



***The place of pegylated IFN in
HBV therapeutic
(clinical cases)***

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Clinical case 1, AVT

16.02.2011

- Man, Caucasian, 34 years old, height 1.85 m, weight 86 kg (BMI 25.12 kg/m²).
- Route of transmission and duration of disease – unknown
- Anamnesis:
 - ✓ No IV drug use,
 - ✓ Mother is HBV infected.
 - ✓ He was operated on for melanoma at the age of 7 y.o. (1984)
 - ✓ HBs initial detection – 03.2010 (HBV 1550 IU/ml, ALT 52-84-62 IU/L).
 - ✓ No other diseases.
 - ✓ Athlete (amateur sports - running)
 - ✓ Just married

Clinical case 1, AVT

16.02.2011

- Man, Caucasian, 34 years old, height 1.85, weight 86 (BMI 25.12 kg/m²).
- HBs+, HBe-, antiHBe +, HCV -, HIV-, anti-HDV -, anti-HAV -.

Clinical case 1, AVT

16.02.2011

- Man, Caucasian, 34 years old, height 1.85, weight 86 (BMI 25.12 kg/m²).
- HBs+, HBe-, antiHBe +, HCV -, HIV-, anti-HDV -, anti-HAV -.
- Hematology: HGB 164 g/l, WBC 5.1x10⁹/L, PLT 270x10⁹/L.

- Blood chemistry:

ALT **43** U/L,

AST 26.1 U/L,

GGT **76.9** (10-60) U/L,

AP 91.9 (0-128) U/L,

bilirubin 19.14 µmol/L,

cholesterol **7.4** mmol/l,

glucose 5.13 mmol/L,

uric acid 356 µmol/L,

creatinin 85.4 µmol/L,

total protein 68.4 g/L,

albumin 52.9 g/L,

AFP 1.66 (0-16) IU/L.

- INR 0.95, PTT 13.3 sec (12-15 sec), PTI 111 (81-138%)

Clinical case 1, AVT, 34 y.o. man

- 16.02.2011: HBV DNA 173 500 IU/ml
- Abdominal ultrasound – normal
- LSM 8.6 kPa.

Clinical case 1, AVT, 34 y.o. man

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Treatment / follow-up options?

Working recommendations for Treatment Initiation in HBeAg-Negative Patients in 2011

	AASLD 2007 ^[1]	US Algorithm 2008 ^[2]	EASL 2009 ^[3]
HBV DNA, IU/mL	> 20,000 [‡]	> 2000	≥ 2000
ALT, x ULN*	1 to > 2	> 1	> 1
Disease stage/grade	Moderate/severe necroinflammation and/or significant fibrosis		
First-line therapy	ADV, ETV, pegIFN	ETV, TDF, pegIFN	ETV, TDF, pegIFN

*Persistent (> 3-6 mos). †TDF not FDA approved at time of publication. ‡ Consider liver biopsy if > 2000 IU/mL and treat if moderate/severe inflammation and/or fibrosis found.

- Criteria for HBV DNA, ALT and disease stage/grade must all be met
 - If not, guidelines recommend monitoring and consideration of treatment based on individual's age, health status, and stage of infection/disease

Current treatment options

	AASLD (2009)	APASL (2012)	EASL (2012)
Treatment candidacy			
HBV DNA (IU/mL)	≥ 20000	≥ 2000	> 20000
ALT	≥ 2 × ULN	≥ 2 × ULN	≥ 2 × ULN
Other criteria			Treat if, HBV DNA > 2000, ALT > ULN and moderate to severe inflammation on liver biopsy and/or at least moderate fibrosis.
Liver biopsy (or noninvasive markers of fibrosis) to consider if			
HBV DNA (IU/mL)	2000-20000	> 2000	> 2000
ALT	1-2 × ULN	1-2 × ULN	> ULN
Other criteria		≥ 40 yr old	
First-line treatment	PEG-IFN or Entecavir or Tenofovir	PEG-IFN or Entecavir or Tenofovir	PEG-IFN or Entecavir or Tenofovir
Duration of treatment			
IFN	12 mo	12 mo	12 mo
Oral	> 1 yr	Unknown/long-term	Unknown/long-term
Stopping treatment strategy for NA	Until HBsAg clearance	Until HBsAg clearance, may consider stopping if treated for at least 2 yr with undetectable HBV DNA on three separate occasions 6 mo apart.	Until HBsAg clearance.

Selecting Between Recommended First Line Nucleos(t)ide and Interferon Therapy

	Nucleos(t)ides		Interferon-Based Therapy	
Feature	Pro	Con	Pro	Con
Administration	Oral	Long term/ indefinite	Finite duration	Subcutaneous
Antiviral activity	High			Low durable rates DNA suppression
Resistance	Very low resistance [†]		No	
Adverse events	Minimal	Rare renal tox with nucleotide		Substantial*
HBeAg loss and clearance	HBeAg loss \uparrow over time	Lower rates vs IFN	Higher rates vs nucleos(t)ides	HBeAg loss \neq HBV DNA suppression
HBsAg loss and clearance	Higher and earlier events [†]	Low rates	High rates (select populations)	Low rates in general patient groups
Other	Anti HIV (TDF)	May induce HIV resistance (TDF/ETV)	Anti HCV/HDV	



*Prolonged treatment not feasible. [†] Newer vs older nucleos(t)ides.

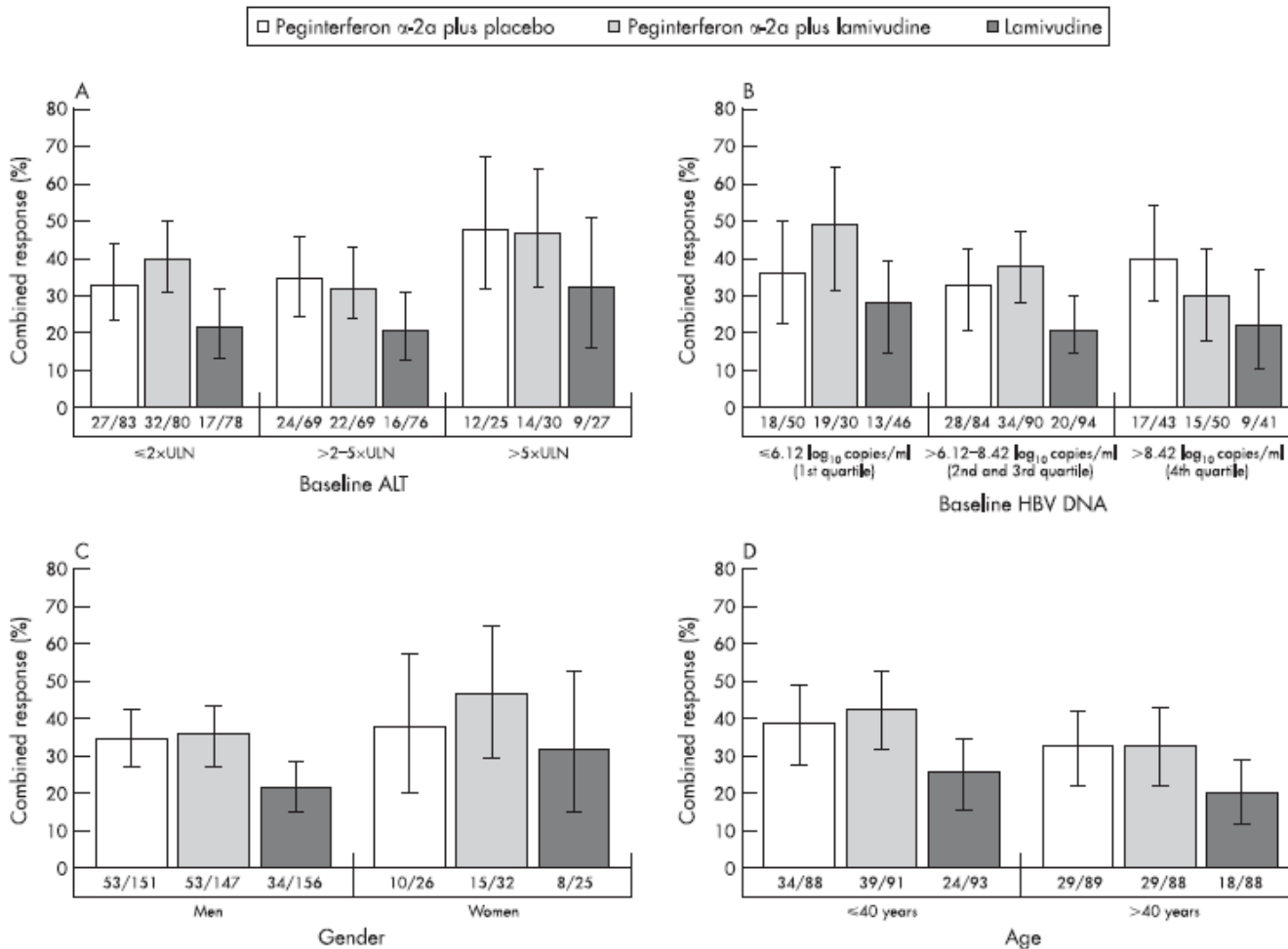
Clinical case 1, AVT, 34 y.o. man

- 16.02.2011: HBV DNA 173 500 IU/ml
- Abdominal ultrasound – normal
- LSM 8.6 kPa.

