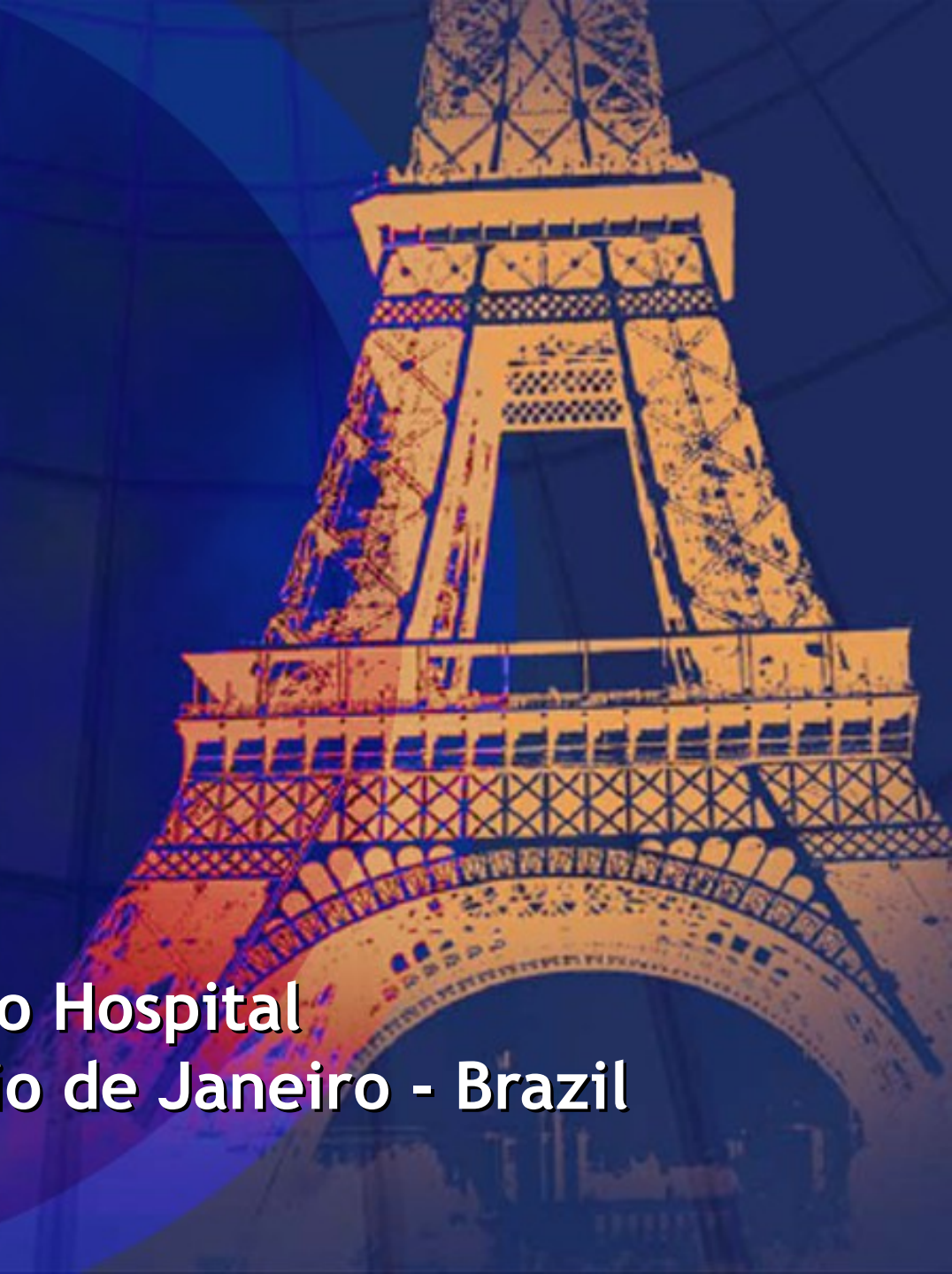


Case Report

Ana Carolina Cardoso
Clementino Fraga Filho Hospital
Federal University - Rio de Janeiro - Brazil



Case Report

- ✓ 63 years old, female
- ✓ BMI: 25, Insulin resistance, Arterial hypertension
- ✓ 2003: diagnosis of HCV infection
- ✓ Contamination: 1983, blood transfusion
- ✓ No excessive alcohol intake or tobacco use
- ✓ Genotype 1b

Case Report

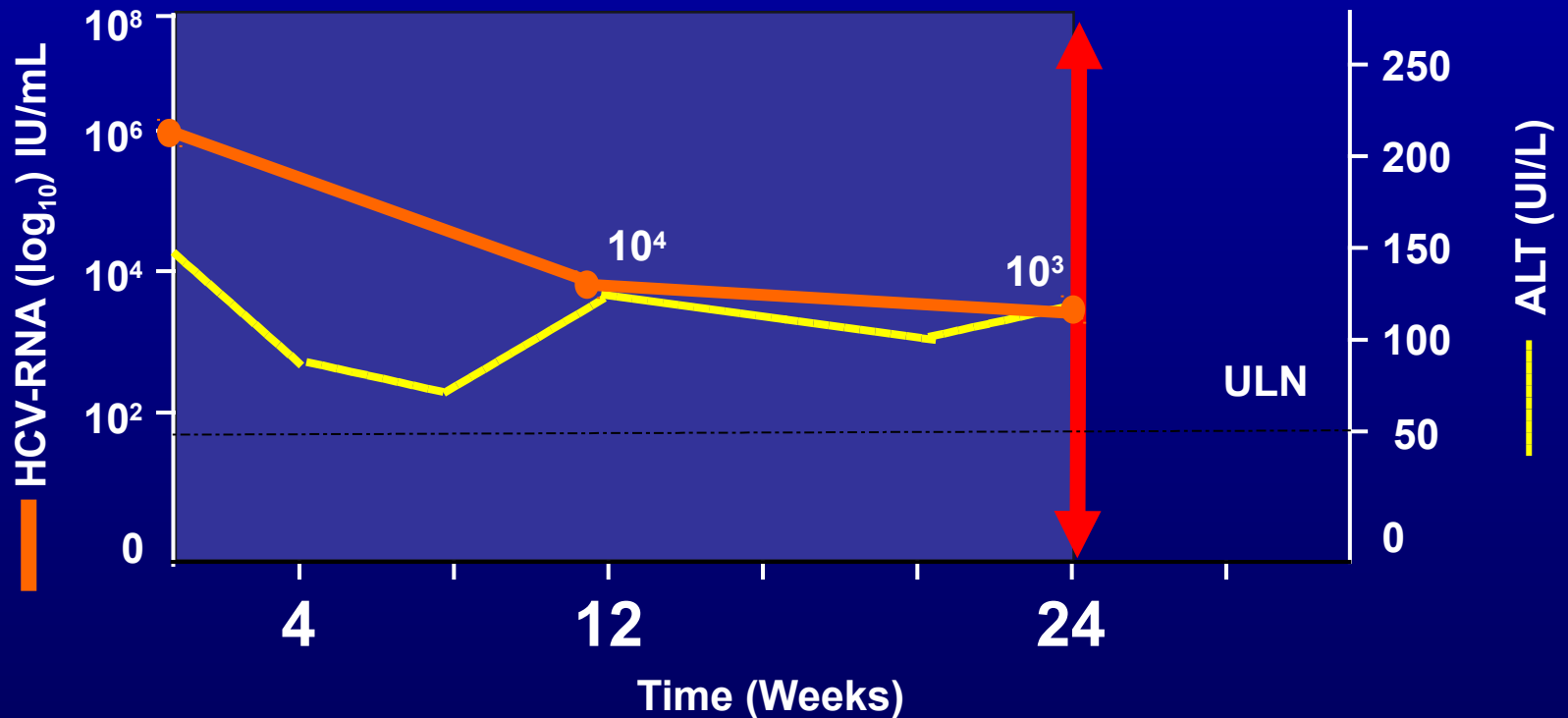
- ✓ Liver biopsy (2004): 1,8 cm, 15 PT, A2F2 (METAVIR),
NASH (60% steatosis)

Case Report

✓ Treatment (2005/2006): PEG INF / RBV (72 ws)

