologic care
- Dream region of 'Provence - Côte d'Azur': sea, sun & elderly people
- High level HIV epidemic
- **VISAGE1 study**: potential drug interactions between antiretroviral drugs and all other products in elderly HIV patients
- **VISAGE2 study**: non-antiretroviral drugs taken by elderly HIV patients, compared to elderly non-HIV patients, and drug interactions



A. Darque: Drug interactions in elderly individuals with the human immunodeficiency virus, JAGS: February 2012 vol 60, 2

P. Enel, HIV-Infected and non HIV-Infected Elderly Patients: do their drug interactions differ? 2nd international Workshop on HIV & Aging, Baltimore 2011

HIV & Aging

- HAART transformed the **HIV-infection** into chronic infection
- Despite virological control and potential immune restoration, HIV-infected patients are more vulnerable than non-infected ones of the same age in terms of: death, comorbidity and not classifying pathologies
- **Aging** is an heterogeneous problem not only explained by comorbidities, geriatricians suggest that “frailty” may describe this heterogeneous process
- **Frailty** represents the cumulative effects of age-related deterioration in multiple physiological systems and homeostatic mechanisms resulting in greater susceptibility to stressors
- **Precariousness** is associated with impaired physical and mental quality of life

N.F. Onen: Frailty among HIV-infected persons in an urban outpatient care setting, J Infection (2009) 59, 346e352

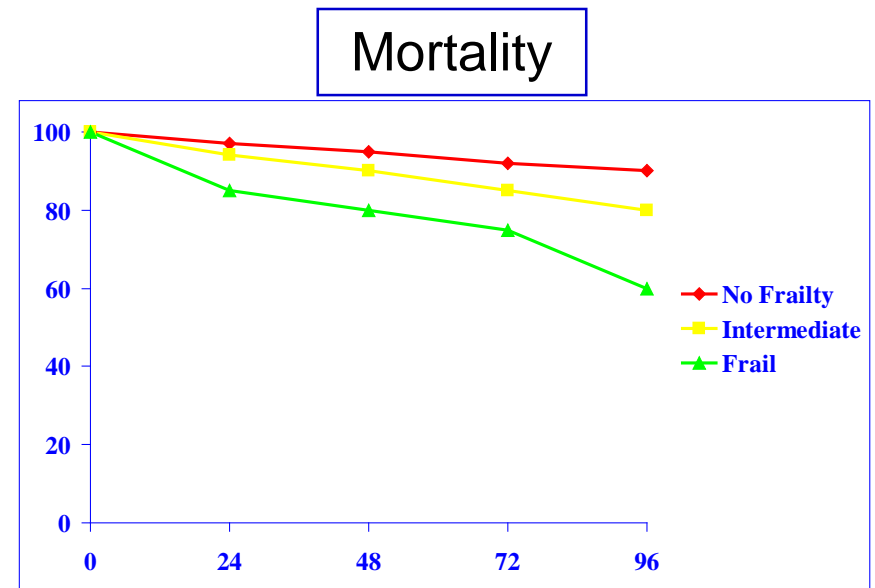
T. Douab: Health-related quality of life of people living with HIV followed up in hospitals in France: comparing trends and correlates between 2003 and 2011 (ANRS-VESPA and VESPA2 national surveys), AIDS Care, 2014;26 Suppl 1:S29-40.

Frailty in Older Adults: Evidence for a Phenotype

Linda P. Fried,¹ Catherine M. Tangen,² Jeremy Walston,¹ Anne B. Newman,³ Calvin Hirsch,⁴
John Gottdiener,⁵ Teresa Seeman,⁶ Russell Tracy,⁷ Willem J. Kop,⁸ Gregory Burke,⁹
and Mary Ann McBurnie² for the Cardiovascular Health Study
Collaborative Research Group

5 markers :

1. Nutrition
2. Mobility
3. Strength
4. Energy
5. Physical activity



- Frail: ≥ 3 markers
- Intermediate / Pre-frail: 1-2 markers
- No Frailty: 0 marker