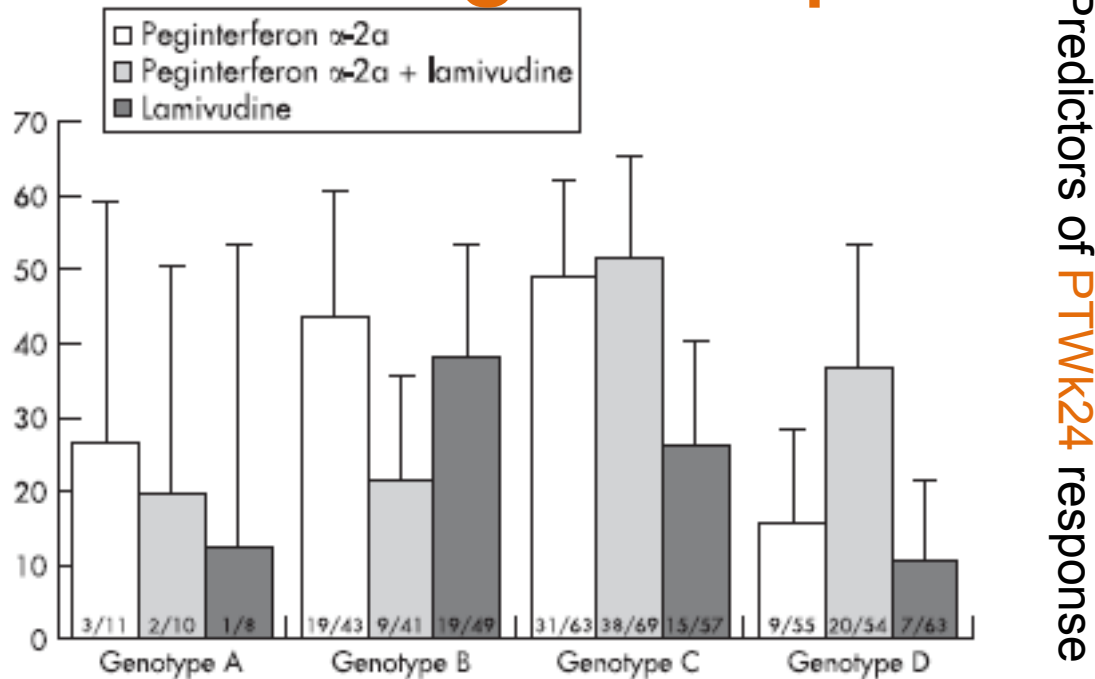
Additional testing?

Pre-treatment predictors of PegIFN efficacy in HBe- negative patients

Predictors of PTWk24 response



Pre-treatment predictors of PegIFN efficacy in HBe-negative patients



Pre-treatment predictors of PegIFN efficacy in HBe-negative patients

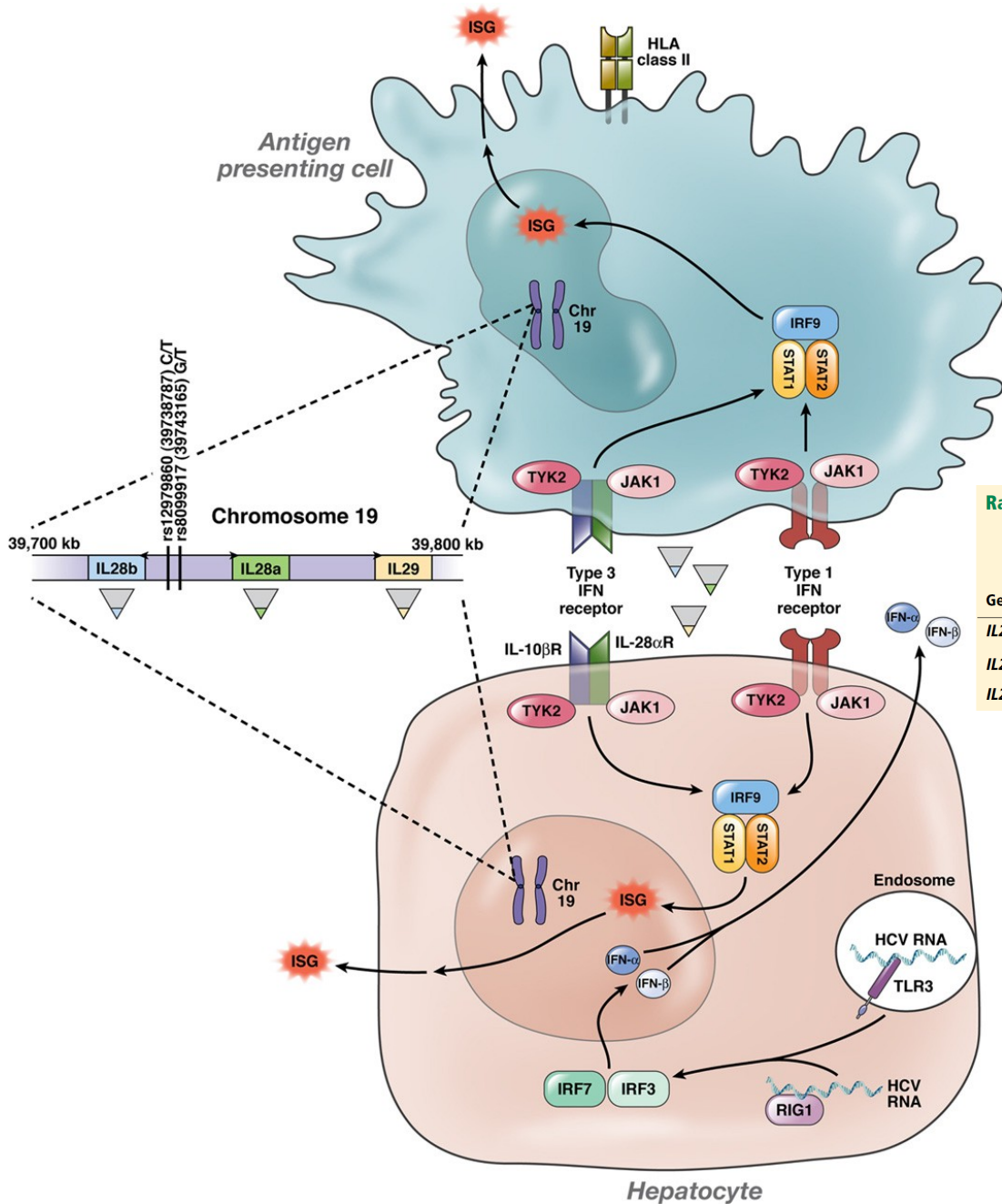
Pre-treatment factors and sustained combined response (normal ALT and HBV DNA ≤ 20000 cop/ml) at year 1 posttreatment follow-up

Factor	Odds ratio (95% CI)	p Value
Age (10 year increase)	0.80 (0.63 to 1.02)	0.0687
Gender (M v F)	0.68 (0.34 to 1.37)	0.2828
Weight (10 kg increase)	1.03 (0.81 to 1.30)	0.8271
ALT (baseline)	1.00 (1.00 to 1.00)	0.3970
Log ₁₀ HBV DNA (baseline)	1.06 (0.93 to 1.21)	0.3612
Genotype (A v D)	2.58 (0.73 to 9.20)	0.1432
Genotype (B v D)	3.69 (1.54 to 8.79)	0.0033
Genotype (C v D)	5.46 (2.46 to 12.1)	<0.0001
PEG-IFN α -2a v LAM	2.11 (1.11 to 4.01)	0.0223
PEG-IFN α -2a+LAM v LAM	2.16 (1.14 to 4.10)	0.0185

Clinical case 1, AVT, 34 y.o. man

- 16.02.2011: HBV DNA 173 500 IU/ml
- Abdominal ultrasound – normal
- LSM 8.6 kPa.
- **Genotype HBV –D**

Any other examination(s)?



