



ANONYMOUS UNLINKED STUDY OF THE PREVALENCE OF ANTI-HCV ANTIBODIES IN HIV-INFECTED MOTHERS OF LIVE NEWBORNS 2005 – 2009

SUMMARY

STUDY OBJECTIVES

- To estimate the prevalence of HIV-HCV coinfection in mothers of live newborns.
- To estimate the proportion of HIV-infected mothers of live newborns who are positive for anti-HCV antibodies in the participating Autonomous Regions.

METHODOLOGY

Population: For 2009, live newborns in the regions participating in the HIV seroprevalence study: Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Galicia, and Valencia. For the period 2005-2009, live newborns from the same regions. The laboratory samples are anonymous and unlinked.

Laboratory analysis: HIV antibodies were determined by ELISA and were confirmed by immunoblot. Dried blood spots confirmed as positive for HIV were tested for anti-HCV antibodies using third-generation ELISA reagents.

Statistical analysis: The proportion of HIV-infected mothers with HCV-Ab was calculated per 100, and the prevalence of HIV-HCV coinfection was calculated per 1,000 mothers of live newborns. These parameters and their 95% confidence intervals were calculated using the exact binomial method for the total data and by Autonomous Region, year, and for the whole period. Trends were evaluated using the χ^2 test for trends.

RESULTS

2009: Sufficient material was available to test 154 HIV+ samples. HCV-Ab was detected in 32 samples, which represents a **proportion of HIV+ mothers with HCV-Ab of 20.8%**, and a **prevalence of HIV-HCV coinfection** in mothers of liveborns of **0.29%** (95% CI: 0.19-0.40). The Canary Islands have the highest prevalence of HIV-HCV coinfection (1.14%; 95% CI:0.55-2.09), as well as the largest proportion of HIV seropositive mothers who are infected with HCV (37%).

2005-2009: The prevalence of HIV for the total period in mothers of live newborns in these regions was 1.40% (95% CI: 1.30-1.49), and the prevalence of HIV-HCV coinfection was 0.28% (95% CI: 0.24-0.32). The number of samples positive for HCV-Ab in mothers with HIV was 175, which represents 19.82% of this group. The overall trend over the period shows a **significant reduction in prevalence**.

CONCLUSIONS

- * The prevalence of HIV-HCV coinfection has **declined** since 2005, and remains at around **0.30 per thousand** mothers of live newborns in recent years in the Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Valencia, and Galicia.
- * About **20% of the HIV-infected women** are **also infected with HCV** in the regions studied. The prevalence of HCV-Ab in HIV-positive mothers has exhibited a downward trend since 2005.

Autonomous Regions of:
Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Valencia, and Galicia

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ANONYMOUS UNLINKED STUDY OF THE PREVALENCE OF ANTI-HCV ANTIBODIES IN HIV-CARRIER MOTHERS OF LIVE NEWBORNS 2005-2009

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INTRODUCTION

As a complement to the anonymous unlinked study of HIV prevalence in mothers of live newborns initiated in 1996, it was decided in 2004 to conduct screening for anti-HCV antibodies (HCV-Ab) in all samples that had been positive for HIV. This report presents the results for 2009.

Previous reports also presented data on the evolution of prevalence of HIV-HCV coinfection since 1998. However, the Balearic Islands joined the study in 2005, and Murcia and Melilla withdrew for the period 2005-2009, therefore this report presents the evolution of the prevalence for the period 2005-2009 in the autonomous regions of the Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Galicia, and the Valencia.

HCV infection is very frequent in persons infected with HIV because they share the same routes of transmission. The resulting complications are becoming increasingly apparent, since HIV patients are now surviving longer thanks to treatment. Various studies have shown high morbidity and mortality due to HCV coinfection, with more rapid progression to cirrhosis or cancer of the liver, and greater risk of liver toxicity from antiretroviral treatment. Vertical transmission of HCV can occur in 4-5% of cases, with risks that are proportional to the virological status of the mother at the time of birth. The risk increases to 20 or 30% in case of coinfection with HIV. Accordingly, it is important to know and monitor the levels of coinfection with HIV. This was the reason for the present study, the results of which are presented below.