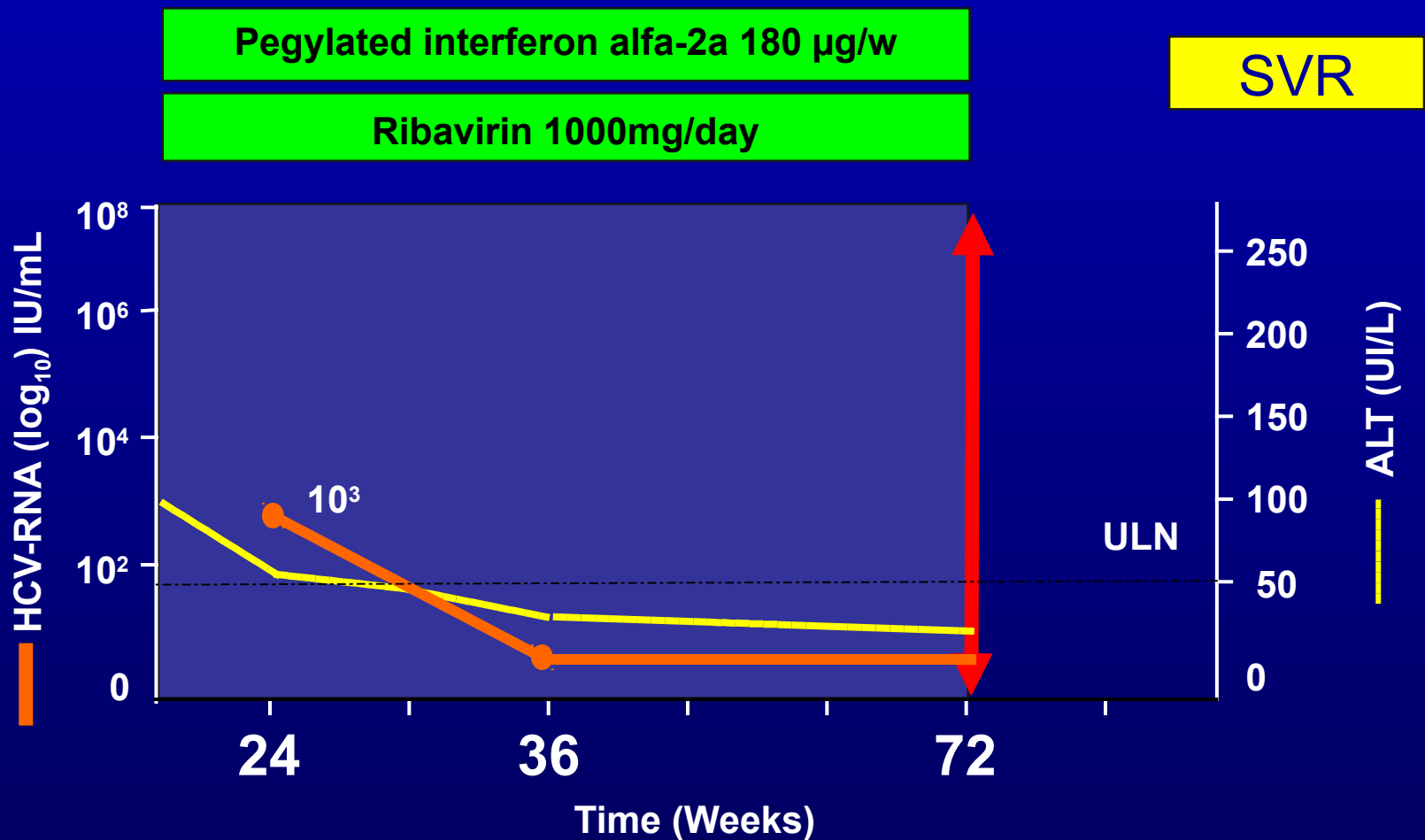
Pegylated interferon alfa-2a 180 µg/w

Ribavirin 1000mg/day



Case Report

✓ Treatment (2005/2006): PEG INF / RBV (72 ws)



Case Report

2006 - 2011

- ✓ Follow-up
- ✓ Asymptomatic
- ✓ BMI: 25
- ✓ ALT/AST normal
- ✓ Platelet count – 140 – 160.000/mm³
- ✓ US – liver steatosis

Case Report

July / 2011

FibroTest® – 0.51

Fibrotest	Equivalent METAVIR
0.75-1.00	F4
0.73-0.74	F3-F4
0.59-0.72	F3
0.49-0.58	F2
0.32-0.48	F1-F2
0.28-0.31	F1
0.22-0.27	F0-F1
0.00-0.21	F0

Case Report

August / 2011

FibroScan® – 8.8 kPa / 0.9 (11%) / 83%



Case Report

March / 2013

FibroScan® – 9.6 kPa / 0.9 (10%) / 91%
CAP® – 265 dB/m / 21 (7%)



Case Report

July / 2013

- ✓ **3 cm nodule detected during ultrasound surveillance**
- ✓ **MRI – 3 nodules – 3 cm, 2,3 cm and 2 cm**
- ✓ **Referred to a Liver Transplantation Center**

Case Report

November / 2013

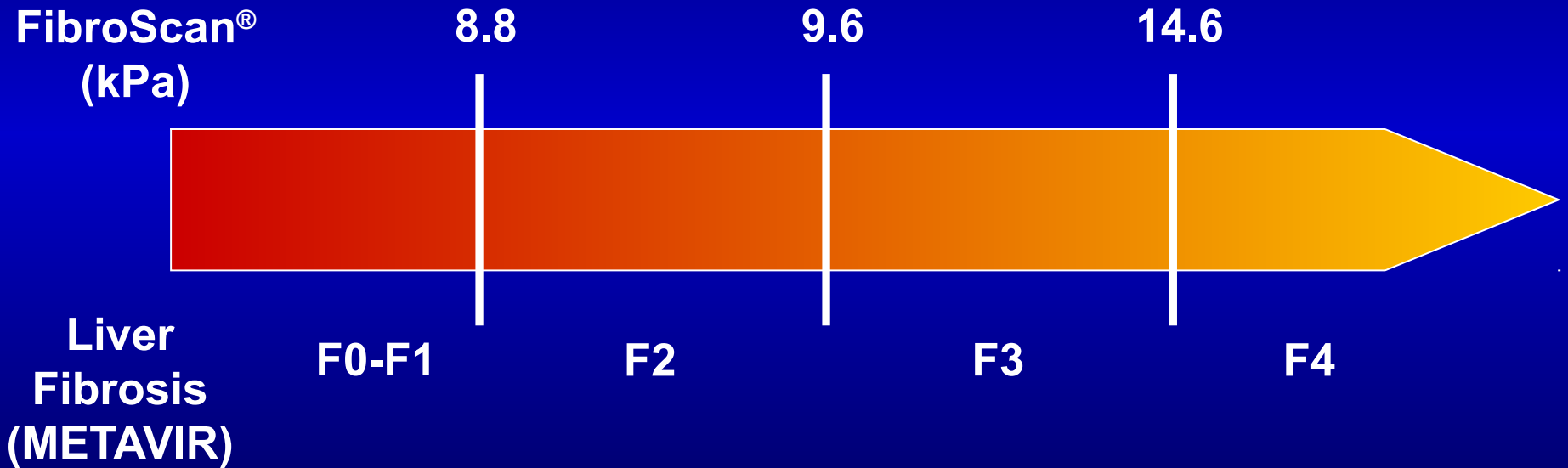
- ✓ Liver transplantation
- ✓ Explant – liver cirrhosis and NASH

Case Report

Key points

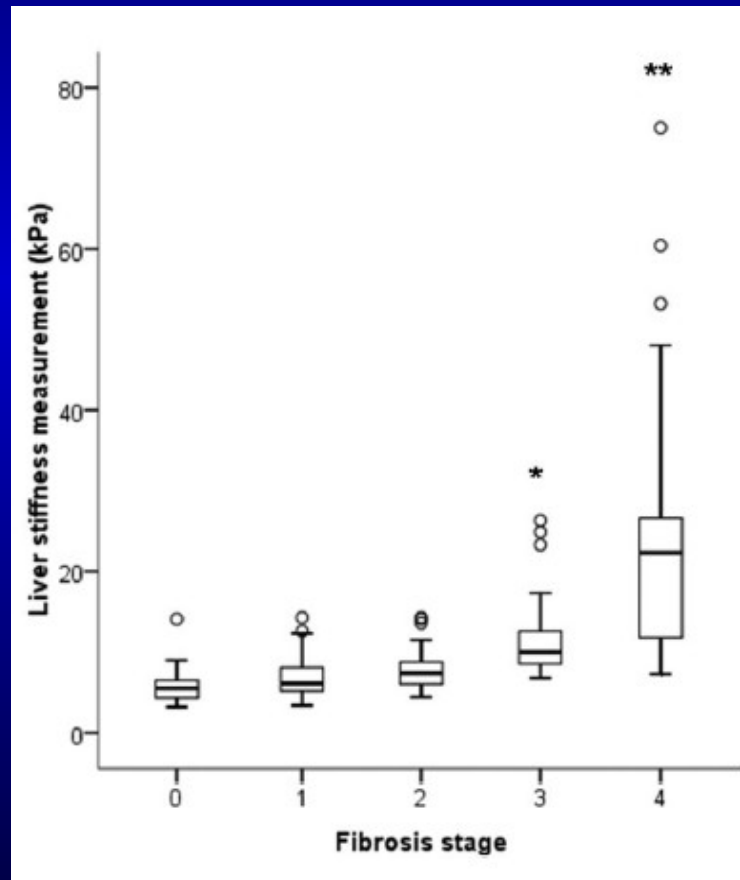
- ✓ **Non invasive markers after treatment**
- ✓ **Discordance – LB vs. Non invasive markers**

