CONGRESSO NAZIONALE SIMEU

25 Maggio 2018, Roma

ISCHEMIA MESENTERICA ACUTA: UNA PATOLOGIA TEMPO DIPENDENTE

Dott. Stefano Sartini

U.O.C MECAU

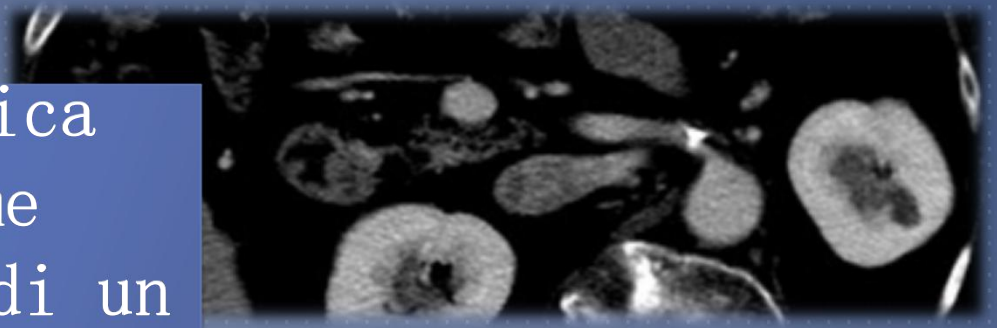
Osp.Policlinico San Martino, Genova

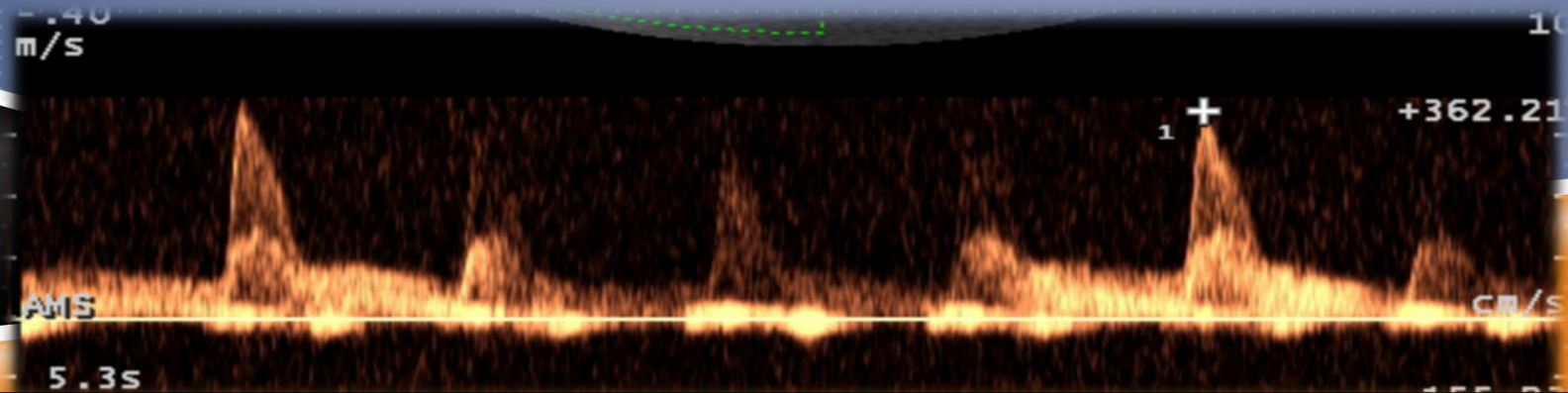
INTRODUCTION

"Occlusion of the mesenteric vessels is apt to be regarded as one of those conditions of which the diagnosis is impossible, the prognosis hopeless, and the treatment almost useless."

Cokkinis AJ. Observations on the mesenteric circulation. J Anat. 1930

L’ Ischemia Mesenterica Acuta è una sindrome causata dall’ apporto di un inadeguato flusso ematico dei vasi mesenterici, causando ischemia ed eventualmente gangrena della parete intestinale





DIMENSIONI DEL PROBLEMA

Incidence of Acute Thrombo-Embolic Occlusion of the Superior Mesenteric Artery—A Population-based Study

OVERALL AUTOPTIC FINDINGS:

6,9/1000

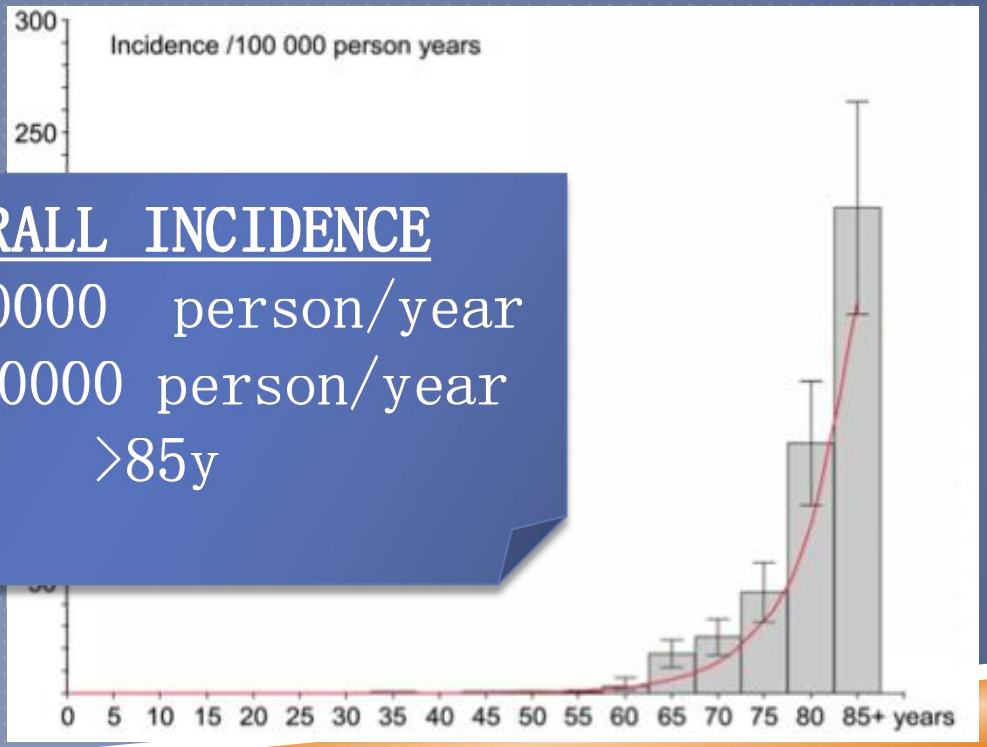
11,8/1000 >80y

OVERALL INCIDENCE

8,6/100000 person/year

217/100000 person/year >85y

2:1 women



Acosta S et al. Eur J Vasc Endovasc Surg Vol 27, February 2004

DIMENSIONI DEL PROBLEMA

Systematic review of survival after acute mesenteric ischaemia according to disease aetiology

MORTALITY RATES

71% for arterial embolism;

87% for arterial thrombosis;

British Journal of Surgery 2004; 91: 17–27

44% for venous thrombosis;

80% for non-occlusive ischaemia;

Schoots IG et al.British Journal of Surgery 2004; 91:17 - 27

Table 2. Ten Most Common Reasons (Number of Visits) for Visits by Individuals Aged 65 and Older to U.S. Emergency Departments (2001–2009)