OBJECTIVES

- To estimate the prevalence of HIV-HCV coinfection in mothers of live newborns.
- To estimate the proportion of HIV-infected mothers of live newborns who are positive for anti-HCV antibodies in the participating Autonomous Regions.

METHODS

The population analysed is made up of live newborns in the regions participating in the HIV seroprevalence study: the Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Valencia, and Galicia, regions in which blood samples are routinely collected for the neonatal control of congenital metabolic diseases. For the study, the samples are anonymous and cannot be linked subsequently to the neonates, which avoids selection and participation bias and ensures confidentiality. Information is collected only on the infant's province and year of birth.

The samples were obtained through the corresponding metabolic disease laboratories. Two drops of blood from each newborn were sent to the Retrovirus laboratory of the National Centre of Microbiology. The samples were analysed for HIV antibodies by ELISA test and, to verify the finding, samples that were doubly reactive or discrepant on ELISA were confirmed by immunoblot. If sufficient sample was available to conduct a new test, blood spots confirmed positive for HIV were screened for the presence of anti-HCV antibodies using third-generation ELISA reagents (Monolisa HCV plus v.2, Bio-Rad Francia); samples reactive in ELISA were considered positive.

The samples analysed for HIV during the study period represented 85% of births in the participating regions, and 25% of the total births in Spain reported to the National Statistics



Institute (INE)*. From 2005 to 2009, samples were analysed from the Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Valencia, and Galicia.

This report describes the results for 2009 in the six Autonomous Regions. All six above-mentioned regions were used for the analysis of the period 2005-2009 and the temporal evolution. The proportion of HIV-infected mothers who had HCV-Ab was calculated per 100 mothers, and the prevalence of HIV-HCV coinfection was calculated per 1,000 mothers of live newborns overall and by Autonomous Region, for each year and for the whole period. The 95% confidence intervals were calculated by the exact binomial method using STATA IC 10. For trend assessment, the χ^2 test for trends was applied using PASW Statistics 17 (SPSS).

RESULTS

1. 2009

The following Autonomous Regions participated in 2009: Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Valencia, and Galicia.

Of a total of 154 HIV+ samples, sufficient material was available to conduct an additional test for HCV-Ab in all of them (table 3). HCV-Ab was detected in 32 samples, which means that **the proportion of HIV+ mothers who were positive for HCV-Ab was 20.8%**, and the **prevalence of HIV-HCV coinfection** in mothers giving birth to a live newborn was **0.29%** (95% CI: 0.19-0.40).

The highest prevalence of HIV-HCV coinfection in women giving birth to a live newborn was found in the Canary Islands, as well as the largest proportion of HIV seropositive mothers who were infected with HCV (table 1).

Table 1. Prevalence (‰) of HIV infection and HIV-HCV coinfection in mothers of live newborns, and proportion of HIV infected mothers with HCV-Ab, by Autonomous Region, 2009

AUTON. REGION	N	Prevalence of HIV			Prevalence of HIV-HCV (coinfection)			Proportion of HIV+ samples with HCV-Ab
		HIV+	HIV+ (‰)	95% CI	HCV+	HIV-HCV(‰)	95% CI	%
Balearic Islands	12.235	20	1,63	1.10-2.52	6	0,49	0.18-1.07	30,00
Canary Islands	8.797	27	3,07	2.02-4.46	10	1,14	0.55-2.09	37,04
Castilla-La Mancha	17.666	13	0,74	0.39-1.26	0	0,00	-	0,00
Castilla and Leon	22.125	17	0,77	0.45-1.23	1	0,05	1.14e-06-0.25	5,88
C. Valenciana	30.767	52	1,69	1.26-2.21	7	0,23	0.09-0.47	13,46
Galicia	20.529	25	1,22	0.79-1.80	8	0,39	0.17-0.77	32,00
TOTAL	112.119	154	1,37	1.16-1.61	32	0,29	0.19-0.40	20,78