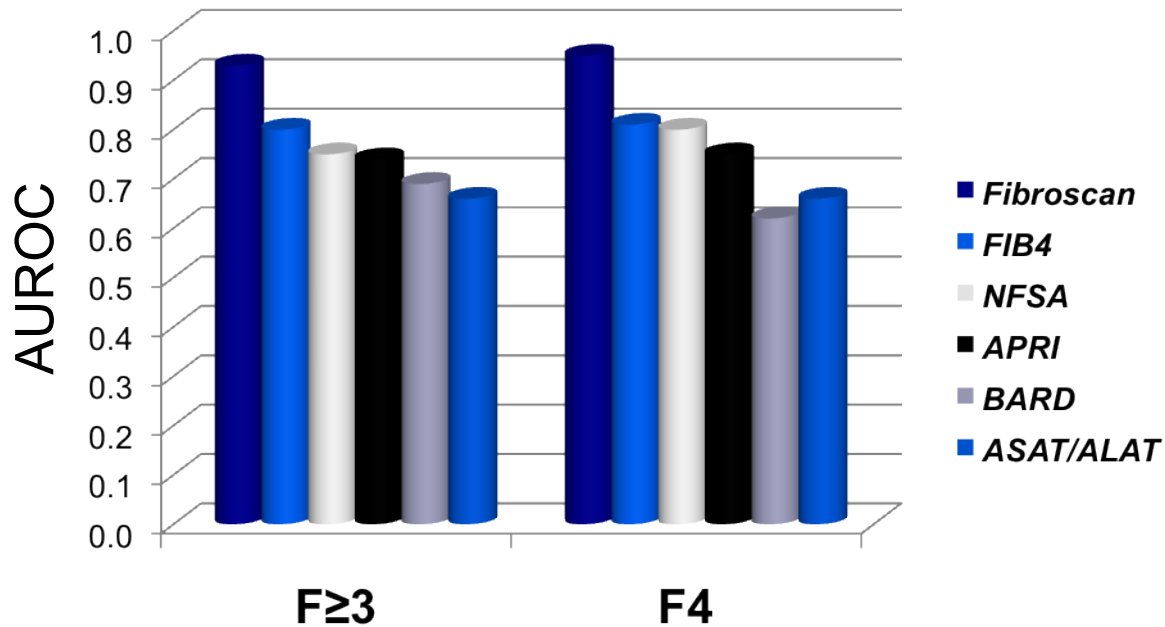
Case Report



FibroScan e NAFLD

- N = 246





Fibroscan®



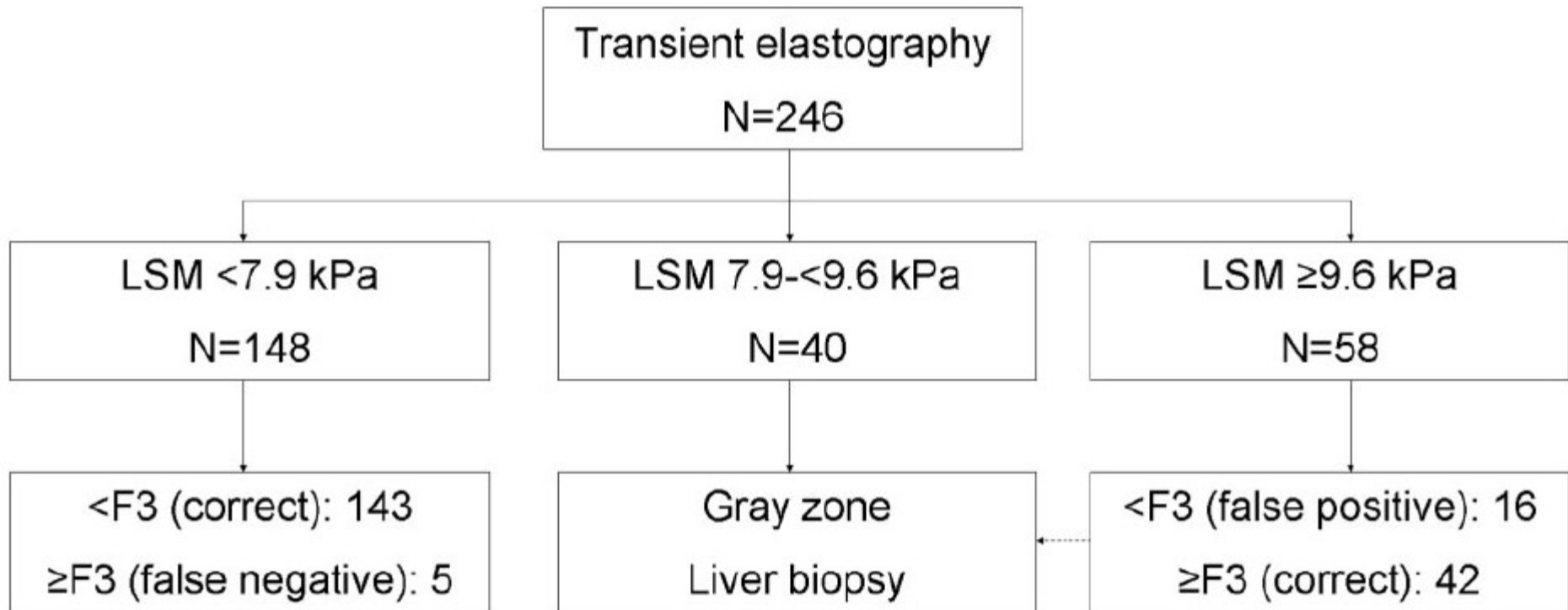
N= 246

Table 2. Accuracy of Transient Elastography

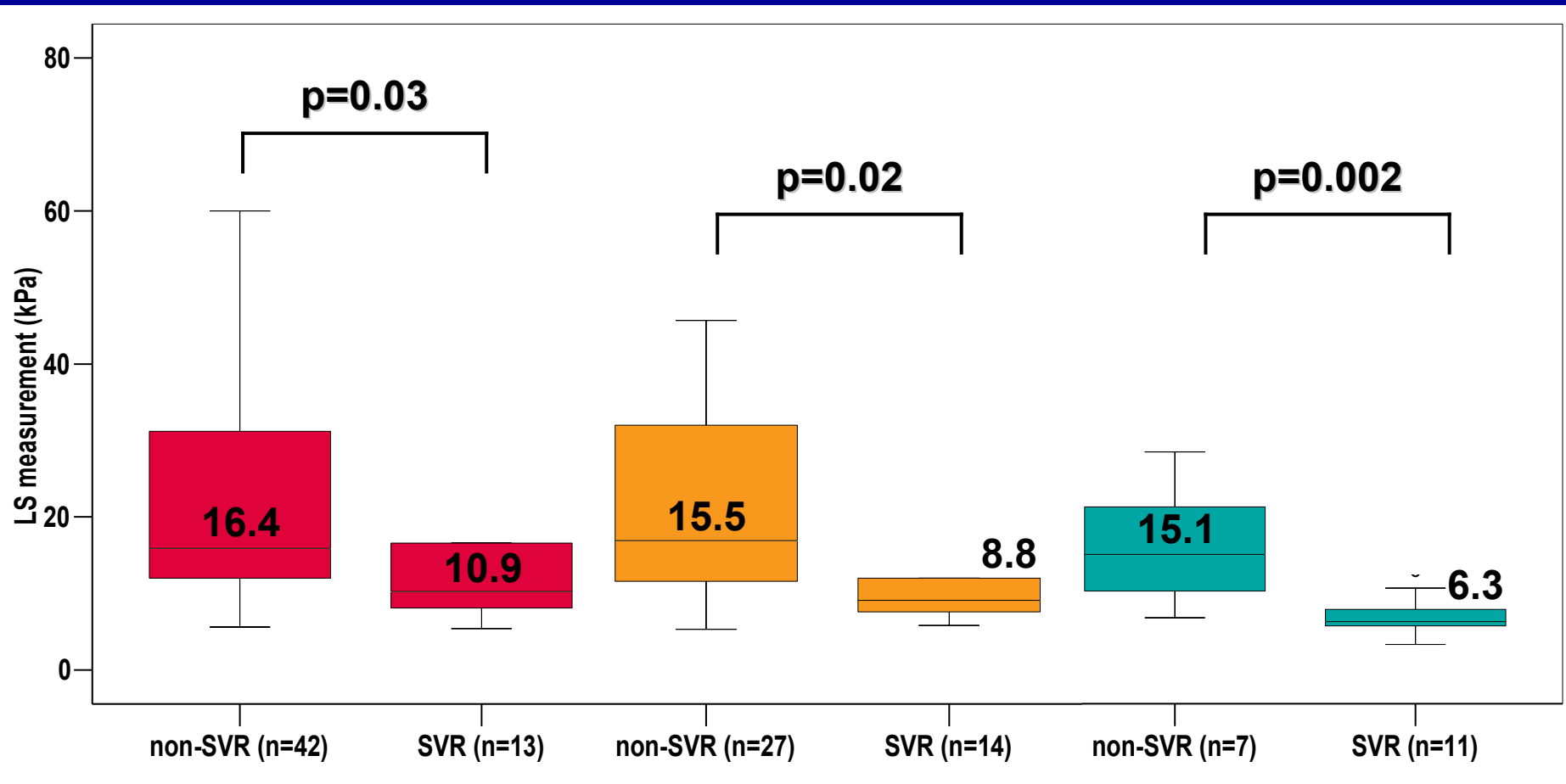
Stage	AUROC	Cutoff (kPa)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	LR+	LR-
\geq F2	0.84 (0.79-0.90)	5.8	91.1	50.3	56.1	89.0	1.8	0.18
		7.0	79.2	75.9	69.6	84.0	3.3	0.27
		9.0	52.5	91.7	81.5	73.5	6.3	0.52
\geq F3	0.93 (0.89-0.96)	7.9	91.1	75.3	52.0	96.6	3.7	0.12
		8.7	83.9	83.2	59.5	94.6	5.0	0.19
		9.6	75.0	91.6	72.4	92.6	8.9	0.27
F4	0.95 (0.91-0.99)	10.3	92.0	87.8	46.0	99.0	7.5	0.091
		10.3	92.0	87.8	46.0	99.0	7.5	0.091
		11.5	76.0	91.0	48.7	97.1	8.4	0.26

For each fibrosis stage, cutoffs with sensitivity >90%, highest overall accuracy and specificity >90% were presented.