Rank	2001	2002	2003	2004	2005	2006	2007	2008	2009
1	Chest pain (1,349,525)	Shortness of breath (1,223,105)	Chest pain (1,359,379)	Chest pain (1,215,453)	Chest pain (1,176,215)	Chest pain (1,318,621)	Chest pain (1,353,867)	Shortness of breath (1,437,473)	Chest pain (1,510,829)
2	Shortness of breath (1,048,250)	Chest pain (1,180,384)	Shortness of breath (1,265,599)	Shortness of breath (925,594)	Shortness of breath (1,[illegible],668)	Shortness of [illegible] (1,125,170)	Shortness of [illegible] (1,104,180)	Chest pain (1,[illegible])	Shortness of breath (1,[illegible]543)
3	Abdominal pain (528,435)	Accident, NOS (682,542)	Abdominal pain (749,446)	Accident, NOS (683,246)	Abdominal pain (786,200)	Abdominal pain (759,985)	Abdominal pain (831,031)	Abdominal pain (837,974)	Abdominal pain (821,189)
4	Accident, NOS (508,187)	General weakness (584,746)	Accident, NOS (665,793)	General weakness (599,911)	[illegible] weakness (676,487)	Accident, NOS (714,[illegible])	General [illegible] (639,671)	Accident, [illegible] (813,900)	[illegible] weakness (774,243)
5	Vertigo (501,512)	Vertigo (576,388)	General weakness (655,062)	Vertigo (501,639)	Accident, NOS (490,095)	General weakness (550,646)	Accident, NOS (523,281)	General weakness (740,033)	Vertigo (607,894)
6	Dyspnea (452,054)	Abdominal pain (534,642)	Dyspnea (504,662)	Dyspnea (372,210)	Vertigo (468,513)	Vertigo (490,183)	Vertigo (494,593)	Dyspnea (509,595)	Back pain (481,807)
7	Headache (280,613)	Dyspnea (414,003)	Vertigo (496,577)	Back pain (316,654)	Nausea (333,077)	Nausea (378,478)	Dyspnea (385,477)	Vertigo (465,914)	Accident, NOS (436,218)
8	Back pain (270,419)	Nausea (330,041)	Fever (369,528)	Nausea (304,851)	Back pain (331,639)	Back pain (374,202)	Cough (332,984)	Nausea (410,065)	Syncope (406,308)
9	Nausea (258,476)	Cough (307,775)	Nausea (301,219)	Cough (292,186)	Syncope (321,269)	Dyspnea (350,671)	Nausea (321,078)	Back pain (371,229)	Psychological symptoms (391,920)
10	Cough (224,994)	Vomiting (290,864)	Leg pain (298,544)	Hip pain (244,385)	Dyspnea (314,023)	Psychological symptoms (327,144)	Fever (310,426)	Psychological symptoms (365,000)	Dyspnea (373,900)

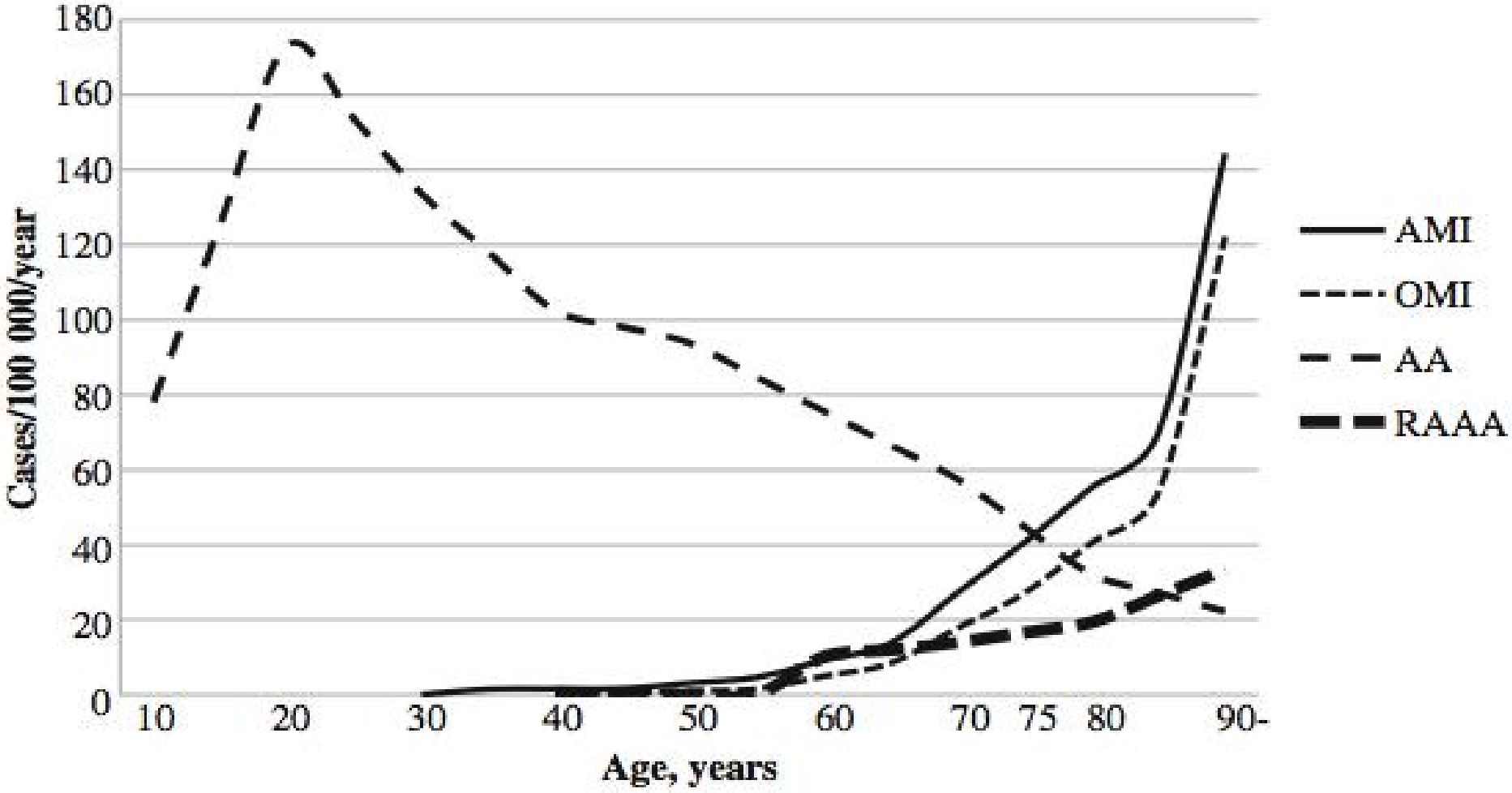
Pines et al. J Am Geriatr Soc 61:12-17, 2

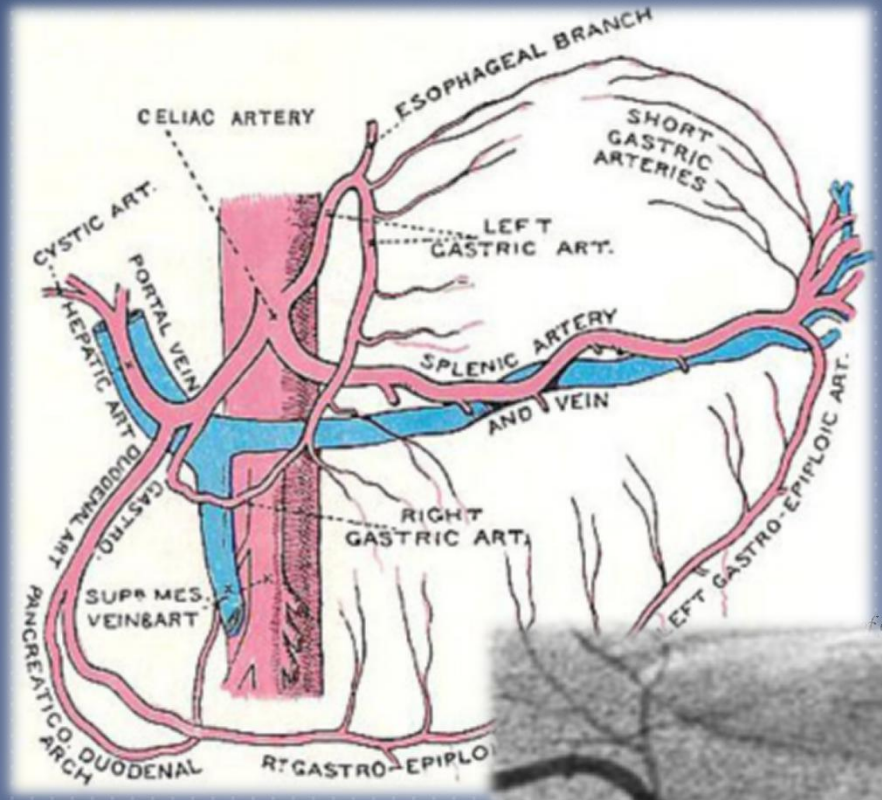
J Gastrointest Surg (2015) 19:1407–1414
DOI 10.1007/s11605-015-2830-3

