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Asymptomatic sexually transmitted infections in French HIV MSM: a predictive risk score for screening - ANRS DRIVER study

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Background : Strategies of screening HIV men who have sex with men (MSM) for Asymptomatic Sexually Transmitted Infections (ASTI) vary between recommendations and practice. We aimed to valid a predictive score targeting this costly screening.

Methods :

- The French ANRS 95020 DRIVER was a prospective, multicentric, cohort study. HIV men who have sex with men (MSM) were systematically screened for Asymptomatic Sexually Transmitted Infection (ASTI) during their semestrial HIV follow-up visit.
- There were two periods of inclusion, the first in 2015 for 8 months and the second in 2017 for 6 months. Patients were recruited in 17 centers of Ile de France (Suresnes, Kremlin-Bicêtre, Paris, Colombes, Marne-La Vallée, Levallois-Perret, Boulogne, Garches, Argenteuil Versailles, St Germain en Laye, Villeneuve St Georges).
- Inclusion criteria were all HIV MSM patients between 18 and 75 years who provided written informed consent and who did not present clinical sign of IST the day of the screening.
- Patients could only participate in one of the 2 periods of inclusion.
- ASTI was defined as screening of at least one of asymptomatic syphilis or chlamydia or gonorrhea.

Table 1: Descriptive and comparison of ASTI screening according to two periods of inclusion (N=781 patients)

* The number of subjects analyzed may slightly differ from the total depending of the variables due to missing data

	N=781* n(%) or mean ± sd	n=490 period 1* n(%) or mean ± sd	n=291 period 2* n(%) or mean ± sd	p-value
Syphilis	**33 (4.2)**	**28 (5.7)**	**5 (1.7)**	**0.007**
Urinary chlamydia	8 (1.0)	3 (0.6)	5 (1.7)	0.155
Pharyngeal chlamydia	18 (2.3)	14 (2.9)	4 (1.4)	0.186
Anorectal chlamydia	39 (5.1)	20 (4.1)	19 (6.7)	0.116
Positive screening of chlamydia	59 (7.6)	33 (6.7)	26 (9.0)	0.255
Nb of positive screening of chlamydia	0.1 ± 0.3	0.1 ± 0.3	0.1 ± 0.3	0.349
Urinary gonorrhea	1 (0.1)	0 (0.0)	1 (0.3)	0.372
Pharyngeal gonorrhea	23 (3.0)	13 (2.7)	10 (3.5)	0.509
Anorectal gonorrhea	22 (2.9)	8 (1.7)	14 (5.0)	0.008
Positive screening of gonorrhea	38 (4.9)	18 (3.7)	20 (6.9)	0.043
Nb of positive screening of gonorrhea	0.1 ± 0.3	0.04 ± 0.2	0.1 ± 0.3	0.053
Positive test of ASTI	83 (10.6)	40 (8.2)	43 (14.8)	0.004
Nb of positive screening of ASTI	0.1 ± 0.5	0.1 ± 0.5	0.2 ± 0.5	0.062

In the univariate analysis, detectable plasma HIV RNA level (OR [95%CI] =2.30 [1.18;4.47], p=0.014), history of syphilis (OR [95%CI] =1.58 [1.04;2.39], p=0.032), poppers consumption (OR [95%CI] =1.71 [1.12;2.60], p=0.013), having more than 6 partners (vs none, OR [95%CI] =3.97 [1.65;9.54] p=0.002), no stable relationship (OR [95%CI] =1.74 [1.12;2.60], p=0.013) and casual partners (OR [95%CI] =2.30 [1.35;3.93], p=0.002) during the last 6 months were all significantly associated with ASTI (Table 2).

Self-reported ASTI predictive score with ROC curve : Considering the final multivariate model, AUC was 0.7 and the optimal discriminant threshold for screening ASTI was 0.1082, corresponding to sensitivity at 80.4% and specificity at 53.1%. Self-reported ASTI predictive score was built with this threshold according to the six factors included in the final model as: no screening if none factor or only one (except detectable plasma HIV RNA level) and screening if detectable plasma HIV RNA level only or a presence of ≥ 2 factors among the 6.