2. 2005 – 2009:

Samples were available for the entire period 2005 to 2009 in the six Autonomous Regions: Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Valencia, and Galicia. A

* Instituto Nacional de Estadística. IneBase: Demografía y población. Movimiento natural de la población. 2008



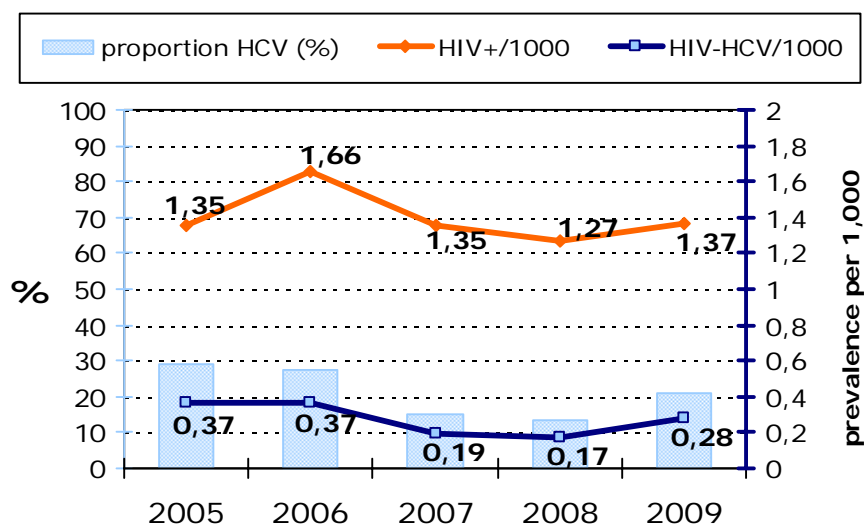
total of 632,164 blood samples from newborns were analysed, 883 of which were positive for HIV; of these, sufficient sample for the new test was available in 830 (94%). The prevalence of HIV in mothers of live newborns in these regions for the total period was 1.40‰ (95% CI: 1.30-1.49), and the prevalence of HIV-HCV coinfection was 0.28‰ (95% CI: 0.24-0.32). In mothers with HIV, the number of samples positive for HCV-Ab was 175, which represents 19.82% (table 2).

Table 2. Prevalence (‰) of HIV infection and of HIV-HCV coinfection in mothers of live newborns, and proportion of HIV-infected mothers with HCV-Ab, 2005-2009
Autonomous Regions of Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Galicia, and Valencia

Year	N	Prevalence of HIV			Prevalence of HIV-HCV (coinfection)			Proportion of HIV+ samples with HCV-Ab
		HIV+	HIV+ (‰)	95% CI	HCV+	HIV-HCV (‰)	95% CI	%
2005	124.742	168	1,35	1.10-1.53	46	0,37	0.26-0.50	29,30
2006	123.193	205	1,66	1.45-1.97	48	0,39	0.26-0.49	27,27
2007	131.581	177	1,35	1.15-1.56	25	0,19	0.12-0.28	15,24
2008	140.529	179	1,27	1.09-1.47	24	0,17	0.11-0.25	13,41
2009	112.119	154	1,37	1.16-1.61	32	0,29	0.19-0.40	20,78
Total for period	632.164	883	1,40	1.30-1.49	175	0,28	0.24-0.32	19,82

The overall trends for the period 2005-2009 show a **statistically significant decline** ($p=0.007$) (graph 1).