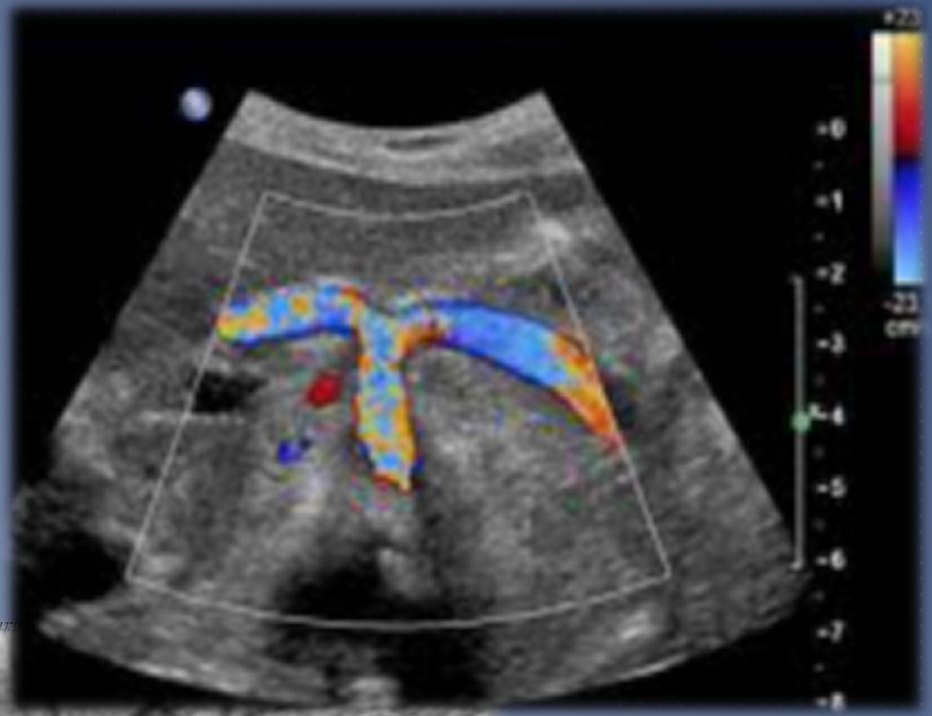
ORIGINAL ARTICLE

Acute Mesenteric Ischemia Is a More Common Cause than Expected of Acute Abdomen in the Elderly

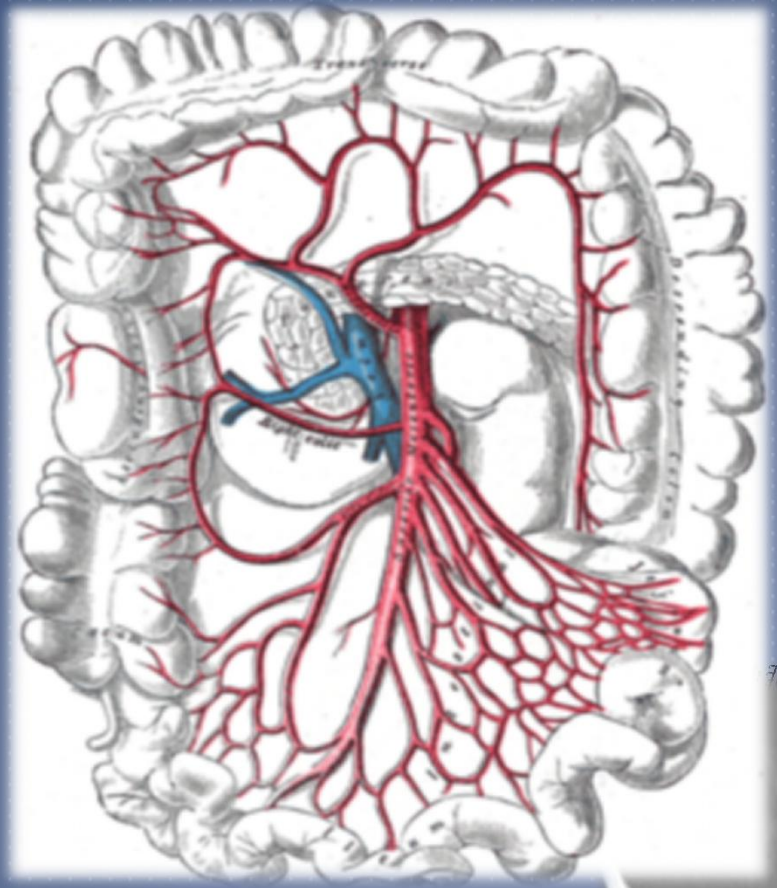
Jussi M. Kärkkäinen[1,2] · Tiina T. Lehtimäki[3] · Hannu Manninen[3,4] · Hannu Paajanen[2,4]