HIV & Frailty phenotype

TABLE 2. Description of Person-Visits by Era

Variables	Characteristics According to Calendar Period			Overall (N = 12,530)
	1994–1995 (n = 2459)	1996–1999 (n = 4891)	2000–2005 (n = 5180)	
Overall person-visits % (n)				
FRP	7.6 (186)	5.2 (255)	4.5 (232)	5.4 (673)
Current age*	41 (37–46)	43 (39–48)	48 (43–52)	45 (40–50)
Clinical AIDS person-visits†	20.7 (509)	20.2 (986)	21.7 (1126)	20.9 (2621)
Current CD4 T-cell count (cells/mm ³)*	323 (140–503)	415 (262–609)	494 (329–704)	431 (268–632)
Current viral load (log ₁₀ copies/mL)	NA	3.2 (<1.6–4.3)	<1.6 (<1.6–3.6)	3.0 (<1.6–4.3)
Type of current treatment % (n)				
Not treated	57.7 (1403)	25.5 (1226)	19.8 (1014)	29.4 (3643)
Monotherapy	26.1 (634)	3.4 (181)	0.9 (47)	7.0 (862)
Combination therapy	16.2 (393)	18.8 (904)	10.6 (545)	14.9 (1842)
HAART	<0.1 (2)	52.0 (2526)	68.7 (3520)	48.7 (6028)
Person-visits without clinical AIDS % (n)				
FRP	3.3 (64)	2.4 (95)	2.9 (118)	2.8 (277)
Current age*	41 (36–46)	43 (39–48)	48 (43–52)	45 (40–50)
Current CD4 T-cell count (cells/mm ³)*	390 (237–551)	457 (306–650)	521 (361–739)	467 (314–667)
Person-visits with clinical AIDS % (n)				
FRP	24.0 (122)	16.2 (160)	10.1 (114)	15.1 (396)
Time from AIDS diagnosis (yrs)*	0.9 (0.2–2.3)	2.6 (1.2–4.3)	6.5 (4.3–8.8)	3.6 (1.4–6.6)
Current age*	41 (37–45)	43 (40–48)	48 (44–52)	45 (41–50)
Current CD4 T-cell count (cells/mm ³)*	51 (16–173)	251 (126–395)	378 (235–582)	265 (108–451)

Earlier occurrence of frailty phenotype

Frail = 6.9 % > 65 years

Our study

Methodology of VISAGE3 study

- **What?** Prospective, cross sectional study 2013-2014
- **Where?** East South France, 12 centers
- **Who?** HIV infected patients ≥ 50 years, follow up in hospitals
- **Data collection on 509 patients:**
 - Demographic and social data, BMI body mass index
 - HIV data: HIV lifetime, AIDS stage, undetectable last viral load, nadir CD4, last CD4
 - Not classifying AIDS comorbidities



Comorbidities	
Cancer	Pulmonary diseases
Hepatitis B/C	Chronical renal diseases
Diabetes	Cardio-vascular diseases
Dyslipidemia	Psychiatric disorders
Hypertension	Osteo-articular diseases
Lipodystrophy	

G. Guaraldi: Premature age-related comorbidities among HIV-infected persons compared with the general population, CID Advance Access published October 13, 2011

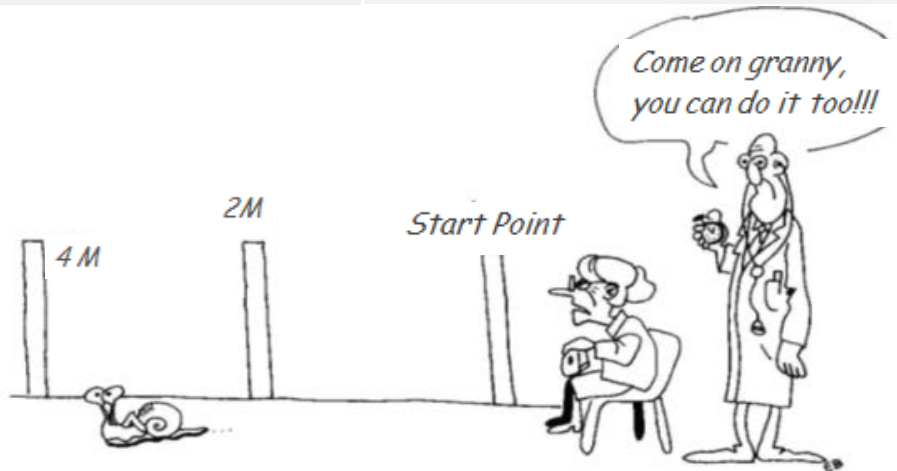
Precariousness
Socioeconomic individual deprivation EPICES Score
11 items questionnaire exploring socio-economics status

C. Sass: Le score Epices : un score individuel de précarité. Construction du score et mesure des relations avec des données de santé, dans une population de 197 389 personnes, BEH, 2006, 14

E. Labbe: A new reliable index to measure individual deprivation: the EPICES score, Eur J Public Health 2015 Aug;25(4):604-9

Markers of Frailty

Criteria	Measures
1. Nutrition/unintentional weight loss	Self-reported unintentional weight loss $\geq 5\%$
2. Mobility/slowness while walking	Gait speed on 4m walking with chronometer, twice
3. Strength/muscular weakness	Grip strength (kg) in the dominant hand with a Jamar handheld dynamometer, thrice
4. Energy/exhaustion	Visual Analogic Scale, self-reported
5. Low levels of activity	Validated self-reported questionnaire