Rates of response to hepatitis C treatment by interleukin-28B rs12979860 genotype

Genotype	Sustained virologic response rates			
	Pegylated interferon + ribavirin	Protease inhibitor + pegylated interferon + ribavirin	Simeprevir + sofosbuvir + ribavirin	Sofosbuvir + ledipasvir
IL28B CC	78%	82%–90%	100%	100%
IL28B CT	38%	72%	100%	100%
IL28B TT	26%	57%	83%	98%

Pre-treatment predictors of PegIFN efficacy in HBe-negative patients

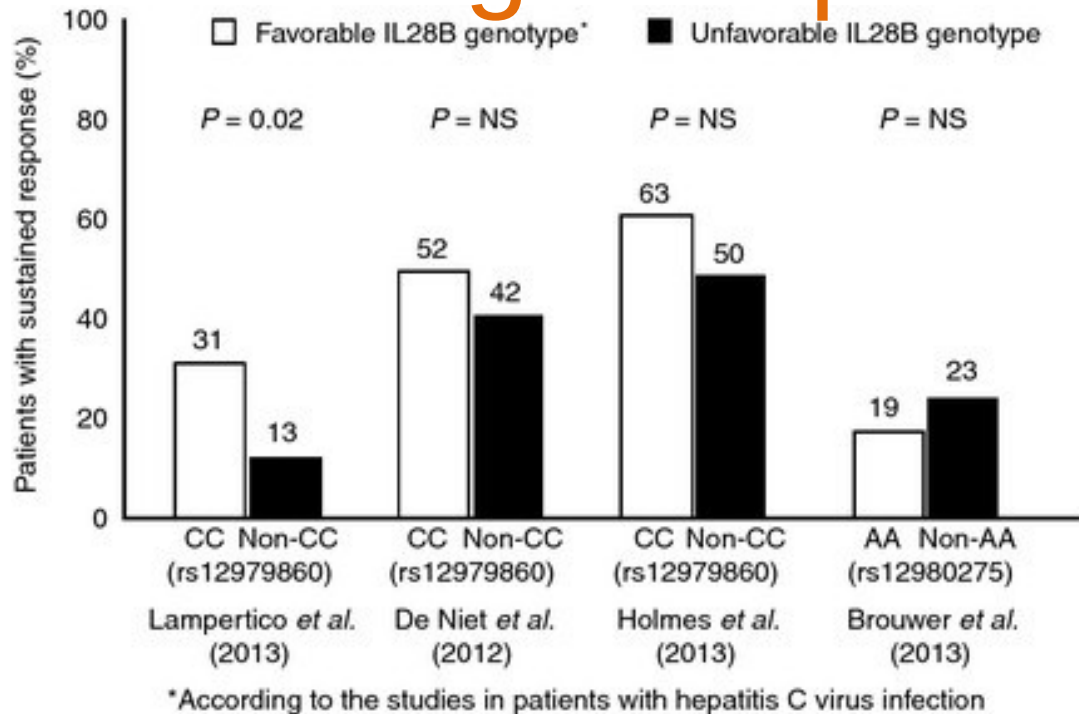
Rates of virological response to IFN therapy according to IL28B genotype

Response	CC (n = 48)	CT/TT (n = 53)	P Value
End-of-therapy virological response (%)	33 (69)	24 (45)	0.01
SVR (%)	15 (31)	7 (13)	0.02
HBsAg clearance (%)	14 (29)	7 (13)	0.04

Pre-treatment predictors of PegIFN efficacy in HBe-negative patients

Baseline Variable	SVR OR (95% CI); P Value		HBsAg Clearance OR (95% CI); P Value	
	Univariate	Multivariate	Univariate	Multivariate
Age, years	0.94 (0.89-0.99); 0.02	0.92 (0.87-0.98); 0.01	0.95 (0.90-1.00); 0.10	
Male	0.80 (0.23-2.80); 0.73		0.75 (0.21-2.61); 0.65	
Cirrhosis	0.75 (0.28-2.00); 0.57		1.06 (0.40-2.82); 0.89	
ALT levels, IU/L	1.00 (0.99-1.00); 0.16		1.00 (1.00-1.00); 0.02	1.00 (1.00-1.00); 0.03
HBV-DNA levels, log cp/mL	0.53 (0.34-0.84); 0.007	0.44 (0.27-0.74); 0.002	0.53 (0.33-0.84); 0.008	0.31 (0.15-0.62); 0.001
HBV genotype D	0.82 (0.15-4.38); 0.81		0.77 (0.14-4.12); 0.76	
IFN standard	1.76 (0.58-5.30); 0.31		3.41 (0.92-12.5); 0.06	
IFN treatment, months	1.07 (0.99-1.17); 0.08		1.16 (1.04-1.30); 0.008	1.20 (1.04-1.39); 0.01
Post-treatment follow-up, years	1.10 (1.00-1.21); 0.03		1.11 (1.01-1.22); 0.02	
CC genotype IL28B	2.98 (1.09-8.13); 0.03	3.72 (1.19-11.5); 0.02	2.70 (0.98-7.42); 0.04	3.63 (1.05-12.5); 0.04

Pre-treatment predictors of PegIFN efficacy in HBe-negative patients



Response rates of HBeAg-negative patients treated with (peg)-IFN according to different IFN- λ 3 (IL28B) polymorphisms

Clinical case 1, AVT, 34 y.o. man

- 16.02.2011: HBV DNA 173 500 IU/ml
- Abdominal ultrasound – normal
- LSM 8.6 kPa.
- **Genotype HBV –D**
- **IL28B rs12979860 – C/T; rs8099917 – T/T**

PegIFN treatment initiation

Pro	Cons
ALT – 1.16 x ULN	HBV genotype D
HBV DNA – 173 500 IU/ml	IL28B rs12979860 - CT
Age – 34 y.o.	Gender – male
Specific demographics/social factors	

Clinical case 1, AVT, 34 y.o. man

Visit type	Baseline
DOV	27.04.2011
HBsAg	Positive
HBeAg	Negative
anti-HBe	Positive
HBV DNA quant, IU/ml	23525
HBs quant, IU/ml	3553
ALT, IU/ml	64
AST, IU/ml	34.5
GGT, IU/ml	
Bilirubin total $\mu\text{mol/l}$	23.42
Glucose, mmol/l	5.89
PTI, %	80
TSH, mIU/L	1.02
RBC, $\times 10^{12}/\text{L}$	5.37
WBC $\times 10^9/\text{L}$	4,8
ANC $\times 10^9/\text{L}$	2.51
PLT, $\times 10^9/\text{L}$	307
HGB, g/L	160