Elastografia Hepática Transitória - FibroScan®



LSM and follow up after treatment



< 3 years

3-6 years

> 6 years

LSM vs. Morphometry after treatment

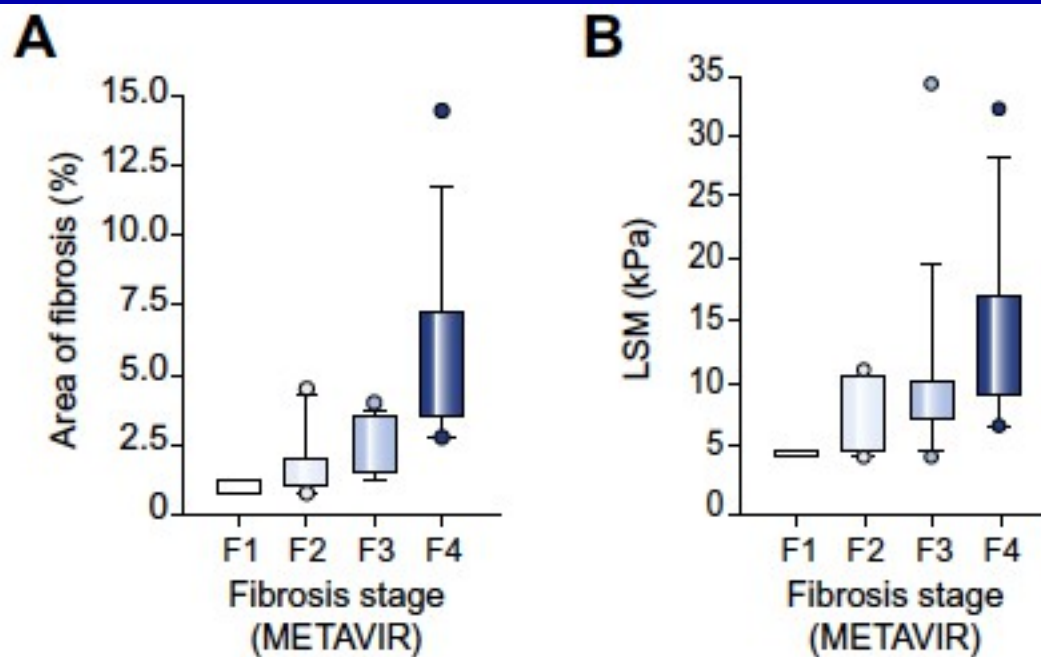
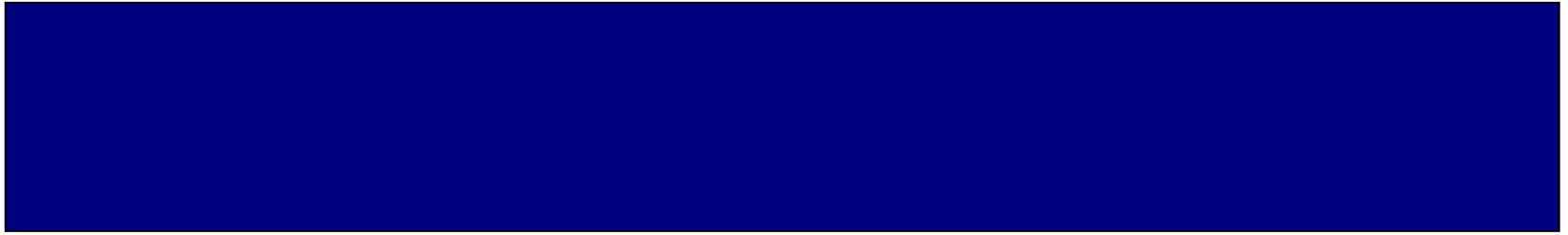
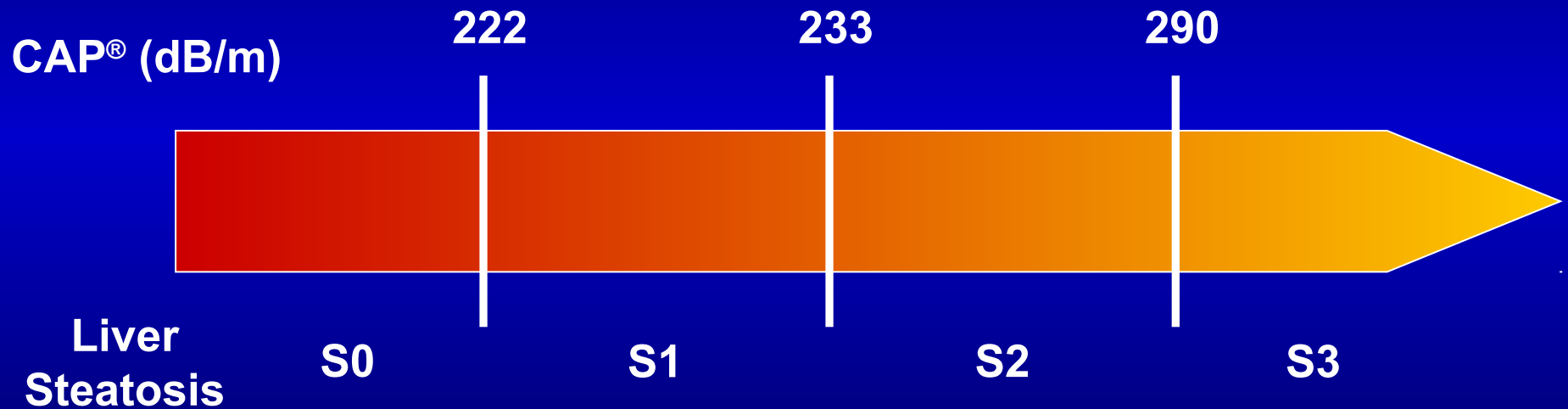


Fig. 1. Correlation between fibrosis stage as assessed by METAVIR and area of fibrosis as assessed by (A) morphometry or (B) TE values.



Case Report



CAP[®] HCV

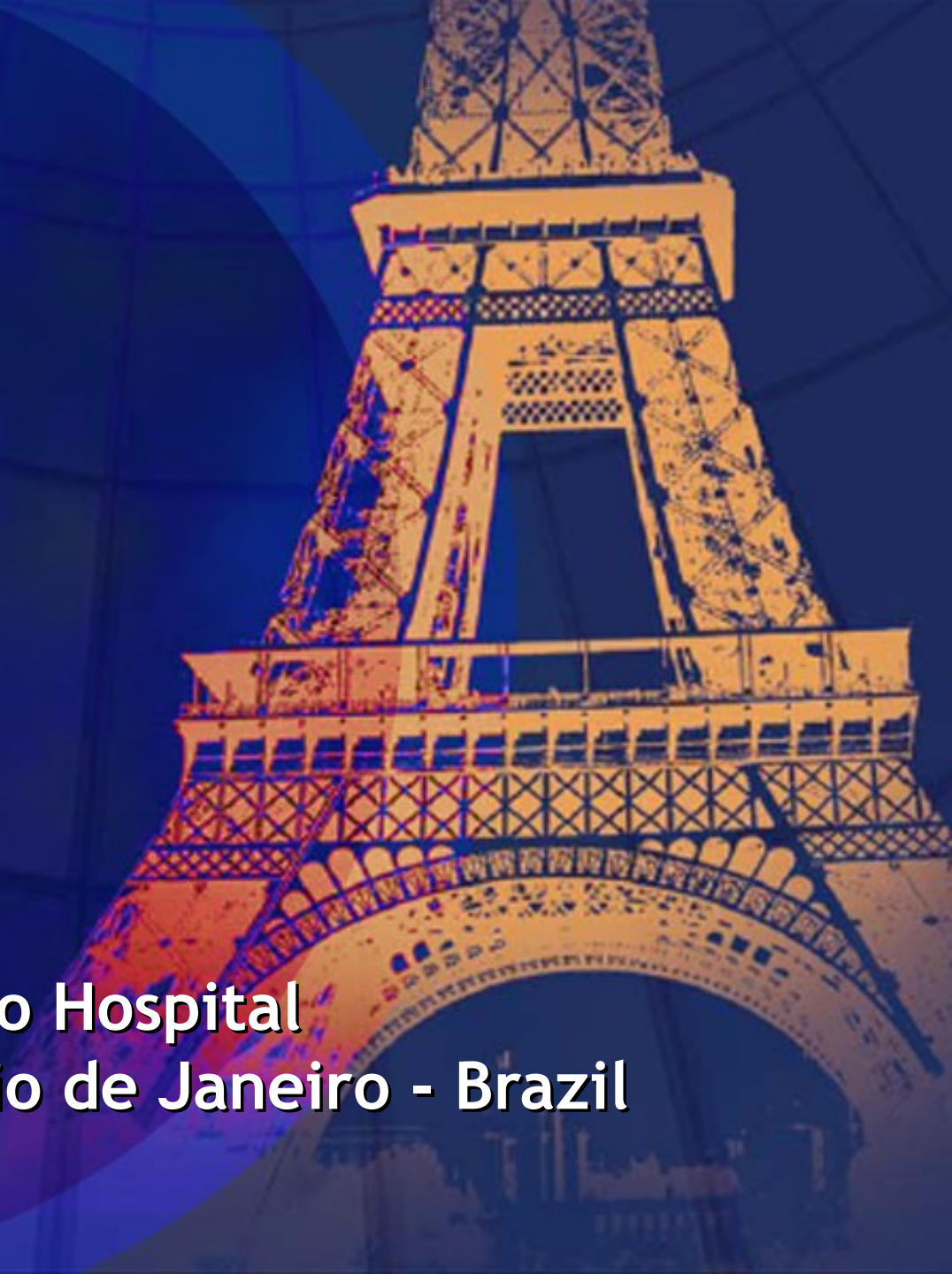
Associated factors with steatosis > 35% detected using CAP[®]

N=274

Characteristics	<i>P</i>
Male Gender	0,03
Diabetes	0,04
Hypercholesterolemia (> 200 mg/dL)	0,04
Weight (>79 Kg)	} < 0,001
BMI (>27)	
Abdominal circumference (>100)	

Case Report

Ana Carolina Cardoso
Clementino Fraga Filho Hospital
Federal University - Rio de Janeiro - Brazil



Case Report

- ✓ 64 years old, male
- ✓ BMI: 31, DM, Arterial hypertension
- ✓ 2006: ALT/AST and GGT elevation
- ✓ 2008: Acute myocardial infarction + stents
- ✓ 2012: US abnormal – heterogeneous liver surface, liver steatosis and spleen in the upper limit of normality

Case Report

- ✓ 2012: Start lab. investigation
- ✓ HBV +, Anti-HBc IgM -
- ✓ HBeAg +; HBV Viral load 23,000,000 UI/mL
- ✓ ALT 1000 / AST 1100 / GGT 560 / platelet 145.000/mm³
- ✓ No excessive alcohol intake or tobacco use
- ✓ No medications
- ✓ 2012: Endoscopy – No OV

Case Report

July / 2012

FibroTest[®] – 1.0

Fibrotest	Equivalent METAVIR
0.75-1.00	F4
0.73-0.74	F3-F4
0.59-0.72	F3
0.49-0.58	F2
0.32-0.48	F1-F2
0.28-0.31	F1
0.22-0.27	F0-F1
0.00-0.21	F0

Case Report

July / 2012

FibroScan[®] – 50 kPa / 5 (10%) / 50%
CAP[®] – 382 dB/m / 19 (5%)



Case Report

- ✓ **July/2012: Start Treatment – Entecavir**
- ✓ **Diet + exercises**
- ✓ **October/2012: Viral load after 3 months: undetectable**
- ✓ **Jan/2013: ALT 120 / AST 100 / GGT 80**
- ✓ **Platelet 139.000/mm³**
- ✓ **BMI: 29**

Case Report

Jan / 2013

FibroTest® – 0.75

Fibrotest	Equivalent METAVIR
0.75-1.00	F4
0.73-0.74	F3-F4
0.59-0.72	F3
0.49-0.58	F2
0.32-0.48	F1-F2
0.28-0.31	F1
0.22-0.27	F0-F1
0.00-0.21	F0

Case Report

Jan / 2013

FibroScan[®] – 21 kPa / 2.1 (10%) / 100%
CAP[®] – 290 dB/m / 29 (10%)



Case Report

- ✓ **May/2013: HBeAg - / Anti-HBe +**
- ✓ **July/2013: Viral load: undetectable**
- ✓ **July/2013: ALT 108 / AST 97 / GGT 100**
- ✓ **Platelet 130.000/mm³**
- ✓ **BMI: 27**

Case Report

July / 2013

FibroTest[®] – 0.72

Fibrotest	Equivalent METAVIR
0.75-1.00	F4
0.73-0.74	F3-F4
0.59-0.72	F3
0.49-0.58	F2
0.32-0.48	F1-F2
0.28-0.31	F1
0.22-0.27	F0-F1
0.00-0.21	F0

Case Report

July / 2013

FibroScan[®] – 11 kPa / 0.9 (9%) / 100%
CAP[®] – 245 dB/m / 24 (10%)