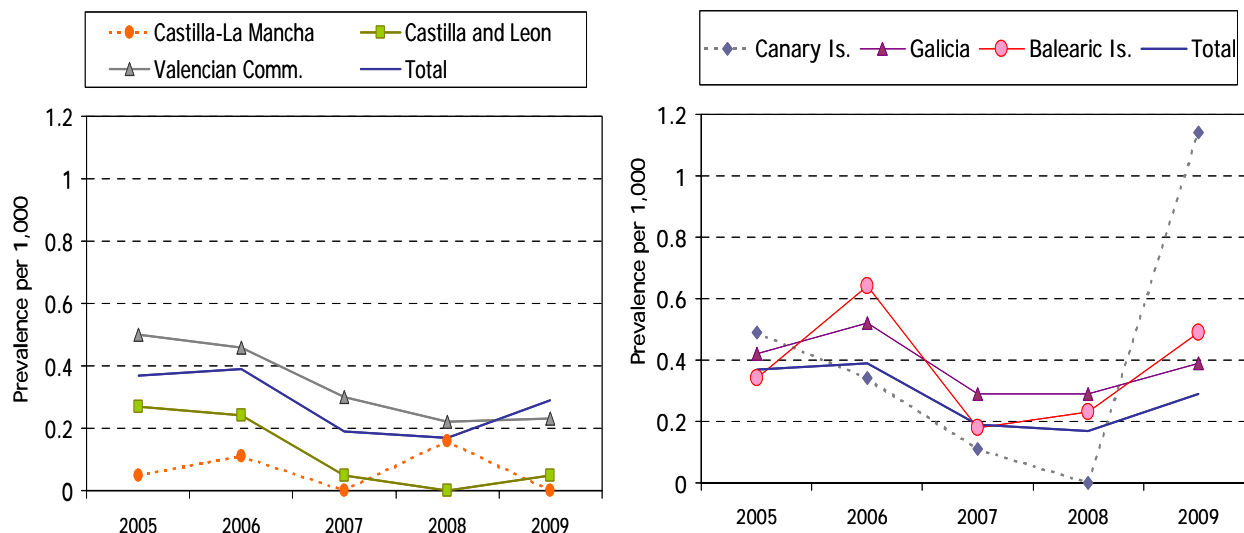
Graph 1. Prevalence (‰) of HIV infection and of HIV-HCV coinfection in mothers of live newborns, and proportion of HIV-infected mothers with HCV-Ab, 2005-2009
Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Galicia, and Valencia



Graph 2 presents the evolution of HIV-HCV coinfection between 2005 and 2009 by Autonomous Region. Given the low prevalence, the rates are very unstable, and thus difficult to interpret. The highest prevalence in the period was seen in 2009 in the Canary Islands (annex, table 3). A downward trend can be seen during the period for most regions, which is only significant for Castilla and Leon ($p=0.003$) and Valencia ($p=0.004$).



Graph 2. Prevalence (‰) of VIH-HCV coinfection in mothers of live newborns, by Autonomous Region. 2005–2009.



The proportion of HIV+ mothers who also had HCV-Ab ranged widely over the study period, from 0% to 62.5% (table 3 in the annex). The downward trend is also significant ($p=0.003$).

COMMENTS

This report presents the situation with respect to the prevalence of HIV infection and HIV-HCV coinfection in mothers of live newborns, as well as the proportion of HIV-infected mothers of live newborns who were positive for HCV-Ab. Study coverage was 85% in the participating Autonomous Regions and 25% in all of Spain. The results obtained in this study can be reliably generalised to all women of reproductive age in the population of the participating Autonomous Regions.

The results of studies conducted in pregnant women indicate that the prevalence of HCV infection varies widely. Among the six autonomous regions that participated during the period 2005-2009, the finding that 20% of HIV+ mothers were positive for HVC-Ab is somewhat lower than the proportions found in other studies in Spain.

CONCLUSIONS

- * The prevalence of **HIV-HCV coinfection has declined** in mothers of live newborns since 2005, and remains at around **0.20 per thousand** mothers of live newborns in recent years in the Balearic Islands, Canary Islands, Castilla-La Mancha, Castilla and Leon, Valencia, and Galicia.
- * In the regions studied, **20% of HIV-infected mothers are also infected with HCV**. The prevalence of anti-HCV antibodies in HIV positive mothers has been declining since 2005.