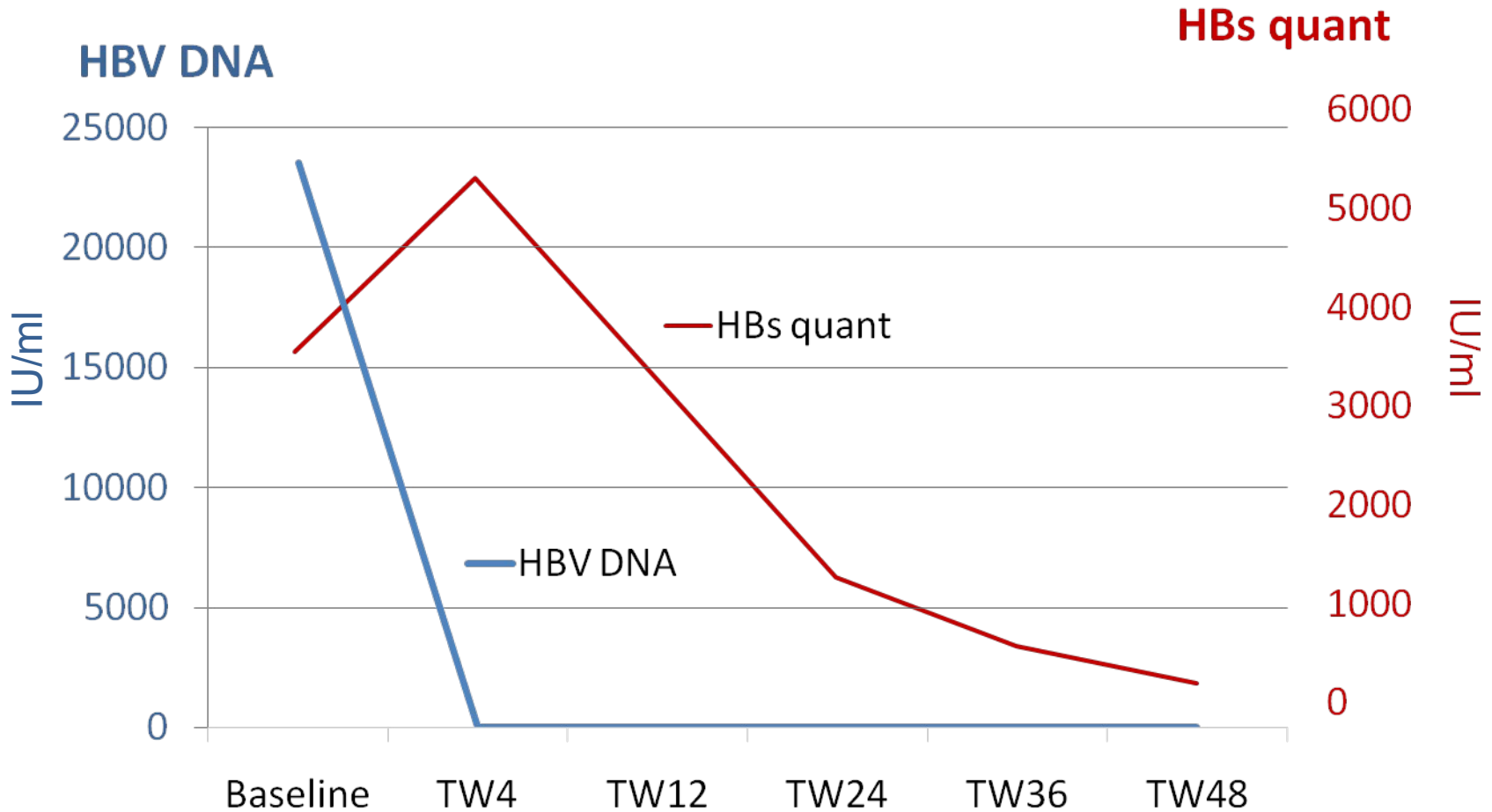
Clinical case 1, AVT, 34 y.o. man

Visit type	Baseline	TW 4	TW 12	TW 24	TW 36	TW 48
DOV	27.04.2011	25.05.2011	21.07.2011	14.10.2011	28.12.2011	26.03.2012
HBsAg	Positive					Positive
HBeAg	Negative			Negative		Negative
anti-HBe	Positive			Positive		Positive
HBV DNA quant, IU/ml	23525	not detected	not detected	not detected	not detected	not detected
HBs quant, IU/ml	3553	5301		1278.8	574.9	204
ALT, IU/ml	64	52	40.8	80	57	52
AST, IU/ml	34.5	36	116.9	43.9	36.4	31,6
GGT, IU/ml		80.6	19.3	107.9	86.3	79.6
Bilirubin total $\mu\text{mol/l}$	23.42	13.32	42.55	10.27	12.64	9.09
Glucose, mmol/l	5.89	5.14	7.53	4.48	4.78	5.04
PTI, %	80					
TSH, mIU/L	1.02		0.94			0.98
RBC, $\times 10^{12}/\text{L}$	5.37	5.79	5.47	5.91	5.9	5.44
WBC $\times 10^9/\text{L}$	4.8	3	5.47	3.4	5	3.1
ANC $\times 10^9/\text{L}$	2.51	2.23	2.22	1.71	2.96	1.29
PLT, $\times 10^9/\text{L}$	307	175	163	180	171	108
HGB, g/L	160	166	167	158	170	154

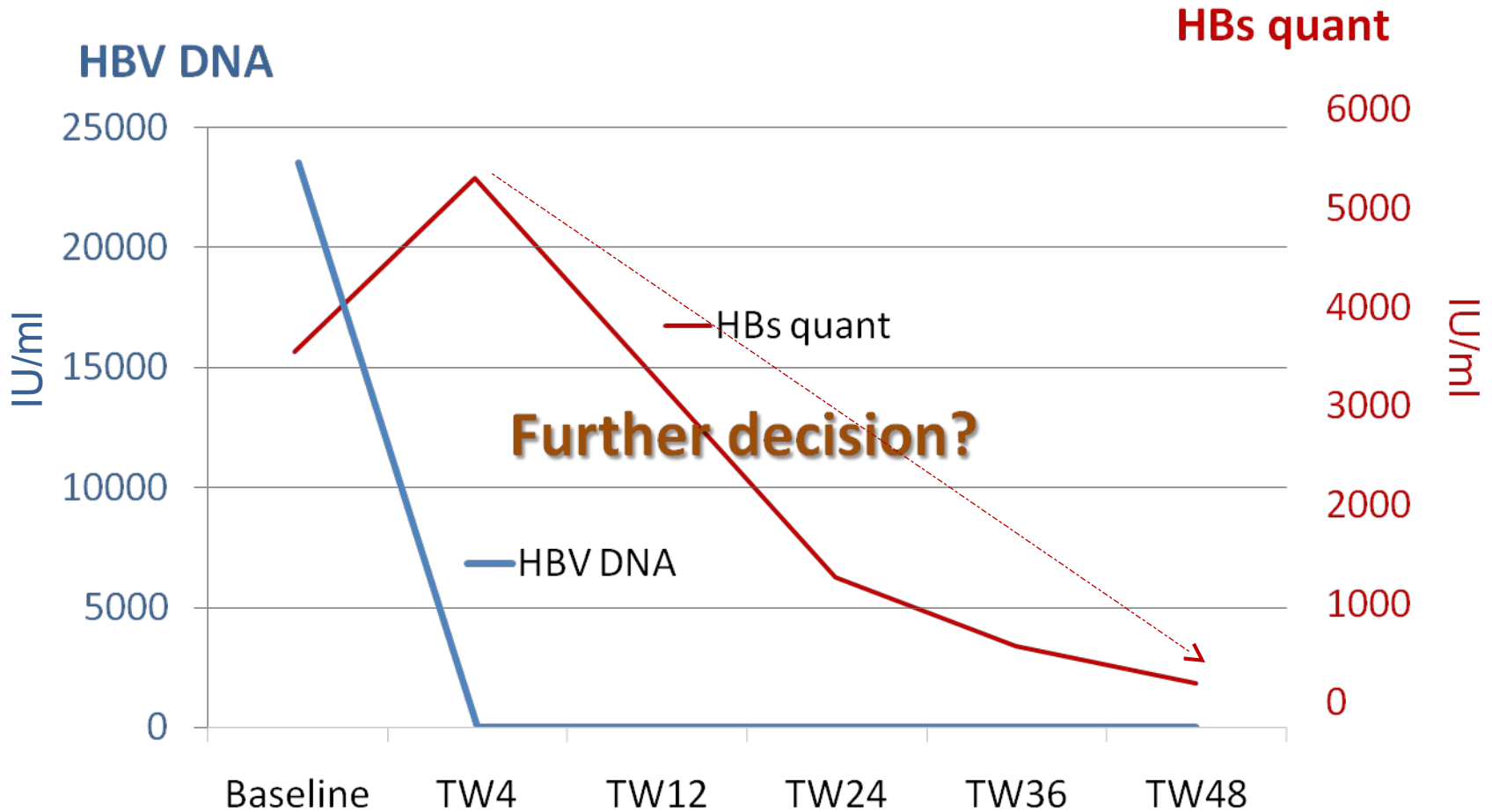
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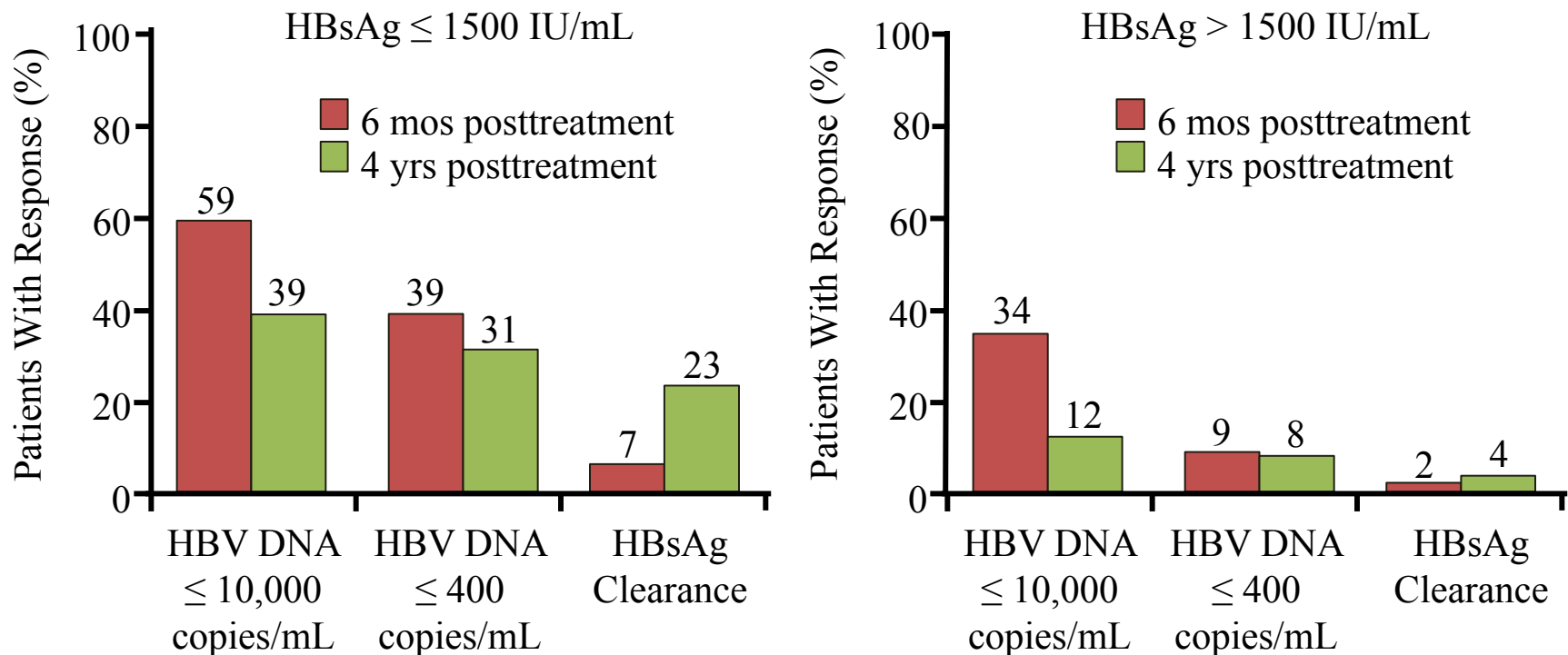
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Clinical case 1, AVT, 34 y.o. man