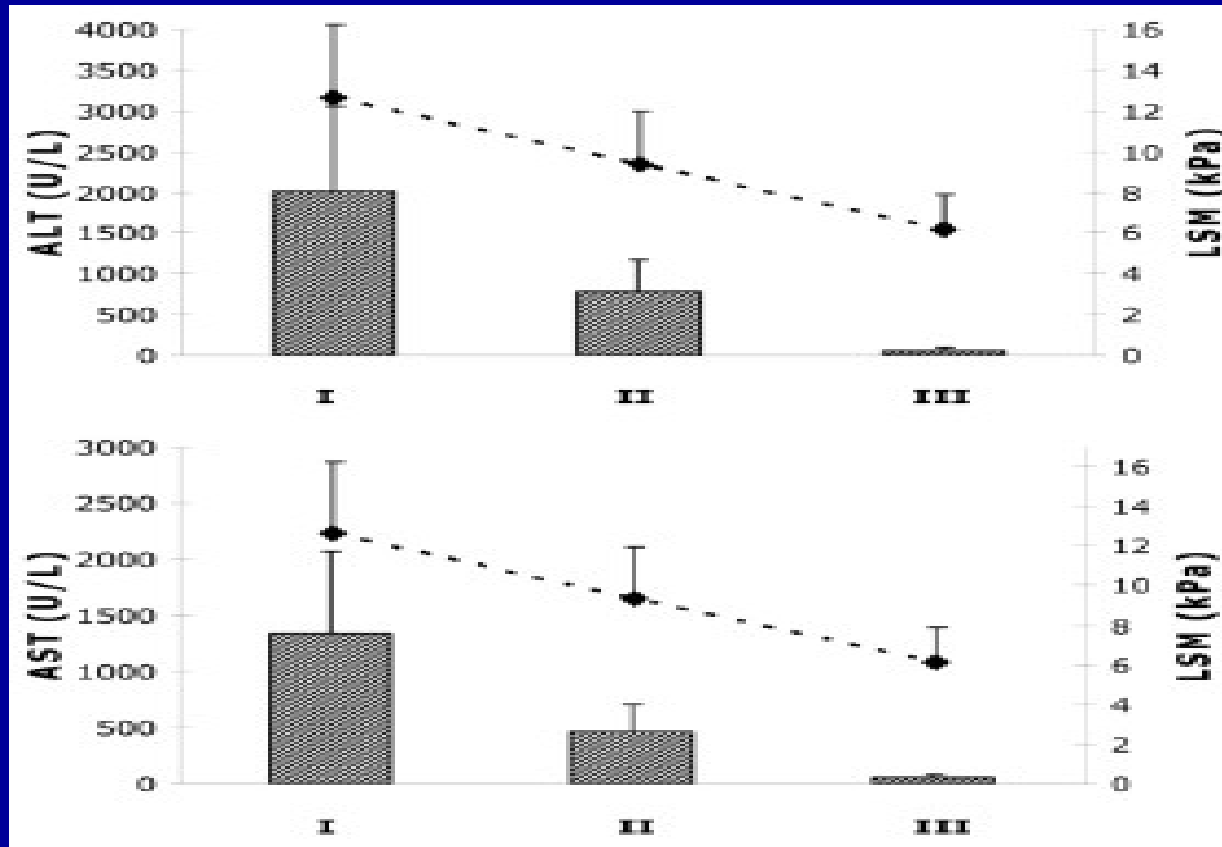


Case Report

- ✓ **Key points**
- ✓ **ALT influence in Non invasive markers**
- ✓ **Non invasive markers in chronic Hep B**
- ✓ **CAP in chronic Hep B**



Acute Viral Hepatitis



18 patients

APRI

(Aspartate to Platelet Ratio Index)

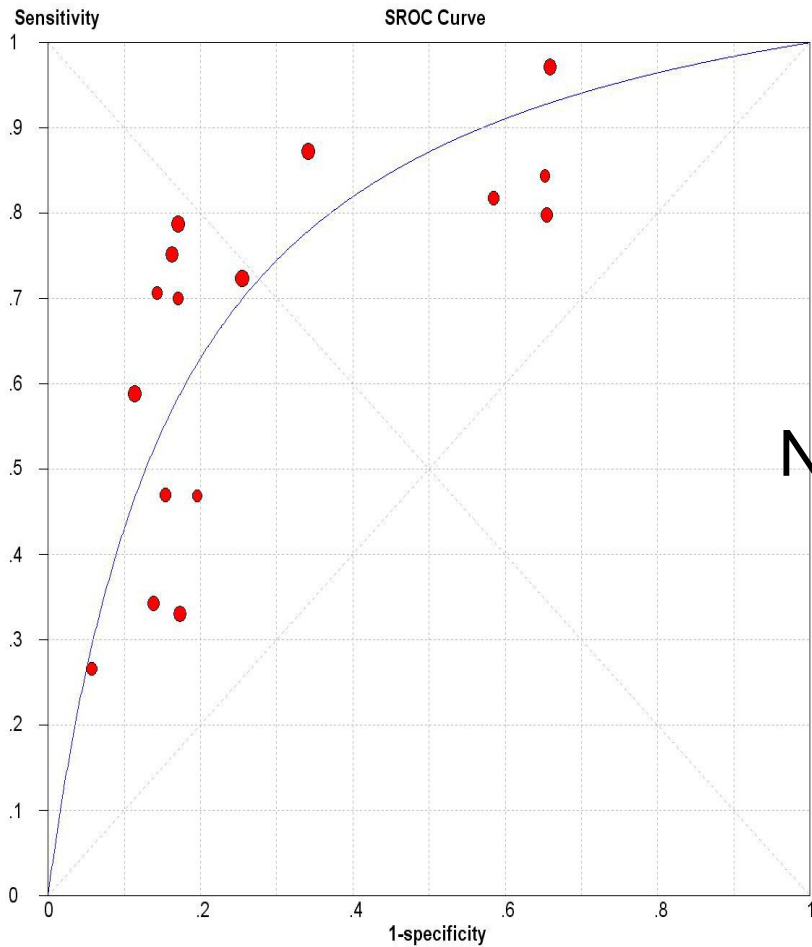
$$\text{APRI} = \frac{\text{AST (}/\text{ULN)} \times 100}{\text{Platelet (}10^9\text{/L)}}$$

N = 270 patients

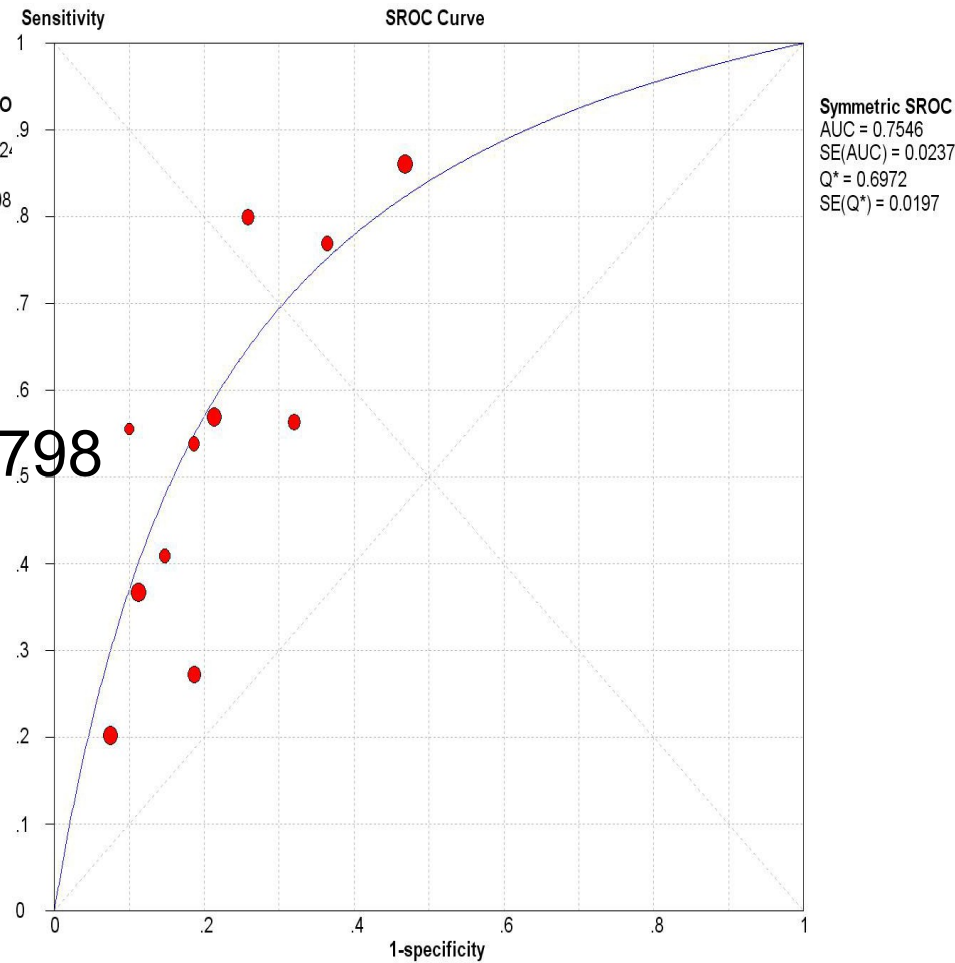
(estimation 192; validation 78)

F2-F4 : 50% ; F4 15%




APRI – Meta-analysis



N = 1.798



FibroMeter

Package	Blood parameters	Information provided
	<ul style="list-style-type: none">▪ Prothrombin index▪ AST▪ ALT▪ Urea▪ GGT▪ Alpha-2-macroglobulin▪ Platelets	<ul style="list-style-type: none">▪ Fibrosis score▪ Cirrhosis score▪ Inflammatory activity score
	<ul style="list-style-type: none">▪ Prothrombin index▪ AST▪ ALT▪ Ferritin▪ Glucose▪ Hyaluronic acid▪ Platelets▪ Patient's weight	<ul style="list-style-type: none">▪ Fibrosis score▪ Percentage of liver fibrosis
	<ul style="list-style-type: none">▪ Prothrombin index▪ Platelets▪ Alpha-2-macroglobulin▪ Hyaluronic acid	<ul style="list-style-type: none">▪ Fibrosis score▪ Percentage of liver fibrosis