Patients characteristics

	Total n=509	
Male	370	73%
Median age (year) <i>IQR</i>	57 (53-64)	
Normal BMI	303	60%
Median HIV lifetime	20 (13-25)	
AIDS	113	24%
Last undetectable VL	445	87%
Median nadir CD4	207 (100-332)	
Median last CD4	596 (425-813)	

Results

	Total n=509	
Frailty: ≥ 3 markers	32	6.4%
Pre-frailty: 1-2 markers	291	58.0%
No-frailty: 0 markers	179	35.7%
Precariousness	242	49%
≥ 2 Comorbidities	307	60%
≥ 3 Comorbidities	196	39%

Results

The 5 markers of frailty

Low activity	248	51%
Muscular weakness	100	20%
Weight loss	66	13%
Poor energy	36	7%
Slowness	26	5%

The 6 first comorbidities

Dyslipidemia	185	36.7%
Lipodystrophy	155	30.5%
Hepatitis B/C	132	26.1%
Psychiatric disorders	131	25.7%
Osteo-articular diseases	115	22.7%
Hypertension	113	22.4%

Frail population

	Frail n=32 (6.4%)		Pre-frail n=291 (58.0%)	Non-frail n=179 (35.7%)	p value*
Age ≥ 70 years	12.9%		8.7%	7.3%	ns
Sex female	37.5%		28.5%	23.0%	ns
Abnormal BMI	59.4%	X1.7	41.2%	33.9%	.005
HIV infection < 1996	50.0%		63.0%	57.8%	ns
AIDS stage	33.3%		24.1%	21.3%	ns
Undetectable last viral load	87.5%		87.5%	88.2%	ns
Nadir CD4 < 200/mm ³	33.3%		50.0%	45.7%	ns
Last CD4 < 350/mm ³	15.6%		11.7%	13.7%	ns
Precariousness	68.8%	X1.5	50.2%	43.4%	.03
≥2 Comorbidities**	78.1%	X1.5	63.2%	52.5%	.007

* Univariate analysis

% without missing values

Precarious population

	Precarious n=242 (48.9%)		Non precarious n=253 (51.1%)	p value
Mean age	59 years		60 years	ns
Sex female	32.0%	X1.4	22.1%	.02
Mean Body Mass Index	24.1		24.2	ns
HIV lifetime ≥ 25 years	29.3%	X1.5	21.1%	.04
AIDS stage	24.7%		23.6%	ns
Undetectable last viral load	86.3%		88.9%	ns
Nadir CD4 < 200/mm ³	51.1%		44.9%	ns
Last CD4 < 350/mm ³	16.3%	X1.7	9.6%	.03
Frailty	9.2%	X2.3	4.0%	.03
≥2 Comorbidities	66.1%	X1.3	50.6%	<10 ⁻³

Multivariate analysis:

Precariousness is related to: sex female, last CD4 < 350, frailty, ≥2 comorbidities

Conclusion

- Our study shows the usefulness of measuring frailty and precariousness in HIV-infected aging patients:
 - about 65% were frail or pre-frail, 57 years mean age
 - about 50% were in precarious situation
 - low physical activity is the main frailty marker
- HIV-infected aging patients need preventive actions to avoid risk of evolution:
 - to the type of decreased Fried criteria, e.g: nutrition program or appropriate physical activity
 - to the social status to improve welfare
 - to comorbidities management: prevention & screening



Acknowledgments

- All patients participants
- VISAGE Study Group
- AP-HM & AMU:



Assistance Publique
Hôpitaux de Marseille

- S. Bregigeon, *MD*
- A. Darque, *PharmD*
- P. Enel, *MD*
- N. Petit, *MD*
- I. Ravaux, *MD*
- K. Baumstark, *MD*

- CGD13:



- F. Retornaz, *MD, PhD*
- Q. Alitta, *MBA*
- A. Langar, *MD*

- General Hospitals:

- Aix en Provence: T. Allègre, *MD*
- Avignon: G. Pichancourt, *MD*
- Digne: P. Granet, *MD*
- Gap: L. Pelissier, *MD*
- Hyères: S. Chadapaud, *MD*
- Marseille, Hop. Européen: P. Philibert, *MD*
- Marseille, Hop. Saint-Joseph: F. Tollinchi, *MD*
- Martigues: R. Cohen-Valensi, *MD*
- Toulon: J.P. De Jaureguiberry, *MD*

- COREVIH HIV Network:

- Clinical research engineers

- Funding:

- GILEAD Sciences
- Aging research's tender AP-HM & CGD13



Sculpture Alain Marbéy



Many thanks for your attention