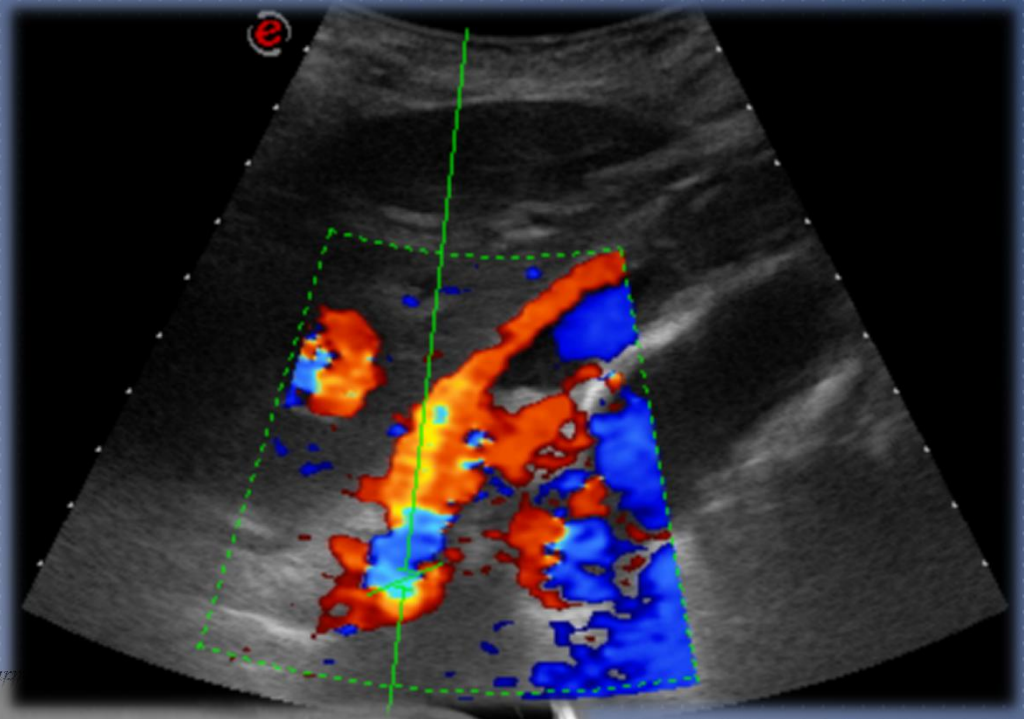




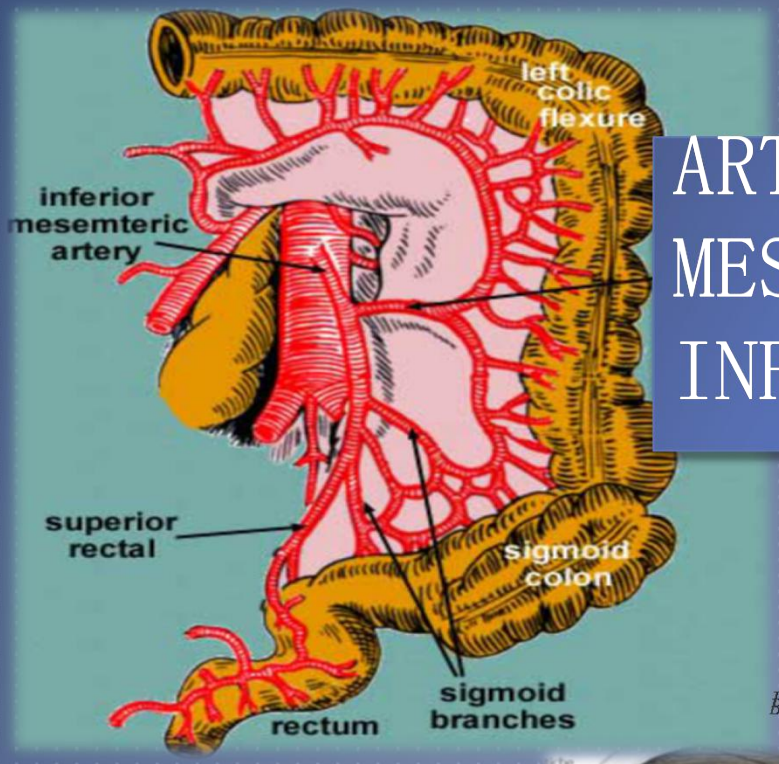


TRONCO CELIACO



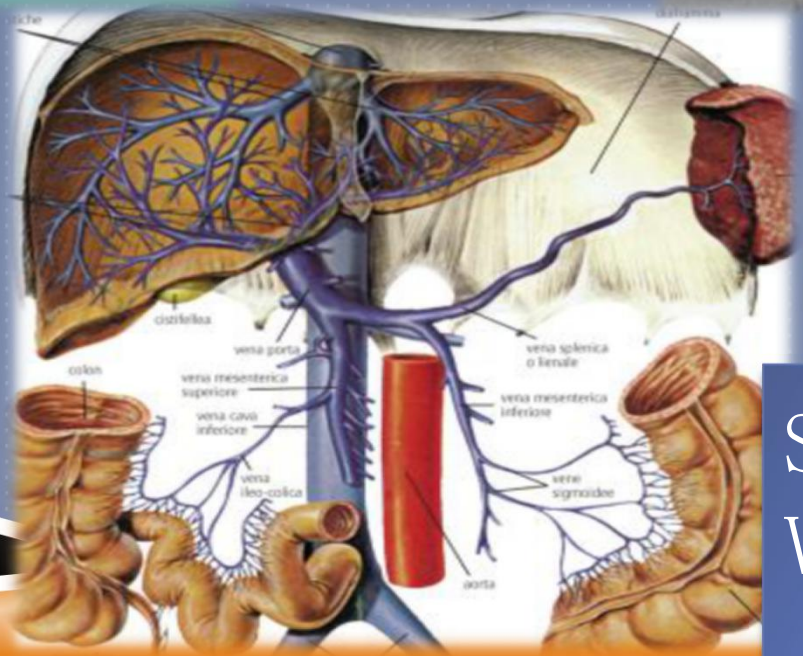


ARTERIA MESENTERICA SUPERIORE



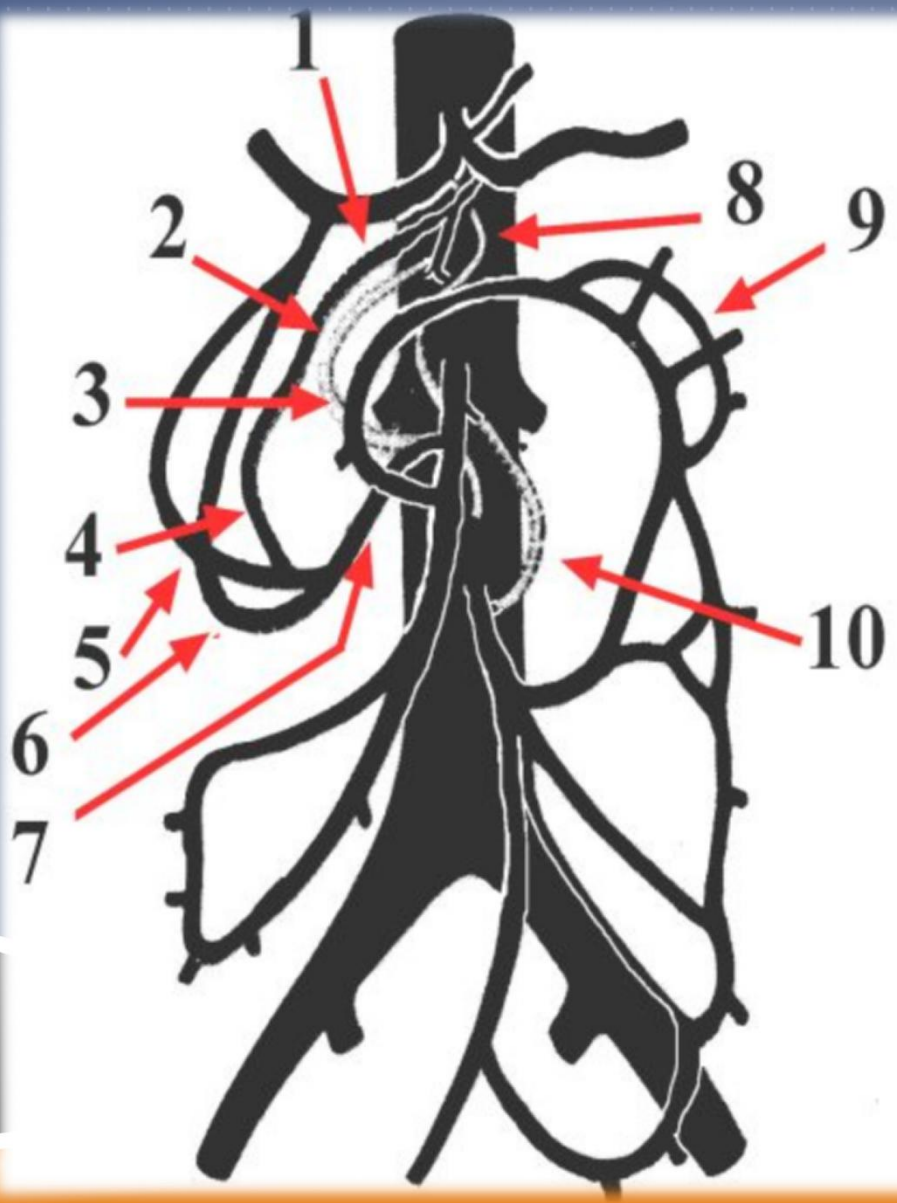
ARTERIA MESENTERICA INFERIORE

British Journal of Surgery 2004; 91: 17–27



SISTEMA VENOSO

ARCATE VASCOLARI INTERCOMUNICAZIONE



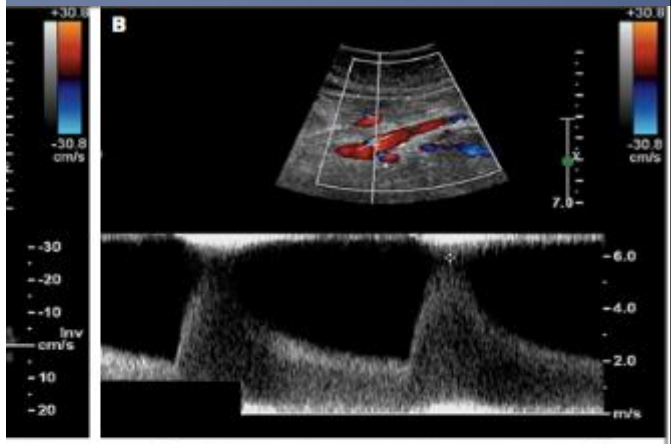
1 – arteria pancreatica dorsale;
2 – arcata di Kirk
3 – arcata di Riolano;
4 – arcata pancreaticoduodenale posteriore;
5 – arcata pancreatico duodenale superiore;
6 – arcata di Rio Branco;
7 – arcata di Buhler;
8 – arcata di Drumond;
9 – tronco duodenopancreatico inferiore;
10 – arcata di Villemin.

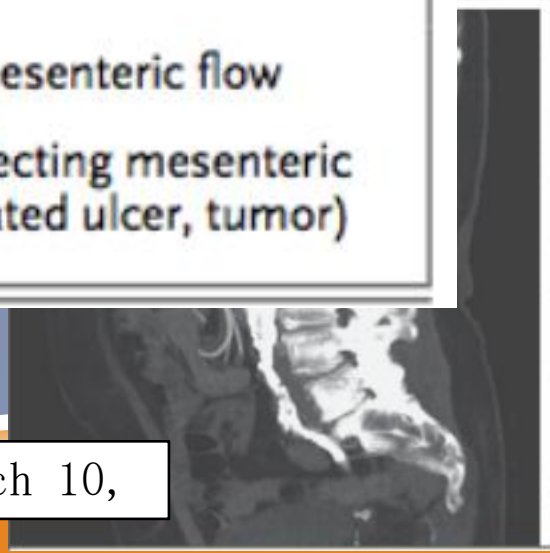
Mesenteric Ischemia

Daniel G. Clair, M.D., and Jocelyn M. Beach, M.D.