FibroMeter™ in HBV

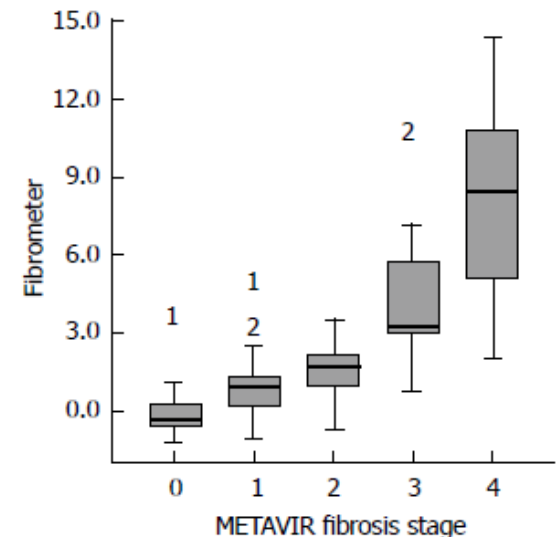
■ Main results

Diagnostic performances (AUROCs) for fibrosis assessment versus histology:

Patients	AUROC F2	Cut off F \geq 2	Se (%)	Sp (%)	AUROC F4	Cut off F4	Se (%)	Sp (%)	Ref
78	0.88	-	-	-	0.94 *	-	-	-	[1]
59	0.82	0.35	80	70	0.86	0.68	83	84	[2]

■ Key messages

- ✓ « Non invasive models including FibroMeter™ can be used in clinical practice for management of chronic HBV by offering alternative biopsy » [1]
- ✓ Less data available compared to HCV infection
- ✓ Promising results, maybe useful for patients follow up and improve access to treatments
- ✓ Further studies are needed on higher cohorts



Box plots of FibroMeter values versus fibrosis stages (METAVIR), [2]

[1] Wu et al. World Journal of Gastroenterology 2010

[2] Bonnard et al. Am Journal of Tropical Hygiene 2010

Fibrotest®

α 2-MG

GGT

TB

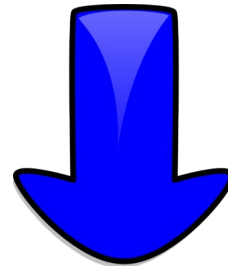
Age

HAPTO

APO-A1



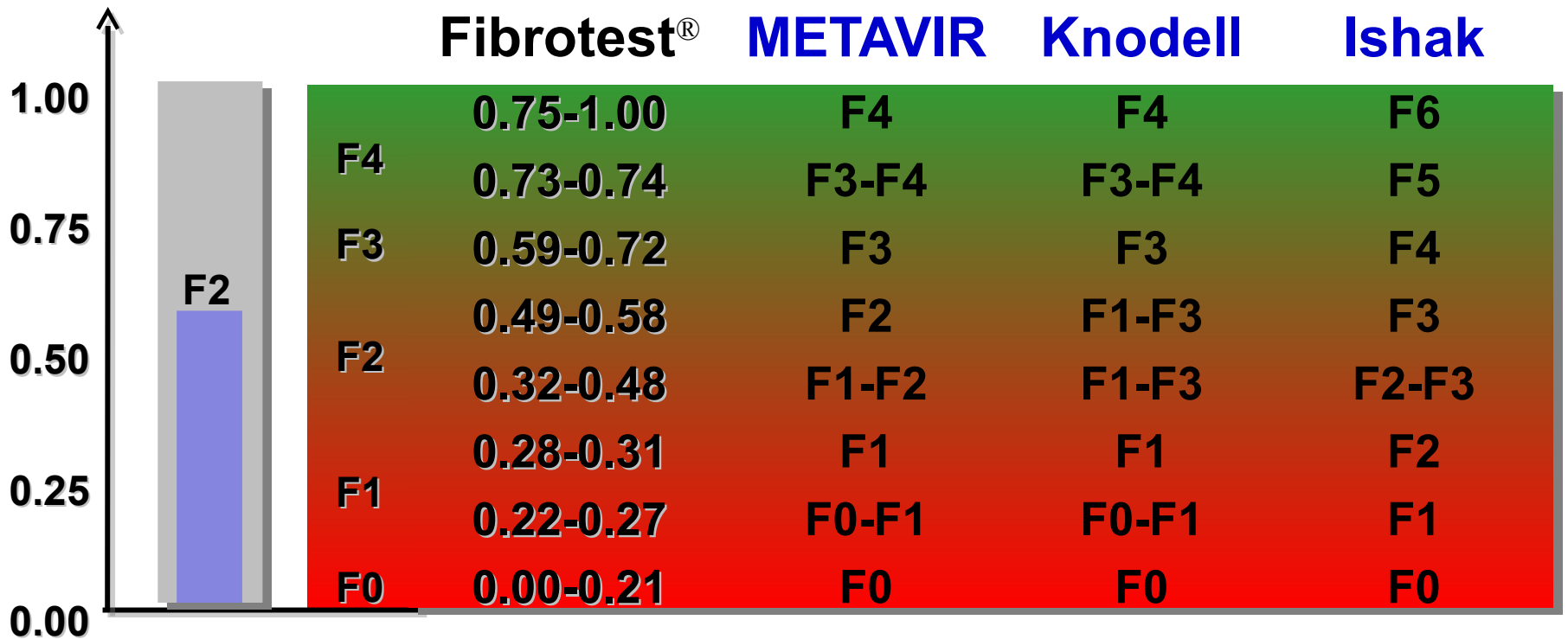
Gender



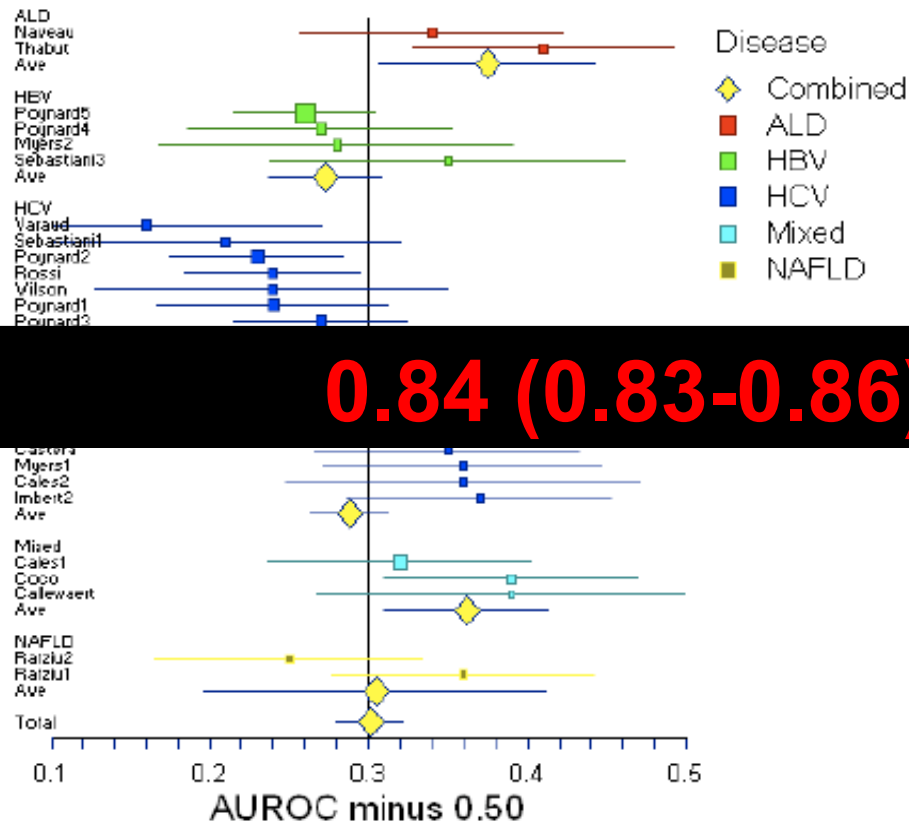
Fibrotest =

$$\begin{aligned} & 4.467 \times \text{Log}_{10} (\alpha 2\text{-MG [g/L]}) - 1.357 \times \text{Log}_{10} (\text{HAPTO [g/L]}) \\ & + 1.017 \times \text{Log}_{10} (\text{GGT [UI/L]}) + 0,0281 \times \text{Age (anos)} + \\ & + 1.737 \times \text{Log}_{10} (\text{BT } [\mu\text{mol/L}]) - 1.184 \times \text{APO-A1 (g/L)} + \\ & + 0.301 \times \text{Gender (Male=1; Female = 0)} - 5.54 \end{aligned}$$