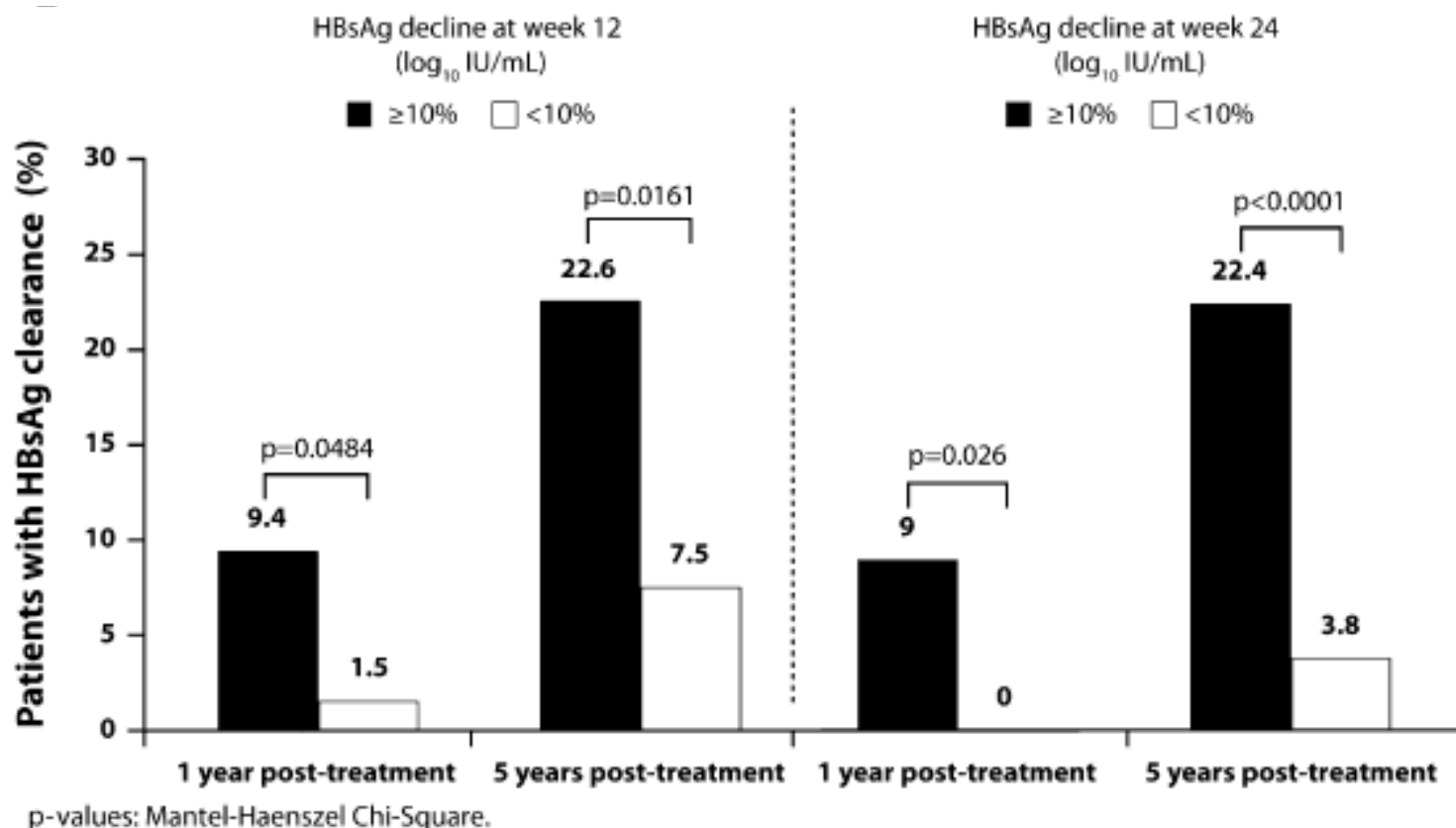


HBsAg Level as Predictor of Long-term Durability of PegIFN Response in HBeAg(-)



Predictive value of HBs at baseline and on-treatment

HBsAg $\leq 5,000$ IU/mL at baseline achieved the highest rates of response post-treatment, PPVs – 30% NPVs – 80%.



End-of-treatment HBs , HBV DNA and HBs clearance

Association Between End-of-Treatment Levels of HBsAg or HBV DNA and HBsAg Clearance 3 Years After Treatment

Parameter	Value	No. of Patients	Patients with HBsAg Loss 3 Years After Treatment, n (%)	Relative Risk	P Value
HBsAg level at week 48, IU/mL (n = 194)	≤10	23	12 (52)	22.8 (8-649)	<0.0001
	>10	171	4 (2.3)		
Decline in HBsAg from baseline to week 48, log ₁₀ IU/mL (n = 198)	>2.0	26	11 (42.3)	14.6 (5.5-38.5)	<0.0001
	≤2.0	172	5 (2.9)		
	>1.0	43	13 (30)	10.8 (3.7-31.8)	<0.0001
	≤1.0	155	4 (2.6)		
HBV DNA level at week 48, copies/mL (n = 194)	≤400	161	15 (9)	3.1 (0.4-22.5)	NS
	>400	33	1 (3)		

Abbreviation: NS, not significant.