Table 1. Causes of Altered Mesenteric Circulation.

Atherosclerosis
Arterial embolus
Arterial dissection
Thrombosis
Vasculitis
Mesenteric venous thrombosis
Poor cardiac output leading to low mesenteric flow
Inflammatory or other conditions affecting mesenteric vessels (e.g., pancreatitis, perforated ulcer, tumor)

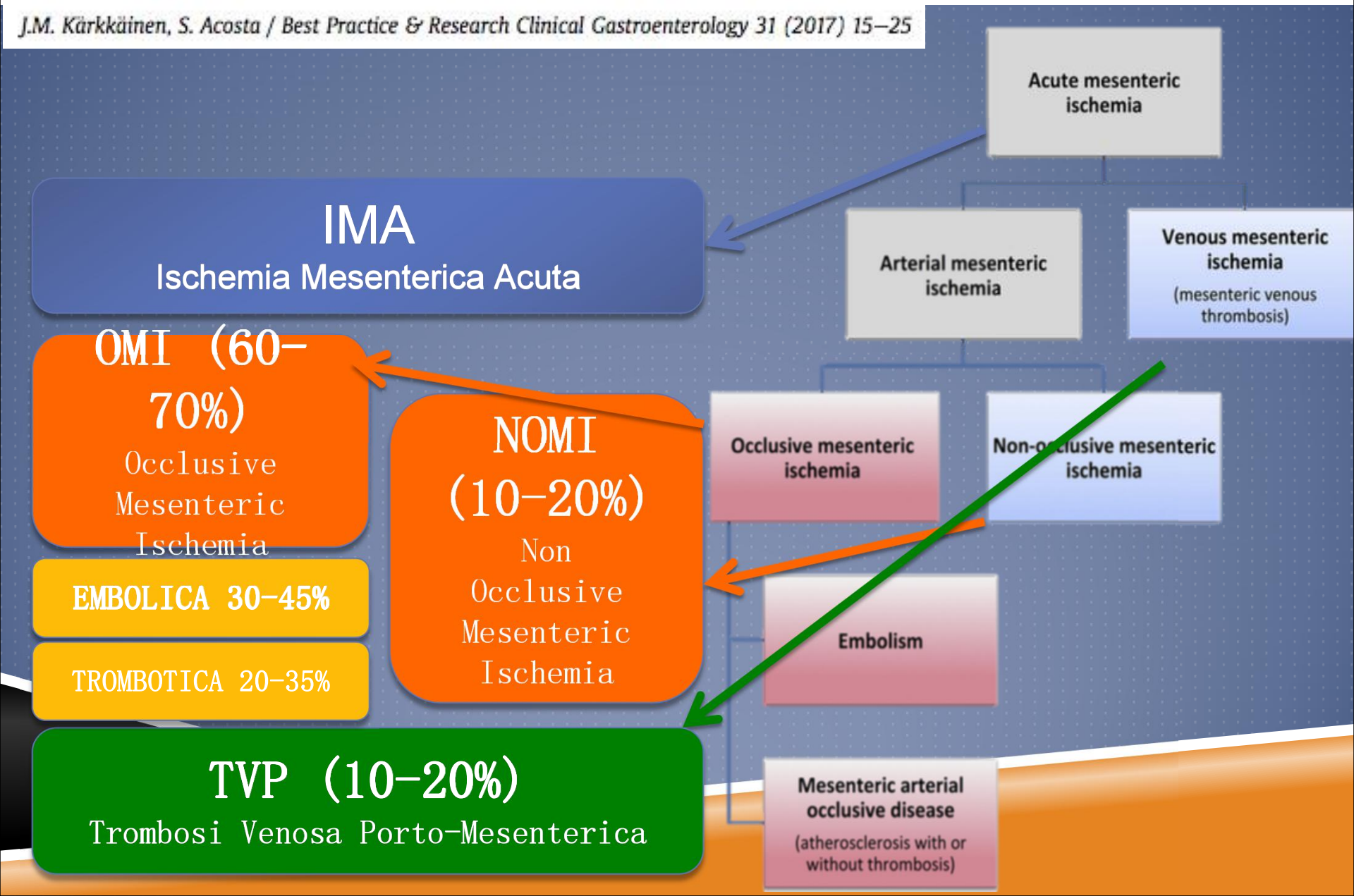




N Engl J Med 374;10 nejm.org March 10, 2016

Acute mesenteric ischemia (part I) – Incidence, etiologies, and how to improve early diagnosis

J.M. Kärkkäinen, S. Acosta / Best Practice & Research Clinical Gastroenterology 31 (2017) 15–25



Occlusione arteriosa trombotica

Occlusione arteriosa embolica

British Journal of Surgery 2004; 91: 17–27

Ischemia non occlusiva

Trombosi sistema porto mesenterico

Forme occlusive acute (OMI)

- Dolore addominale improvviso e violento/vomito/diarrea;
- Quadro clinico discrepante con l’ obiettività addominale;
- Talvolta anamnesi di claudicatio abdominis o fonti cardioemboliche;

Forme non occlusive (NOMI)

- Dolore addominale a esordio graduale/stipsi/diarrea;
- Peggioramento delle condizioni cliniche da causa ignota;
- Stato settico da causa ignota;

P. Kougias et al. / J Vasc Surg

Esami	Sensibilità	Specificità	Valore predittivo positivo (95% i.c.)
Leucociti	0.80	0.50	0.41 (0.20 - 0.83)
Lattati	0.38	0.84	0.71 (0.45 - 1.14)
D-Dimero	0.89	0.40	0.30 (0.14 - 0.84)

Evennett NJ, et al. Systematic review and pooled estimates for the diagnostic accuracy of serological markers for intestinal ischemia. *World J Surg* 2009; 33: 1374-1383