RESULTS

Among the 781 individuals enrolled in the study (490 in first period and 291 in second period), 103 patients (13.2%) had a diagnosis of ASTI: 33 (4.2%) had positive screening of syphilis, 59 (7.6%) of chlamydia and 53 (6.8%) of gonorrhea (Table 1a). Mean age was 46.8 ± 10.9 years and mean time since HIV diagnosis was 13.9 ± 9.4 years (Table 1b). Almost all patients (93.2%) had undetectable plasma HIV RNA level (< 50 copies/ml) and mean CD4 cell count was 709 ± 298/mm3. Only 4.1% of patients were co-infected with HBV and 9.9% with HCV. 75.8% had at least one history of STI (43.7% of syphilis, 32.9% of condyloma, 20.7% of gonorrhea and 11.3% of chlamydia). Among sociodemographic characteristics, 80% of participants were born in France, 81.1% had high school graduate, 36.2% were married, living together or had civil union and 77.6% were employed

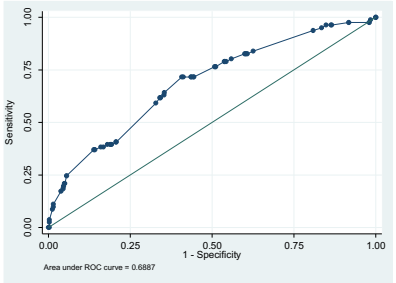
Multivariate binary logistic regression

The final multivariate model indicated that patients who had detectable plasma HIV RNA level (6.8%) were significantly more likely to have an ASTI (OR [95%CI] =2.54 [1.23;5.25], p=0.012), after adjustment for sensation seeking behavior e.g. "I don't like watching porn videos" (OR [95%CI] =1,61 [1,01;2,59], p=0.047), no use of condom/latex square for anal penetration (OR [95%CI] =2.20 [1.36;3.56, p=0.001) and for oro-genital practices (OR [95%CI] =1.83 [1.12;3.01], p=0.016), no stable relationship (OR [95%CI] =1.70 [1.01;2.66], p=0.019) and risk at group sexual intercourse (OR [95%CI] =2.00 [1.15;3.45], p=0.014), during the last 6 months (Table 3).

Table 2 Factors associated with ASTI: multivariate binary logistic regression (N=736 patients)

	No ASTI (n=697, 89.4%) n (%) or mean ± sd	ASTI (n=83, 10.6%) n (%) or mean ± sd	aOR [95% CI]	p-value
Detectable plasma HIV RNA level (≥ 50 copies/ml)	44 (6.3)	9 (10.8)	2.32 [1.03;5.21]	0.042
CD4 cell count ≥ 500 (/mm^3)	532 (76.3)	69 (83.1)	1.67 [0.88;3.16]	0.117
No use of condom/latex square for anal penetrations[1]	281 (41.3)	52 (63.4)	2.47 [1.51;4.05]	$<10^{-3}$
No use of condom/latex square for oro-genital practices[1]	143 (21.3)	28 (34.6)	2.22 [1.33;3.72]	0.002
"My desires for sexual intercourses had disturbed my daily life"	200 (29.6)	34 (41.5)	1.61 [0.99;2.62)	0.056
Not HIV positive status of stable partner or not concerned[1]	519 (75.9)	70 (85.4)	2.10 [1.09;4.06]	0.027

Figure 1: ROC curve (AUC=0.6992)



Conclusion : We propose a predictive model improving ASTI screening strategy among HIV MSM in clinical practice.

Aknowledgements : Special thanks to all participating centers and all the patients *(DRIVER study group:* Pr WEISS Laurence, Dr GHOSN Jade, Dr de TRUCHIS Pierre , Dr TIMSIT Françoise – Julie, Dr Sébastien Fouéré, Dr DUVIVIER Claudine, Dr FROGUEL Eric, Dr CHERET Antoine, Dr BODARD Loïc, Dr MORTIER Emmanuel, Dr FORCE Gilles, Pr ROUVEIX Elisabeth, Dr MASSE Virginie)

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