Clinical case 1, AVT, 34 y.o. man

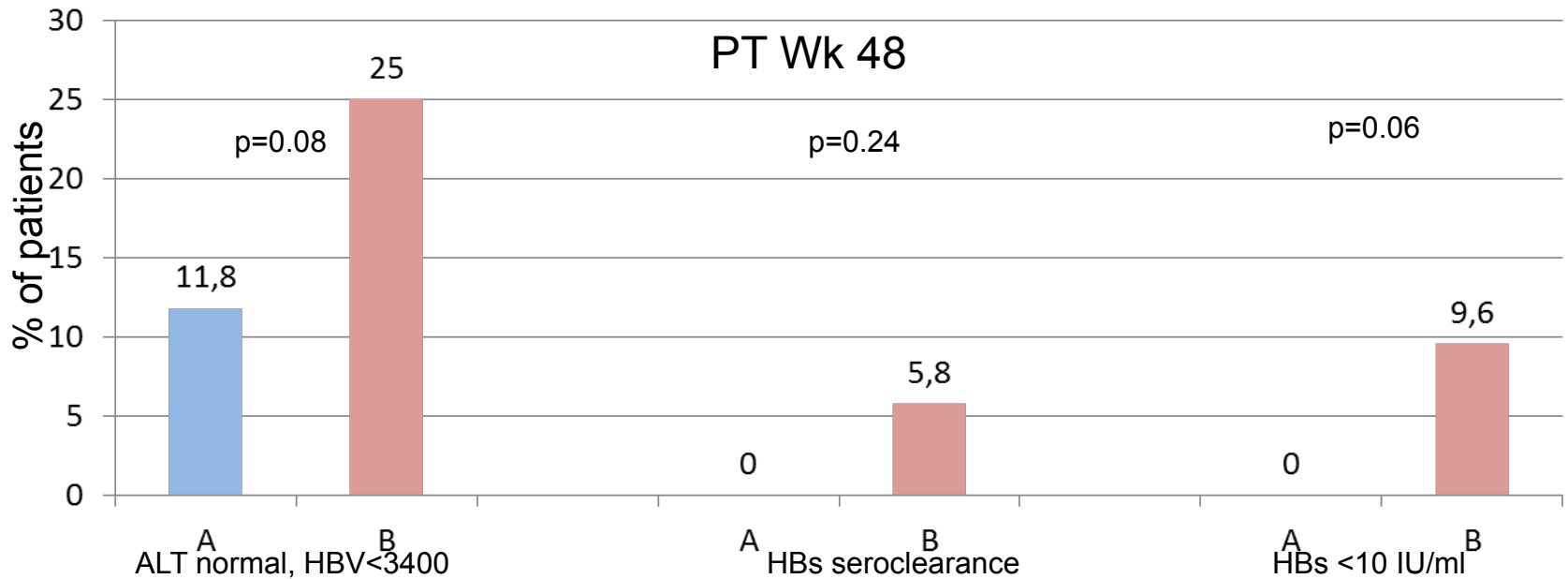
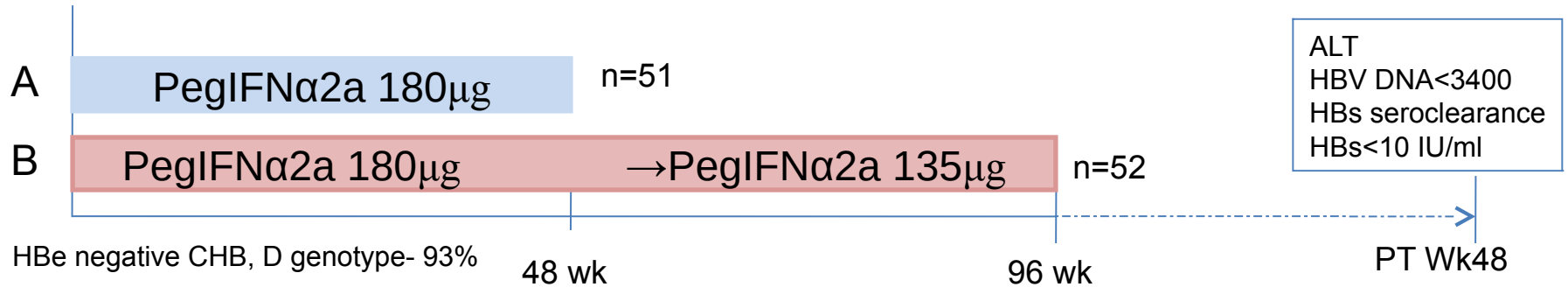
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HBsAg	Positive					Positive
HBeAg	Negative			Negative		Negative
anti-HBe	Positive			Positive		Positive
HBV genotype	D					
HBV DNA quant, IU/ml	23525	not detected	not detected	not detected	not detected	not detected
HBs quant, IU/ml	3553	5301		1278.8	574.9	204
HBs change from basal lvl %log		No	ND	-35%	-83.8%	-94.3%

Clinical case 1, AVT, 34 y.o. man

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DOV	27.04.2011	25.05.2011	21.07.2011	14.10.2011	28.12.2011	26.03.2012
HBsAg	Positive					Positive
HBeAg	Negative			Negative		Negative
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HBV genotype	D					
HBV DNA quant, IU/ml	23525	not detected	not detected	not detected	not detected	not detected
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HBs change from basal lvl %log		No	ND	-35%	-83.8%	-94.3%

Prolonged treatment?