Table 3
Pooled Test Performance Characteristics for Laborator

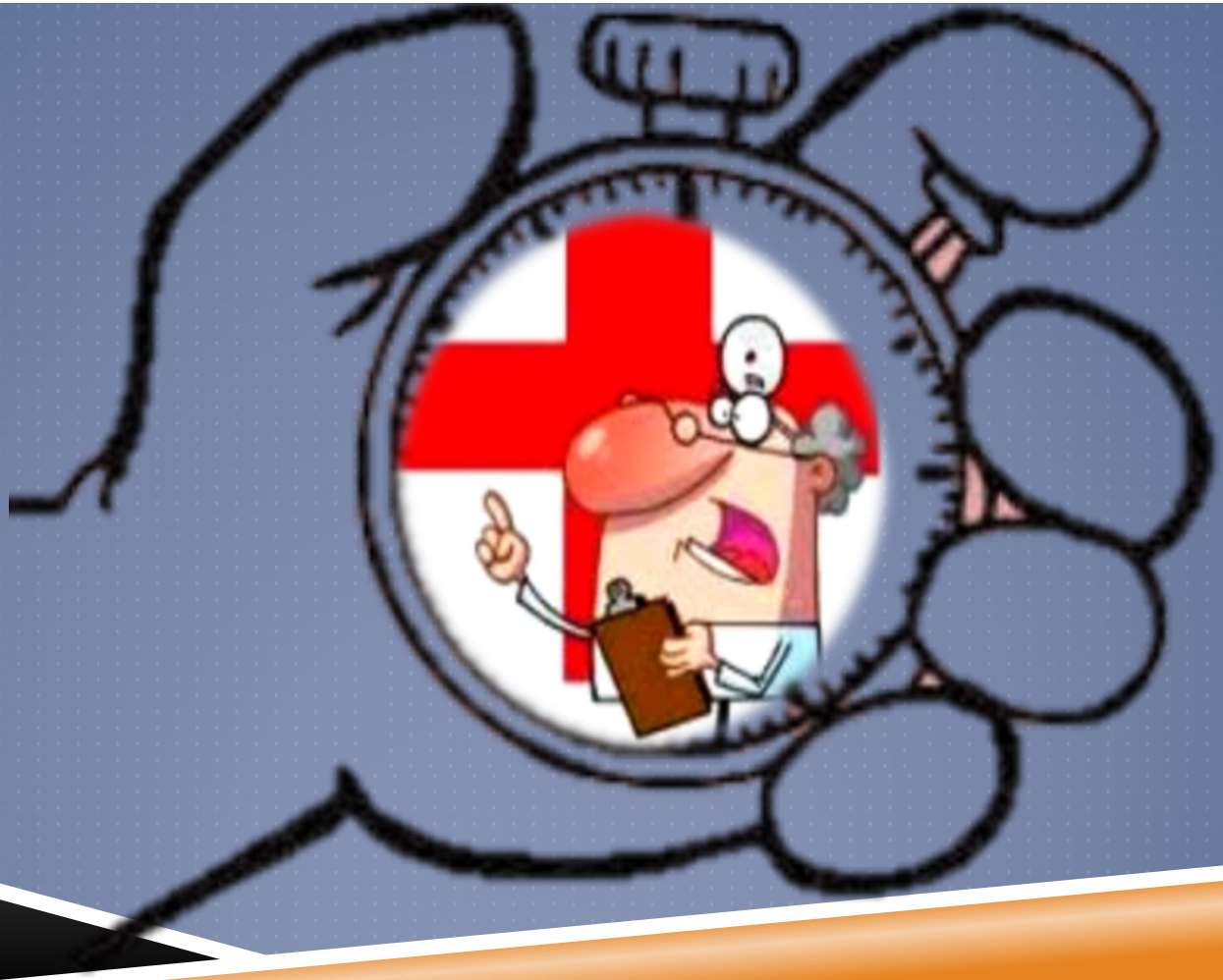
Diagnostic Study	Sensitivity (95% CI)	Specificity (95% CI)
D-Lactate	90 (67–99)	40 (29–51)
L-Lactate	86 (73–94)	44 (32–55)
D-dimer	96 (89–99)	40 (33–47)
GST	68 (55–80)	85 (76–92)
FABP	70 (50–86)	93 (87–97)
MDCT	94 (90–97)	95 (93–97)

FABP = fatty acid–binding protein; GST = alpha-glut
hood ratio; MDCT = multidetector computed tomogra

Conclusion varied. Signs, symptoms, and laboratory testing are insufficiently diagnostic for the condition. Only CT angiography had adequate accuracy to establish the diagnosis of acute mesenteric ischemia in lieu of laparotomy.

Cudnik M.T., Et Al. Academic Emergency Medicine 2013; 20:1088－1100

Acute Mesenteric Ischemia: a Vascular Emergency



Klar E. et al, Dtsch Arztebl Int 2012; 109(14):

Acute Mesenteric Ischemia: a Vascular Emergency

Dopo 6h ischemia irreversibile

<6h
0%-10%

6-12h
50%-60%

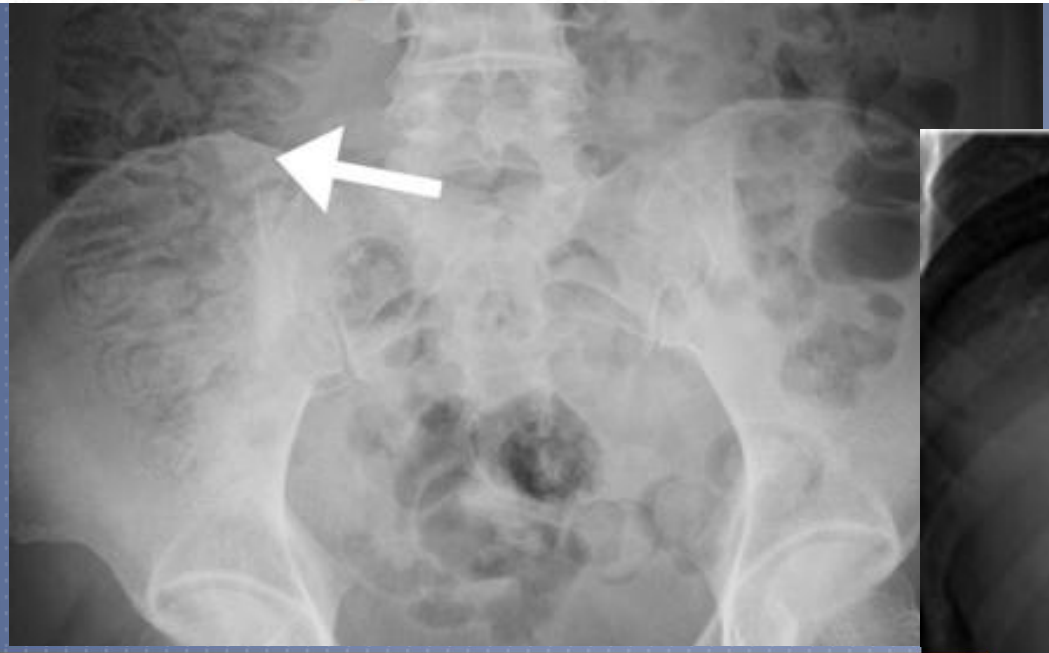
>24h
80%-100%

MORTALITA'

Klar E. et al, Dtsch Arztebl Int 2012; 109(14):

DIAGNOSTICA PER IMMAGINI

The role of plain radiographs in patients with acute abdominal pain at the ED☆,☆☆



RX DIRETTA ADDOME

Segni di diagnosi certa nel 50% dei casi

Van Raden A. et al. Am J Em Med (2011) 29,

DIAGNOSTICA PER IMMAGINI

Diagnostic Accuracy of Multidetector CT in Acute Mesenteric Ischemia: Systematic Review and Meta-Analysis[1]

FB 341.1007

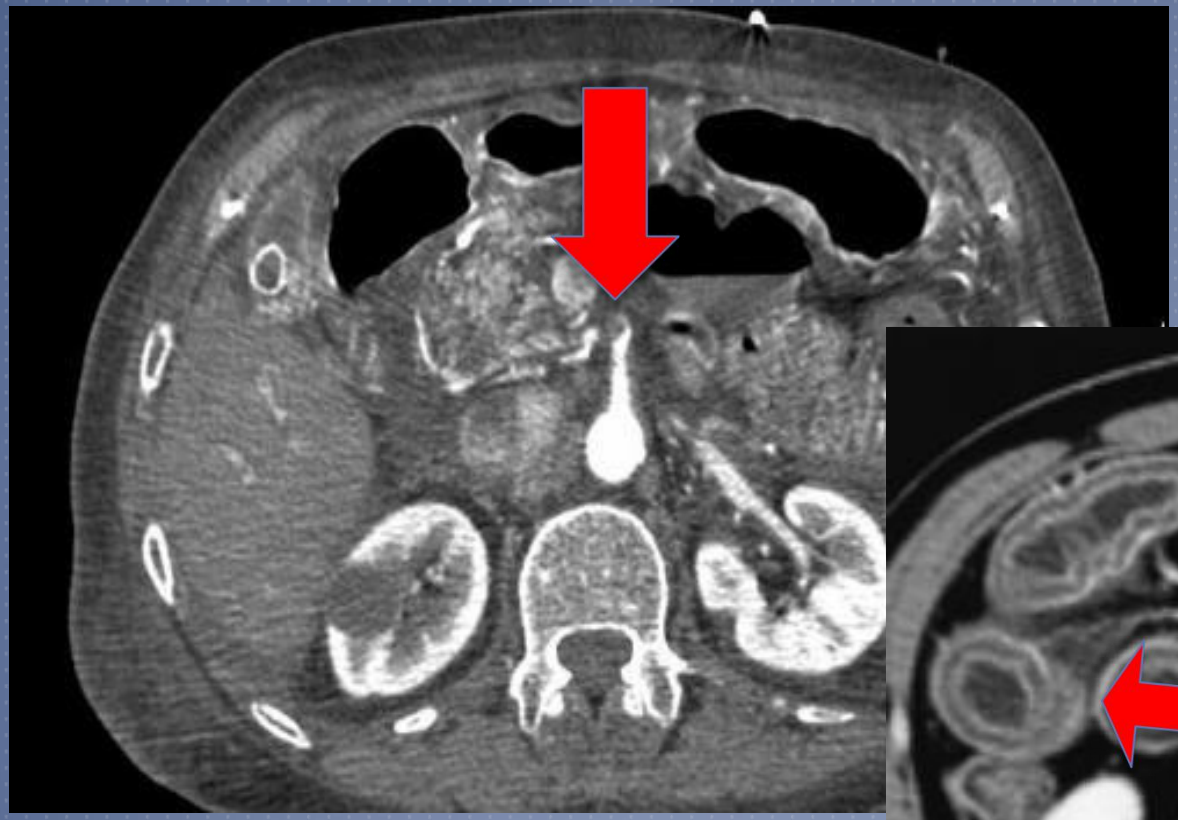
GOLD STANDARD

Sensitivity (95% CI)	TP/(TP+FN)
1.00 (0.87 – 1.00)	26/26
0.81 (0.54 – 0.96)	13/16
0.92 (0.75 – 0.99)	24/26
0.96 (0.82 – 1.00)	27/28
0.89 (0.65 – 0.99)	16/18
0.93 (0.76 – 0.99)	26/28