Fibrotest®



Fibrotest® Meta-Analysis F \geq 2

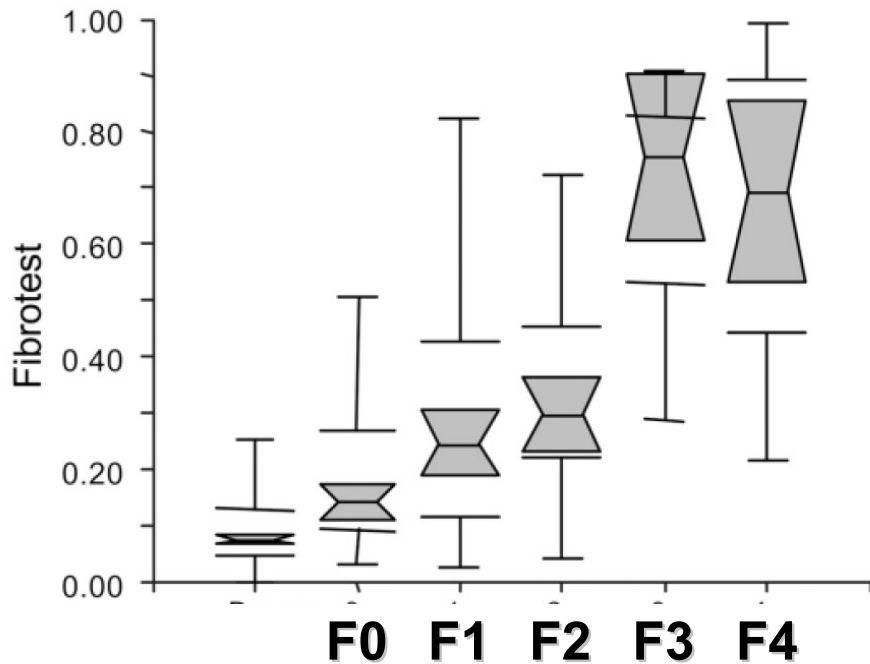


30 studies; N= 6378 patients

Poynard et al. BMC Gastroenterol 2007; 7-40

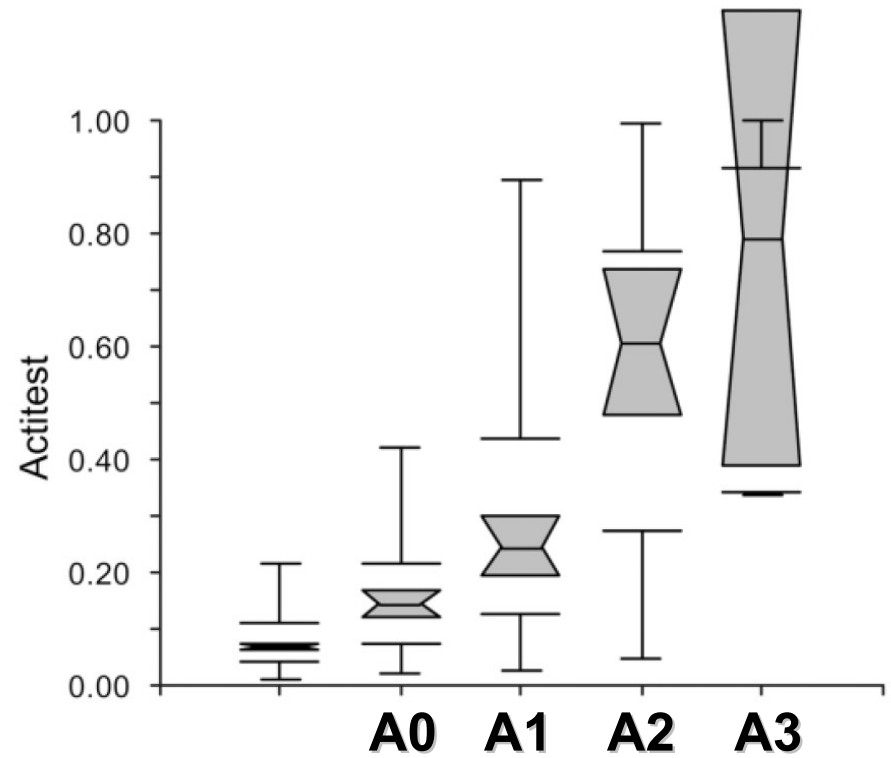
Fibrotest® in HBV

Fibrotest



N = 209

Actitest



Fibrotest's evolution in patients under Lamivudine

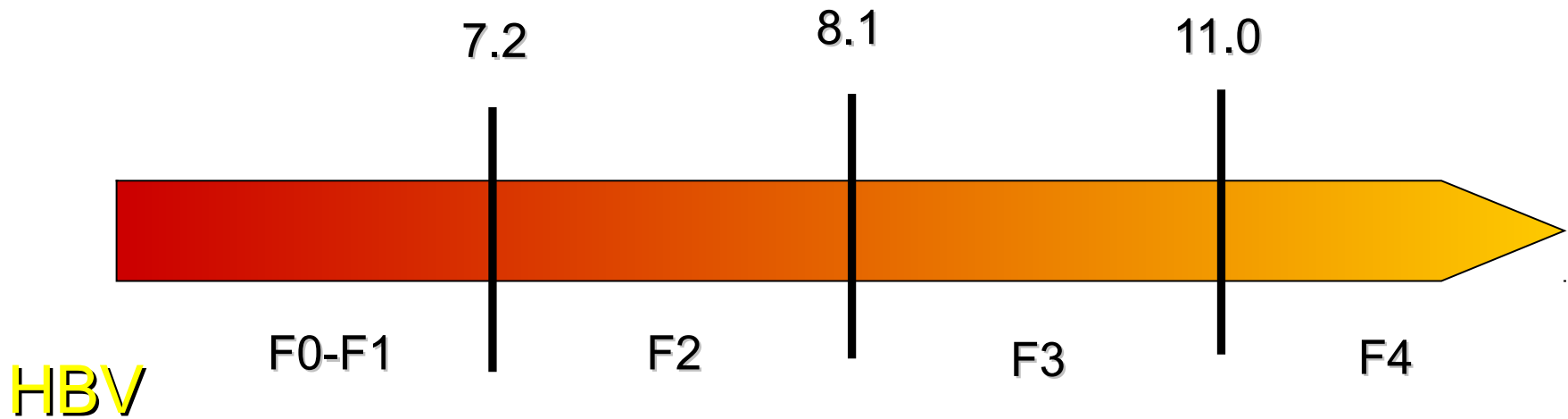
0,51

0,46

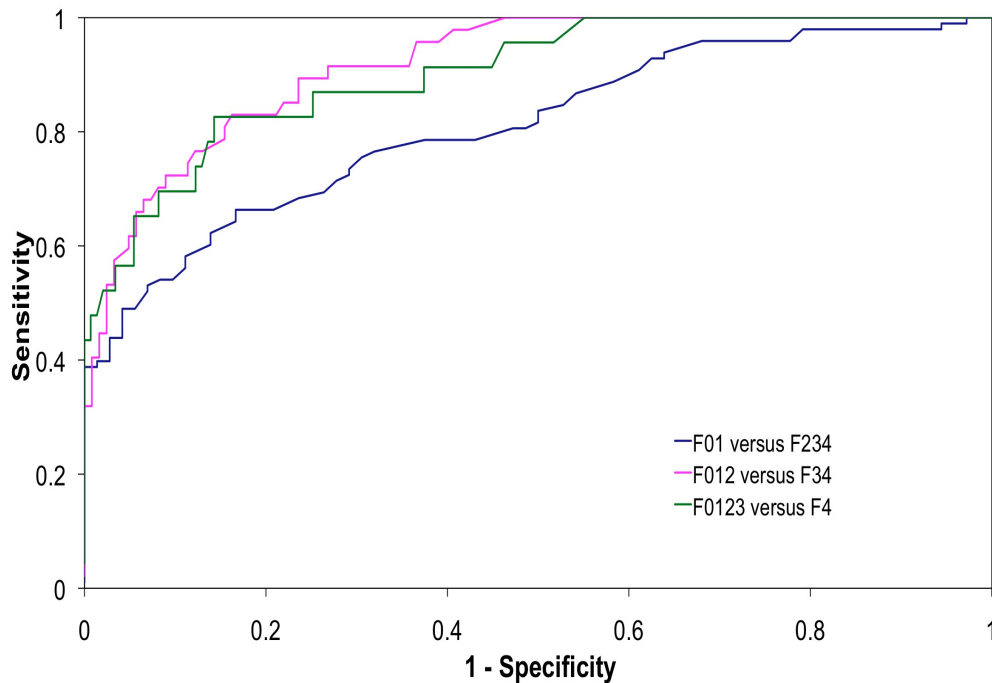
0,46

0,37

FibroScan Cutoffs in Chronic Hepatitis B



FibroScan (FS) in HBV



N = 173

F \geq 2 0.81

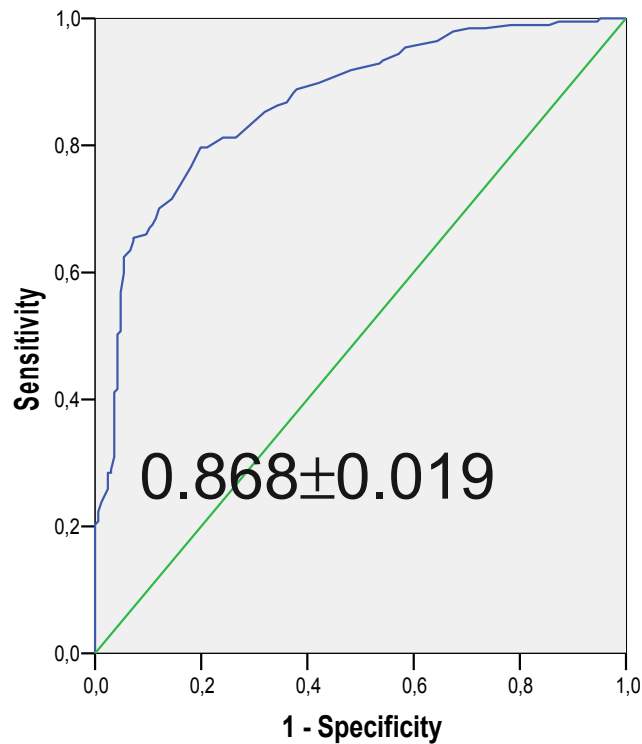
F \geq 3 0.93

F = 4 0.93

FS Performance HCV / HBV $F \geq 2$

HCV

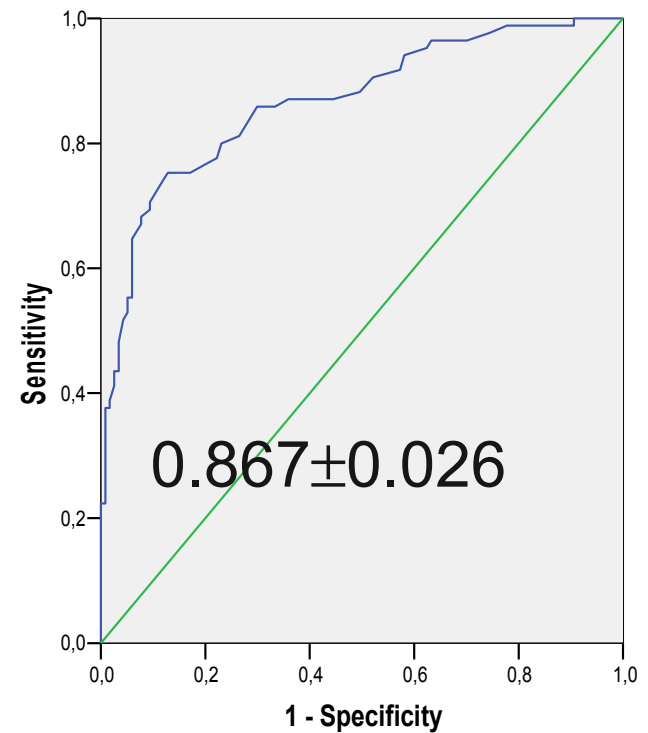
ROC Curve



$P = 0.975$

HBV

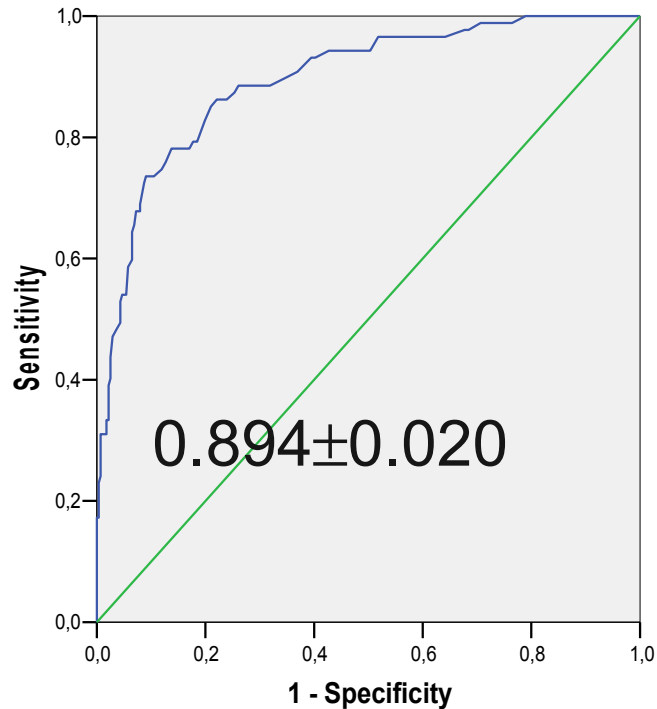
ROC Curve



FS Performance HCV / HBV F ≥ 3

HCV

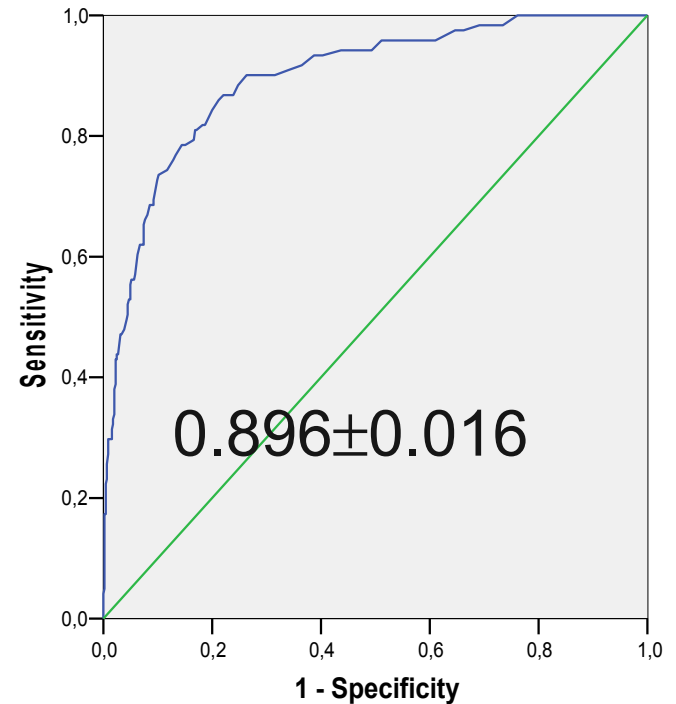
ROC Curve



P = 0.938

HBV

ROC Curve



FS and HBV

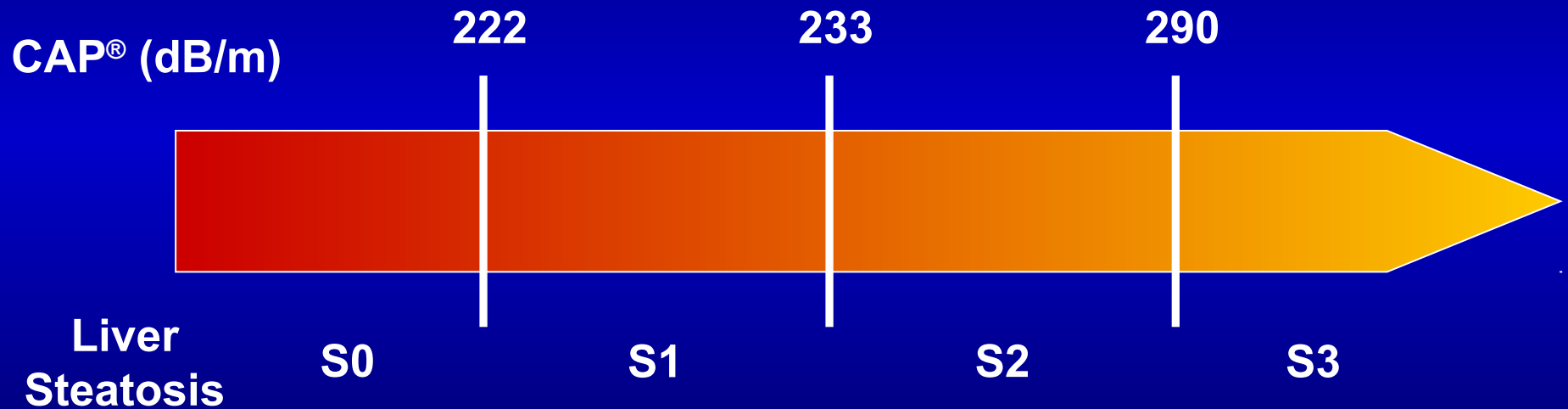
Original Article

Longitudinal assessment of liver stiffness by transient elastography for chronic hepatitis B patients treated with nucleoside analog