Prolonged treatment HBe- CHB with PegIFN

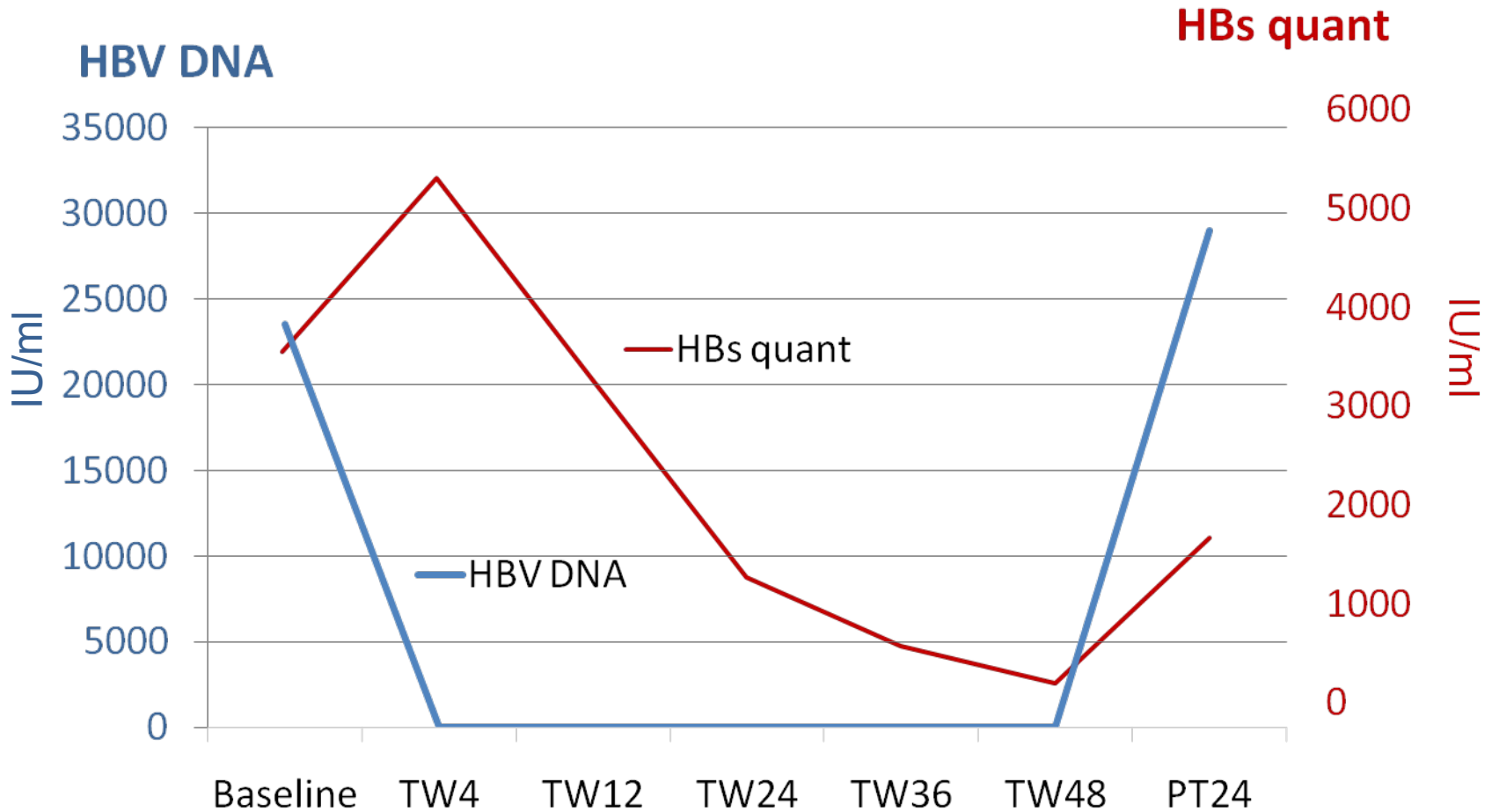


Clinical case 1, AVT, 34 y.o. man

Visit type	Baseline	TW 4	TW 12	TW 24	TW 36	TW 48	PT 24
DOV	27.04.2011	25.05.2011	21.07.2011	14.10.2011	28.12.2011	26.03.2012	19.09.2012
HBsAg	Positive					Positive	
HBeAg	Negative			Negative		Negative	
anti-HBe	Positive			Positive		Positive	
HBV DNA quant, IU/ml	23525	not detected	not detected	not detected	not detected	not detected	29000
HBs quant, IU/ml	3553	5301		1278.8	574.9	204	1666
ALT, IU/ml	64	52	40.8	80	57	52	56
AST, IU/ml	34.5	36	116.9	43.9	36.4	31,6	42
GGT, IU/ml		80.6	19.3	107.9	86.3	79.6	53.1
Bilirubin total μ mol/l	23.42	13.32	42.55	10.27	12.64	9.09	14.51
Glucose, mmol/l	5.89	5.14	7.53	4.48	4.78	5.04	5.37
PTI, %	80						
TSH, mIU/L	1.02		0.94			0.98	
RBC, $\times 10^{12}/L$	5.37	5.79	5.47	5.91	5.9	5.44	5.35
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PLT, $\times 10^9/L$	307	175	163	180	171	108	282
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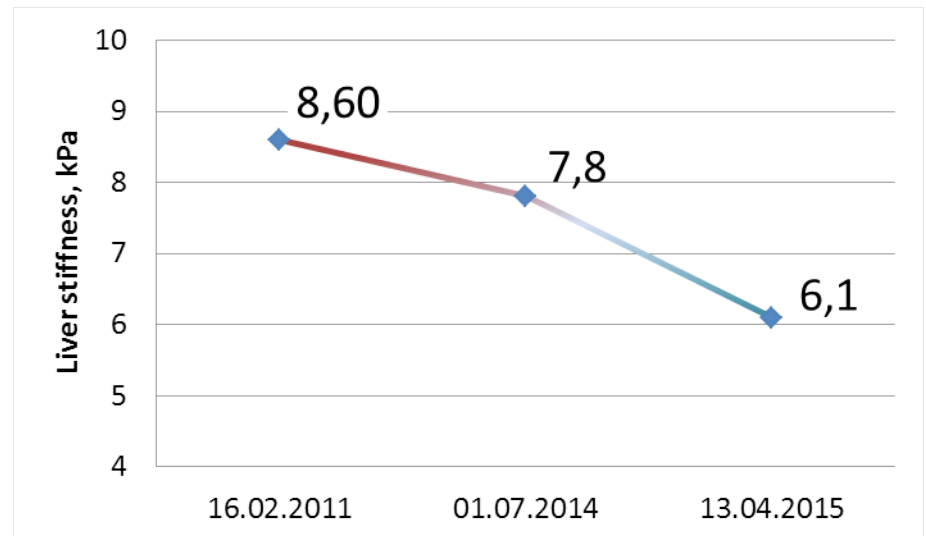
PegIFN- α 2a 180 μ g/week SC. Date of last dose 19.03.2012

Clinical case 1, AVT, 34 y.o. man



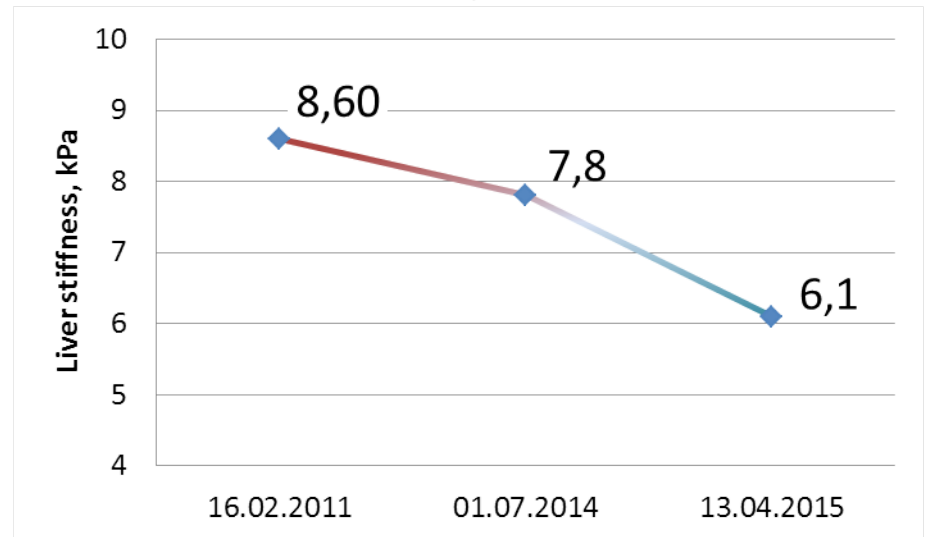
Clinical case 1, AVT, 34 y.o. man

- Since 15.09.2012 patient receives Entecavir 1 mg/day with good compliance.
Concomitant medication: rosuvastatin 5 mg/day (due to \uparrow Cholesterol, LDLP \uparrow)
- Persistently normal ALT, AST, HBs +, HBe-;
- Persistently negative HBV DNA.
- LSM 01.07.14 – 7.8 kPa (F2); LSM 13.04.15 – 6.1 kPa(F0-F1)
- 10.04.2015 anti-HBs 46 IU/ml, HBs +.



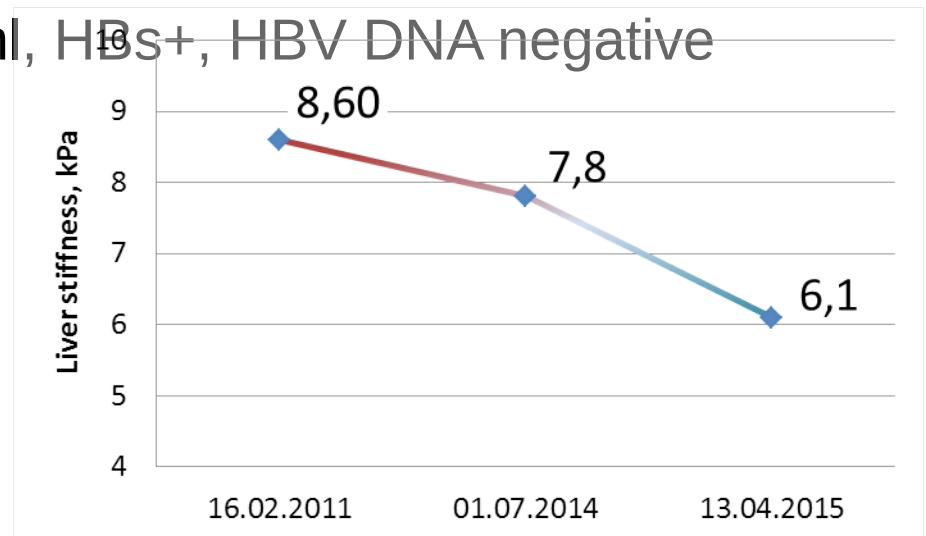
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- 20.08.2015 anti-HBs <3 IU/ml, HBs+, HBV DNA negative



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Concomitant medication: rosuvastatin 5 mg/day (due to \uparrow Cholesterol, LDLP \uparrow)
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- LSM 01.07.14 – 7.8 kPa (F2); LSM 13.04.15 – 6.1 kPa(F0-F1)
- 10.04.2015 anti-HBs 46 IU/ml, HBs +.
- 20.08.2015 anti-HBs <3 IU/ml, HBs+, HBV DNA negative



Further treatment options?

Adding of PegIFN to a current nucleos(t)ide therapy

- 12 patients treated with NA, with undetectable HBV DNA level (9 pts HBe-).
- Added PegIFN as an individualized treatment.
- HBs clearance achieved in 2 (1 HBe-) pts at wk 40 or 32.

- Adding PegIFN to a stable course of NA may be promising
- Further larger studies are needed to obtain statistically powerful support

Clinical case 2

Clinical case 2, AAS, 38 y.o., man

- Referred in June, 13 as HCV patient
 - In 2000 – IV drug use, jaundice, admitted to infectious diseases hospital, symptomatic treatment, IV drug users rehabilitation program 2001-2002.
 - First examined in 2007: HCV Ab+, HBs+. ALT 189 IU/l, AST 154 IU/l, total bilirubin 19 μ mol/l, HCV RNA +, HBV DNA-? HDV Ab+. Treatment considered, but postponed due to unknown reason.
 - **21.04.11 (in infectious diseases hospital):**
 - Liver ultrasound - normal
 - Hematology – normal
 - Blood chemistry : bilirubin – 9 μ mol/l, ALT 155 IU/l, AST 70 IU/ml.
 - HBs+, HBV DNA -, HCV RNA +, genotype-? quantity? HIV Ab -.
 - Liver biopsy: 22 portal tracts, Knodell 4-1-4-3=12, METAVIR : A1 (PMN-3; LN-1)F2
- 27.04.11 started IFN α 2a 9mln IU 3 times a week, 6 month.**
- PT HCV RNA negative achieved. HDV RNA – no data available.

Clinical case 2, AAS, 38 y.o., man

03.06.13 at the reference :

- Man, white/caucasian, DOB 28.05.1975.
- Denies IV drug use since 2001. Social drinking.
- General appearance, physical examination – normal.
- Height 172 cm, weight 80 kg, BMI 27.04 kg/m².
- Liver ultrasound - normal
- LSM 13.2 kPa (~F4).
- Anti HCV +, HCV RNA -, HBs+, HBV DNA 3467 IU/ml (10 400 copies/ml), HIV Ab -
- Anti HDV +, HDV RNA +
- ALT 35 IU/l, AST 23.1 IU/l, bilirubin 9.65 µmol/l, AP 53.7 IU/l, GGT 13.7 IU/l, cholesterol 4.34 mmol/l, creatinin 75 µmol/l, TP 76.8 g/l, albumin 47.1 g/l.
- PTI 75.6%, INR 1.1.