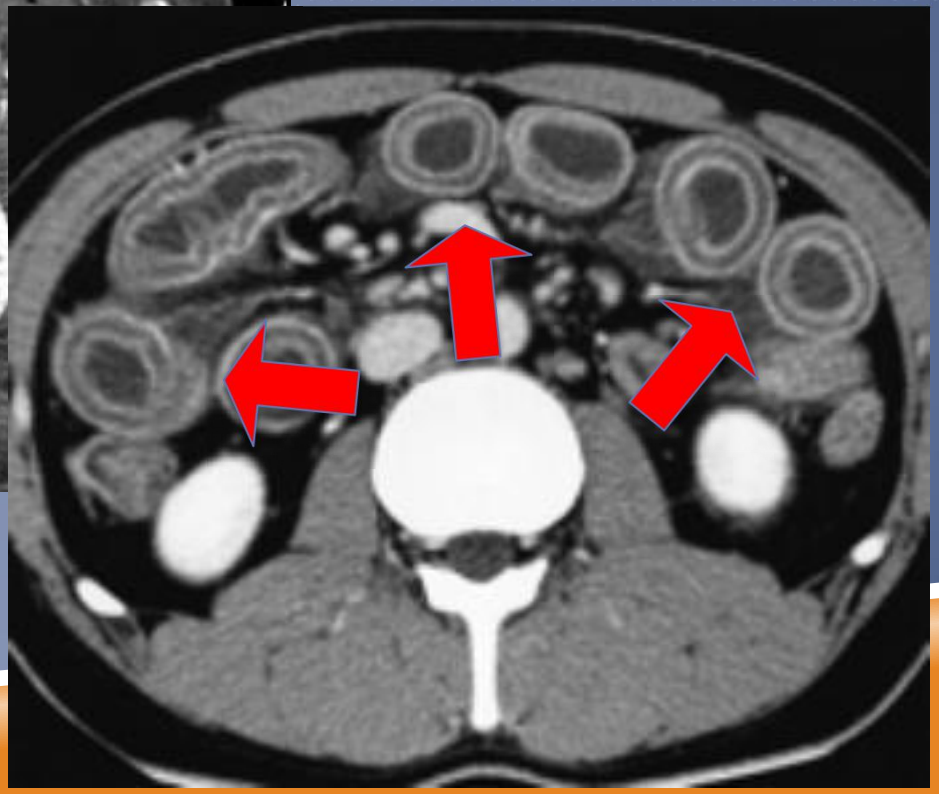
Specificity (95% CI)	TN/(TN+FP)
0.89 (0.74 – 0.97)	32/36
0.97 (0.94 – 0.98)	258/267
1.00 (0.90 – 1.00)	34/34
0.98 (0.89 – 1.00)	46/47
0.97 (0.91 – 1.00)	72/74
0.89 (0.67 – 0.99)	17/19