Table 3. Annual results of tests for anti-HIV and HCV antibodies in blood samples of live newborns, by Autonomous Region. 2005–2009.

Year	Autonomous Region	N	HIV prevalence			HIV-HCV prevalence (coinfection)			Proportion of HIV+ samples positive for HCV-Ab
			HIV+	HIV+ (‰)	95% CI	HCV+	HIV-HCV (‰)	95% CI	%
2005	Canary Islands	8,112	8	0.99	0.43-1.94	4	0.49	0.13-1.26	50.00
	Castilla-La Mancha	19,867	19	0.96	0.58-1.49	1	0.05	1.27e-06-0.28	8.33
	Castilla and Leon	18,319	15	0.82	0.45-1.34	5	0.27	0.08-0.63	33.33
	Valencia	50,305	87	1.73	1.39-2.13	25	0.50	0.32-0.73	29.07
	Galicia	16,541	19	1.15	0.69-1.79	7	0.42	0.17-0.87	36.84
	Balearic Islands	11,598	20	1.72	1.05-2.66	4	0.34	0.09-0.88	23.53
	Total	124,742	168	1.35	1.10-1.53	46	0.37	0.26-0.50	29.30
2006	Canary Islands	8,726	18	2.06	1.22-3.25	3	0.34	0.07-1.00	16.67
	Castilla-La Mancha	17,867	16	0.90	0.51-1.45	2	0.11	0.01.-0.40	13.33
	Castilla and Leon	20,590	21	1.02	0.63-1.55	5	0.24	0.07-0.56	33.33
	Valencia	49,593	102	2.06	1.67-2.49	23	0.46	0.02-0.69	28.75
	Galicia	15,505	23	1.48	0.94-2.22	8	0.52	0.22-1.01	34.78
	Balearic Islands	10,912	25	2.29	1.48-3.38	7	0.64	0.25-1.32	28.00
	Total	123,193	205	1.66	1.45-1.97	48	0.39	0.26-0.49	27.27
2007	Canary Islands	9,494	16	1.69	0.96-2.74	1	0.11	2.67e-06-0.59	6.25
	Castilla-La Mancha	18,487	10	0.54	0.26-0.99	0	0.00	-	0.00
	Castilla and Leon	20,997	14	0.67	0.36-1.12	1	0.05	1.21e-06-0.26	7.14
	Valencia	54,045	95	1.76	1.47-2.15	16	0.30	0.17-0.48	17.78
	Galicia	17,353	21	1.21	0.75-1.85	5	0.29	0.09-0.67	23.81
	Balearic Islands	11,205	21	1.87	1.16-2.86	2	0.18	0.02-0.64	10.53
	Total	131,581	177	1.35	1.15-1.56	25	0.19	0.12-0.28	15.24
2008	Canary Islands	11,071	17	1.54	0.89-2.46	0	0.00	-	0.00
	Castilla-La Mancha	18,656	12	0.64	0.33-1.12	3	0.16	0.03-0.47	25.00
	Castilla and Leon	22,786	21	0.92	0.57-1.41	0	0.00	-	0.00
	Valencia	53,948	79	1.46	1.16-1.82	12	0.22	0.11-0.39	15.19
	Galicia	20,940	25	1.19	0.77-1.76	6	0.29	0.11-0.62	24.00
	Balearic Islands	13,128	25	1.90	1.23-2.81	3	0.23	0.05-0.67	12.00
	Total	140,529	179	1.27	1.09-1.47	24	0.17	0.11-0.25	13.41
2009	Canary Islands	8,797	27	3.07	2.02-4.46	10	1.14	0.55-2.09	37.04
	Castilla-La Mancha	17,666	13	0.74	0.39-1.26	0	0.00	-	0.00
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	Balearic Islands	12,235	20	1.63	1.10-2.52	6	0.49	0.18-1.07	30.00
	Total	112,119	154	1.37	1.16-1.61	32	0.29	0.19-0.40	20.78