Eiichi Ogawa,¹ Norihiro Furusyo,^{1,2} Masayuki Murata,¹ Hachiro Ohnishi,¹ Kazuhiro Toyoda,¹ Hiroaki Taniai,¹ Takeshi Ihara,² Hiroaki Ikezaki,² Takeo Hayashi,² Mosaburo Kainuma¹ and Jun Hayashi^{1,2}

¹Department of General Internal Medicine, Kyushu University Hospital, and ²Department of Environmental Medicine and Infectious Disease, Faculty of Medical Sciences, Kyushu University, Fukuoka, Japan

Case Report



CAP[®] HCV

Associated factors with steatosis > 35% detected using CAP[®]

N=274

Characteristics	P
Male Gender	0,03
Diabetes	0,04
Hypercholesterolemia (> 200 mg/dL)	0,04
Weight (>79 Kg)	} < 0,001
BMI (>27)	
Abdominal circumference (>100)	

Case Report

FibroTest (n=8524)

False Positives

✓ **Hemolysis**

Haptoglobin < 0.30 g/l

✓ **Gilbert**

Bilirubin >17 μ mol/l

GGT < 30 U/l

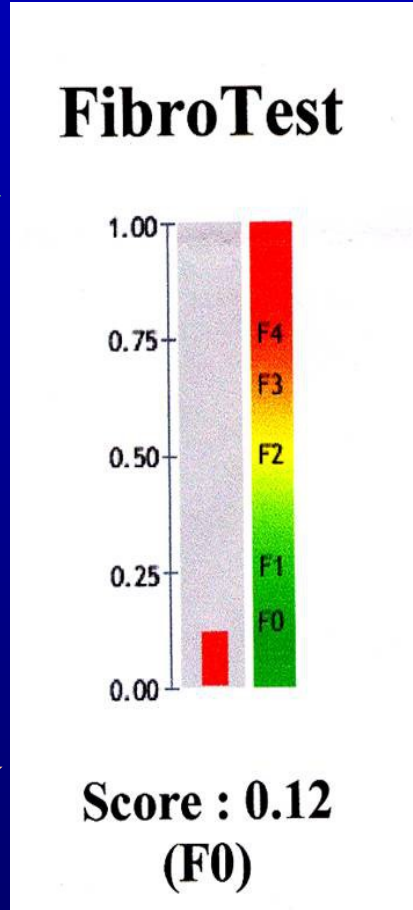
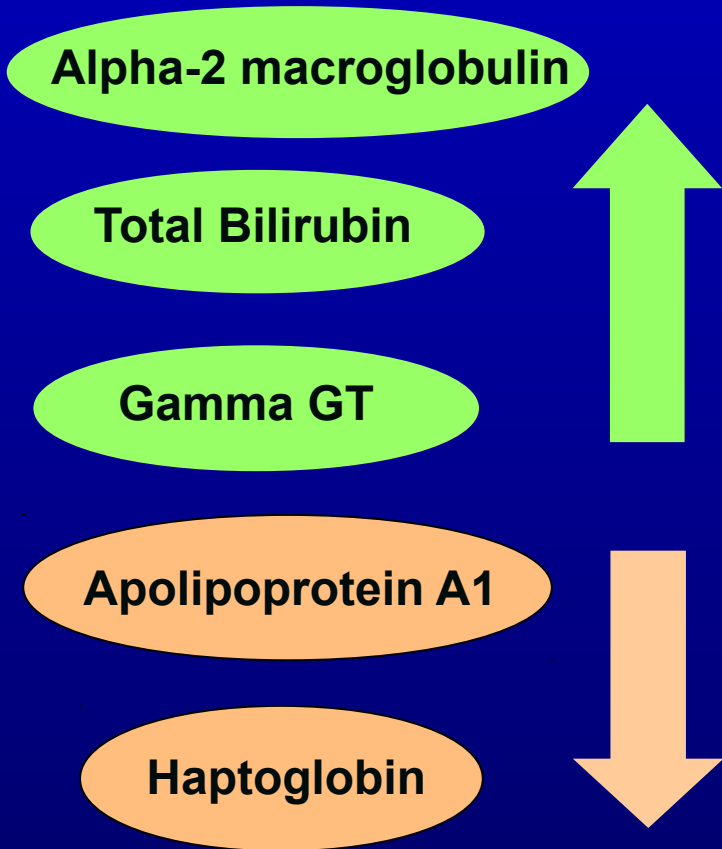
✓ **Sepsis**

False Negatives

✓ **Inflammation**

Haptoglobin > 2.0g/l

Case Report



Fibrotest	Equivalent METAVIR
0.75-1.00	F4
0.73-0.74	F3-F4
0.59-0.72	F3
0.49-0.58	F2
0.32-0.48	F1-F2
0.28-0.31	F1
0.22-0.27	F0-F1
0.00-0.21	F0

CAP VHC