Clinical case 2, AAS, 38 y.o., man

03.06.13 at the reference :

- Man, white/caucasian, DOB 28.05.1975.
- Denies IV drug use since 2001. Social drinking.
- General appearance, physical examination – normal.
- Height 172 cm, weight 80 kg, BMI 27.04 kg/m².
- Liver ultrasound - normal
- **LSM 13.2 kPa (~F4).**
- Anti HCV +, HCV RNA -, HBs+, HBV DNA 3467 IU/ml (10 400 copies/ml), HIV Ab -
- Anti HDV +, HDV RNA +
- ALT 35 IU/l, AST 23.1 IU/l, bilirubin 9.65 µmol/l, AP 53.7 IU/l, GGT 13.7 IU/l, cholesterol 4.34 mmol/l, creatinin 75 µmol/l, TP 76.8 g/l, albumin 47.1 g/l.
- PTI 75.6%, INR 1.1

Consider treatment?

Clinical case 2, AAS, 38 y.o., man

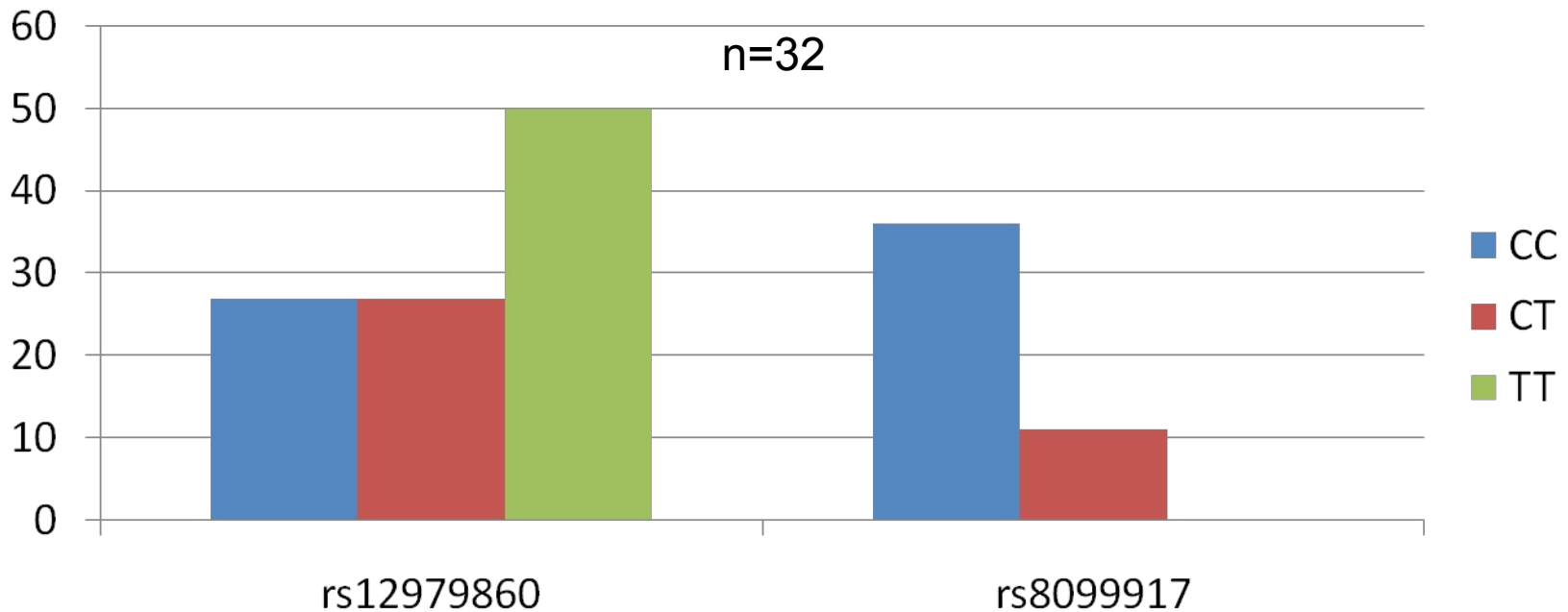
03.06.13 at the reference :

- Man, white/caucasian, DOB 28.05.1975.
- Denies IV drug use since 2001. Social drinking.
- General appearance, physical examination – normal.
- Height 172 cm, weight 80 kg, BMI 27.04 kg/m².
- **LSM 13.2 kPa (~F4).**
- Liver ultrasound - normal
- Anti HCV +, HCV RNA -, HBs+, HBV DNA 3467 IU/ml (10 400 copies/ml), HIV Ab -
- Anti HDV +, HDV RNA +
- ALT 35 IU/l, AST 23.1 IU/l, bilirubin 9.65 µmol/l, AP 53.7 IU/l, GGT 13.7 IU/l, cholesterol 4.34 mmol/l, creatinin 75 µmol/l, TP 76.8 g/l, albumin 47.1 g/l.
- PTI 75.6%, INR 1.1.

|| 28B - rs12979860 – C/T: rs8099917 – T/T

Rates of sustained virologic response to IFN α therapy in HDV

	rs12979860			P value	rs8099917			P value
	CC	CT	TT		TT	TG	GG	
EoT response, n/total (%)	7/15 (47)	8/15 (53)	1/2 (50)	.94	12/22 (54)	4/9 (44)	0/1 (0)	.52
SVR, n/total (%)	4/15 (27)	4/15 (27)	1/2 (50)	.78	8/22 (36)	1/9 (11)	0/1 (0)	.30



HDV treatment predictors

- A negative HDV RNA at 6 months of treatment was the only predictor of SVR (OR = 20; 95% CI 2, 195; P = 0.01).
- Previous exposure to IFN treatment is a negative predictive factor

Clinical case 2, AAS, 38 y.o., man

- 10 JUN 2013 PegIFN α 2b 120 μ g/week was initiated.
- General tolerance – good

Clinical case 2, AAS, 38 y.o., man

Visit type	Baseline	TW 4	TW 12	TW 24	TW 36	TW 48	PT 34
DOV	03.06.13	08.07.13	02.09.13	18.11.13	10.02.14	05.05.14	25.12.14
HBsAg	Positive			Positive		Negative	Negative
HBeAg	Negative					Negative	Negative
anti-HBe	Positive			Positive		Positive	Negative
AntiHBs	Negative			Negative	7,76 (negative)		300 IU/ml
HBV DNA, IU/ml	3467	not detected	not detected	not detected	not detected	not detected	not detected
HDV RNA	+	+	Not detected	Not detected	Not detected	Not detected	Not detected
HBs quant, IU/ml							
ALT, IU/ml	35	120	231	133	140	126	13
AST, IU/ml	23.1	56.8	86.9	65.3	85.4	82.4	16.8
GGT, IU/ml	13.7	20.1	47.3	33.9		25.6	
Bilirubin total $\mu\text{mol/l}$	9.65	9.48	12.55	8.7		7.7	
INR	1.1	0.91	0.9	0.9			
TSH, mIU/L	0.95			2.13		2.91	
WBC $\times 10^9/\text{L}$	7.2	4.9	5.47	3.4	4.66	4.31	5.7
ANC $\times 10^9/\text{L}$	3.0	1.5	40.6	50.4	1.8	1.9	3.6
PLT, $\times 10^9/\text{L}$	202	106	163	180	112	125.9	251
HGB, g/L	149	146	167	158	141.3	136.3	154

07.04.14 (Wk 44): **HBs negative**, HBsAb $<3.0\text{IU/ml}$

Summary of PegIFN as HBV Therapy

- Advantages: finite duration of treatment, durable response in a subset of responding patients; lack of viral resistance development
- Disadvantages: administered by subcutaneous injections; associated with significant toxicities in most patients
- HBeAg and HBsAg seroconversion rates, tolerability, and likelihood of response to treatment vs nucleos(t)ides all play a role decision

Conclusions

Host factors:

Gender
Age
Genes affecting IFN
response
BMI
Ethnicity
Nutrition
Previous treatment
experience

Pathogen factors:

Genotype
Fitness
Mutations (?)

Environmental factors:

Access to different
types of treatment
Family support during
treatment

Conclusions

- PegIFN is the only finite treatment to offer a chance of SVR in CHB patients approved now.
- Current efficacy of <25% chances to be cured supported the need of identification of prognostic factors of favorable response.
- Further studies are needed to identify predictors of response and provide individualized treatment