Jan Menke, *Radiology: 2010* Vol. 256(1):93-101

DIAGNOSTICA PER IMMAGINI

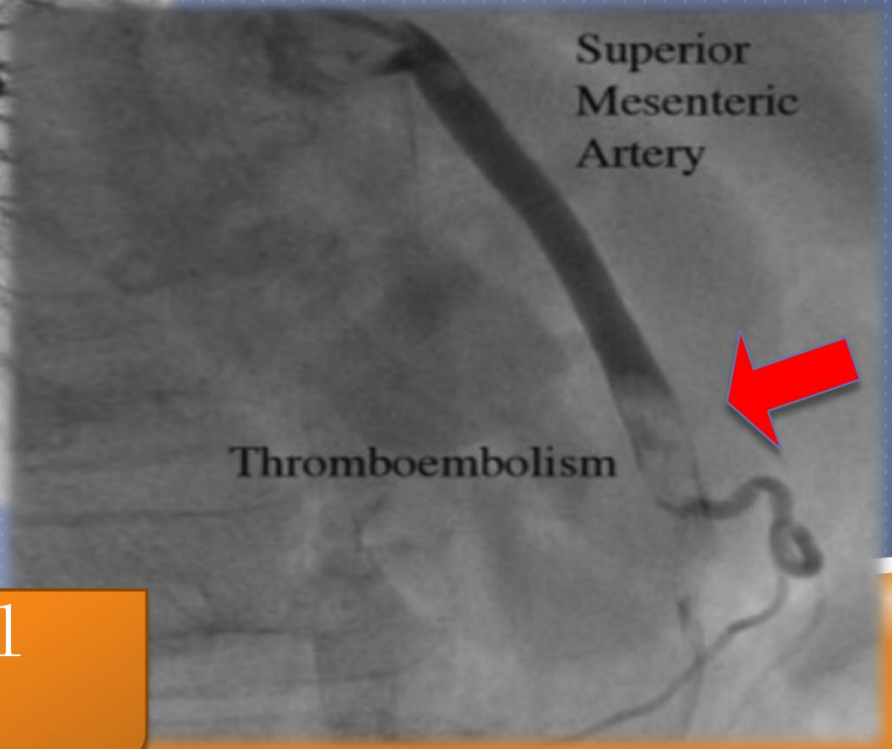


ANGIO-TC
ADDOME



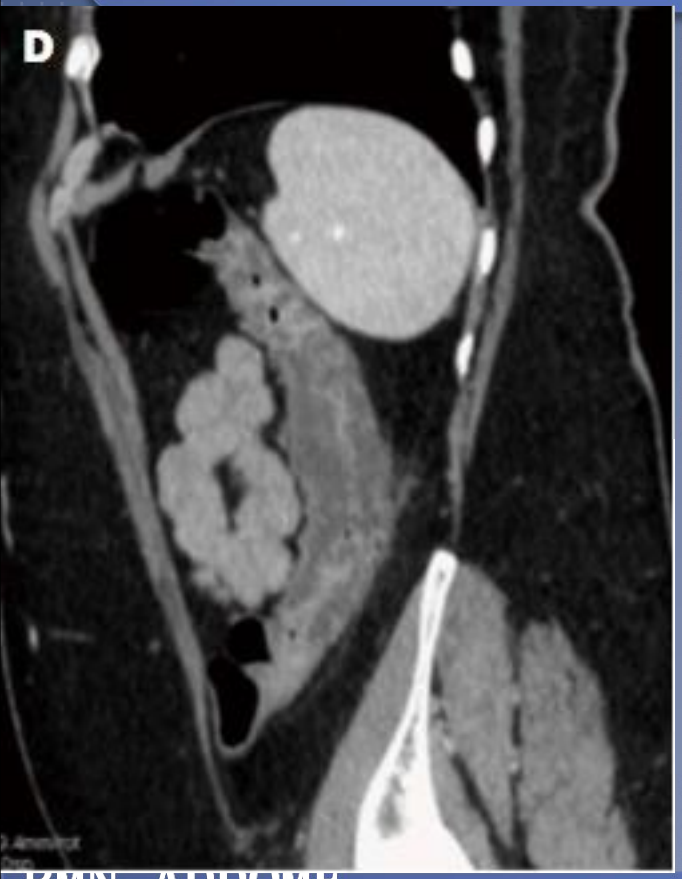
DIAGNOSTICA PER IMMAGINI

ANGIOGRAFIA
+TERAPIA



Gold Standard fino al 2000

DIAGNOSTICA PER IMMAGINI



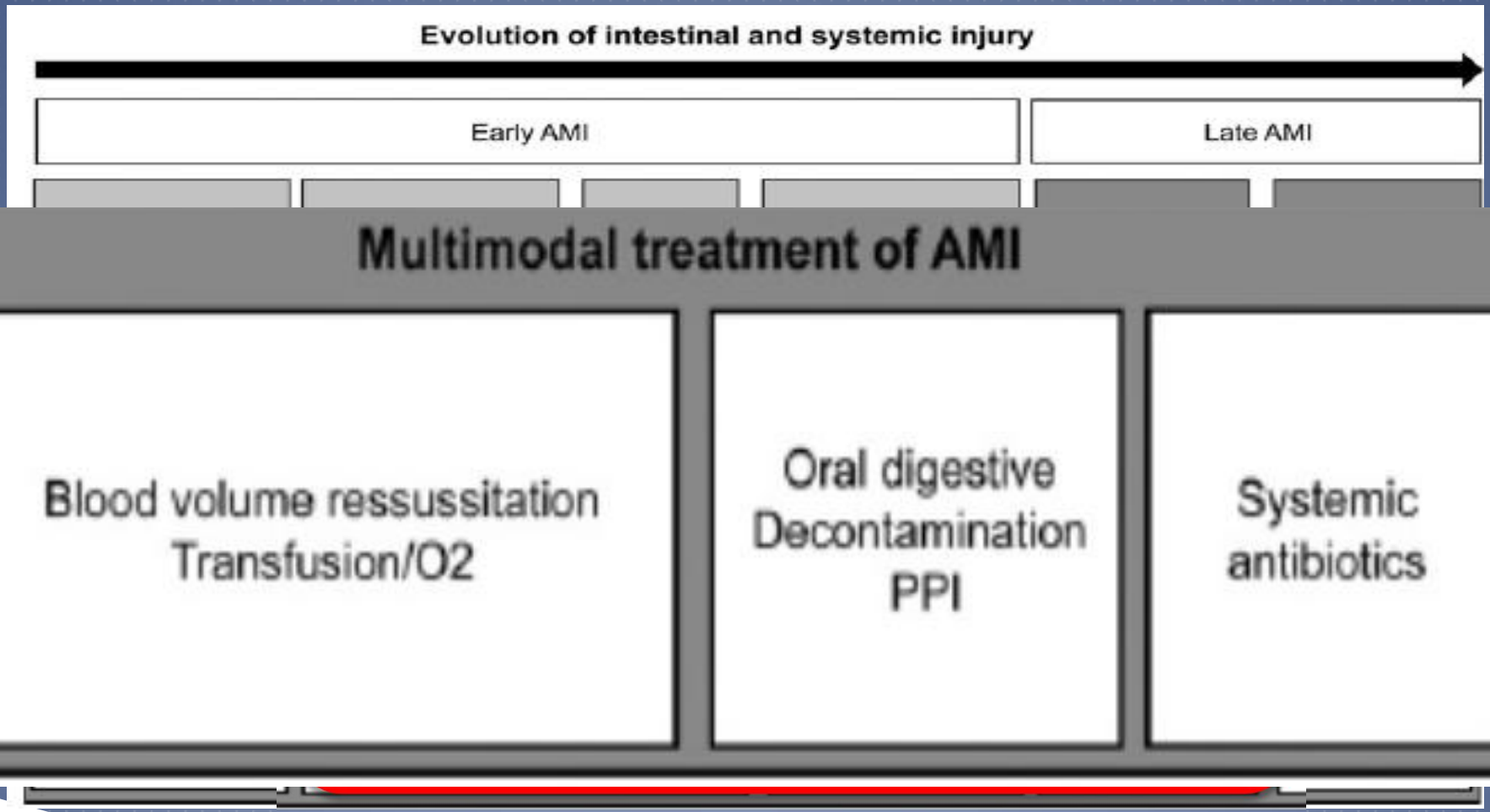
COLONSCOPIA

Swowcroft CV, Sanowsky RA, KozareK RA, (1981), Colonscopy in ischemic colitis. Gastrointestinal endoscopy, 27(3): 156-161

RMN ADDOME

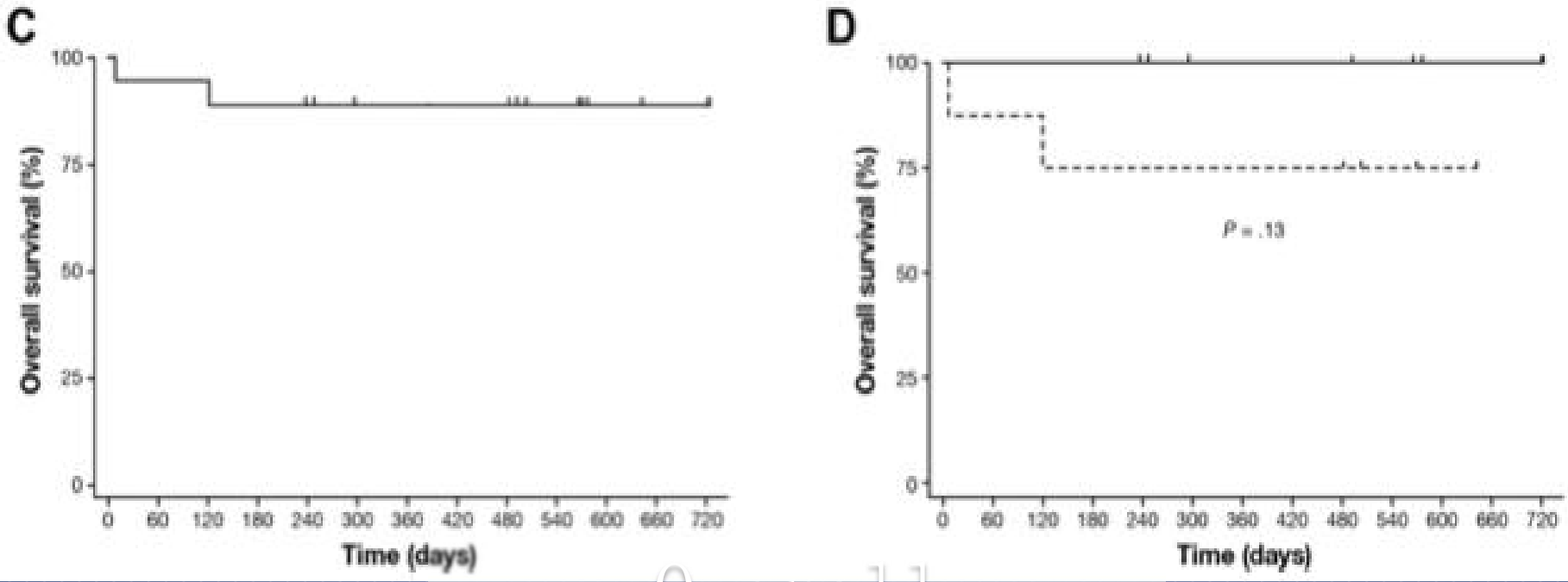
Mazzei MA, Guerrini S, et al. (2013): *Magnetic resonance imaging: is there a role in clinical management for acute ischemic colitis?* World J Gastroenterol. 2013 Feb 28;19(8):1256-63

Effects of a Multimodal Management Strategy for Acute Mesenteric Ischemia on Survival and Intestinal Failure



O. Corcos et al. C Gastroent Hep, 2013;11:158-165

Effects of a Multimodal Management Strategy for Acute Mesenteric Ischemia on Survival and Intestinal Failure



Overall survival:

95% (30 days)

89% (a 1 e 2 anni)

O. Corcos et al. C Gastroent Hep, 2013;11:158-165

OMI

Thrombolysis for acute occlusion of the superior mesenteric artery

Steinarr Björnsson, MD,[a] Martin Björck, MD, PhD,[1] and Stefan Acosta, MD, PhD,[a] *Malmö, Uppsala, and Stockholm, Sweden*

JOURNAL OF VASCULAR SURGERY
Volume 54, Number 6

Early Endovascular Treatment of Superior Mesenteric Occlusion Secondary to Thromboemboli

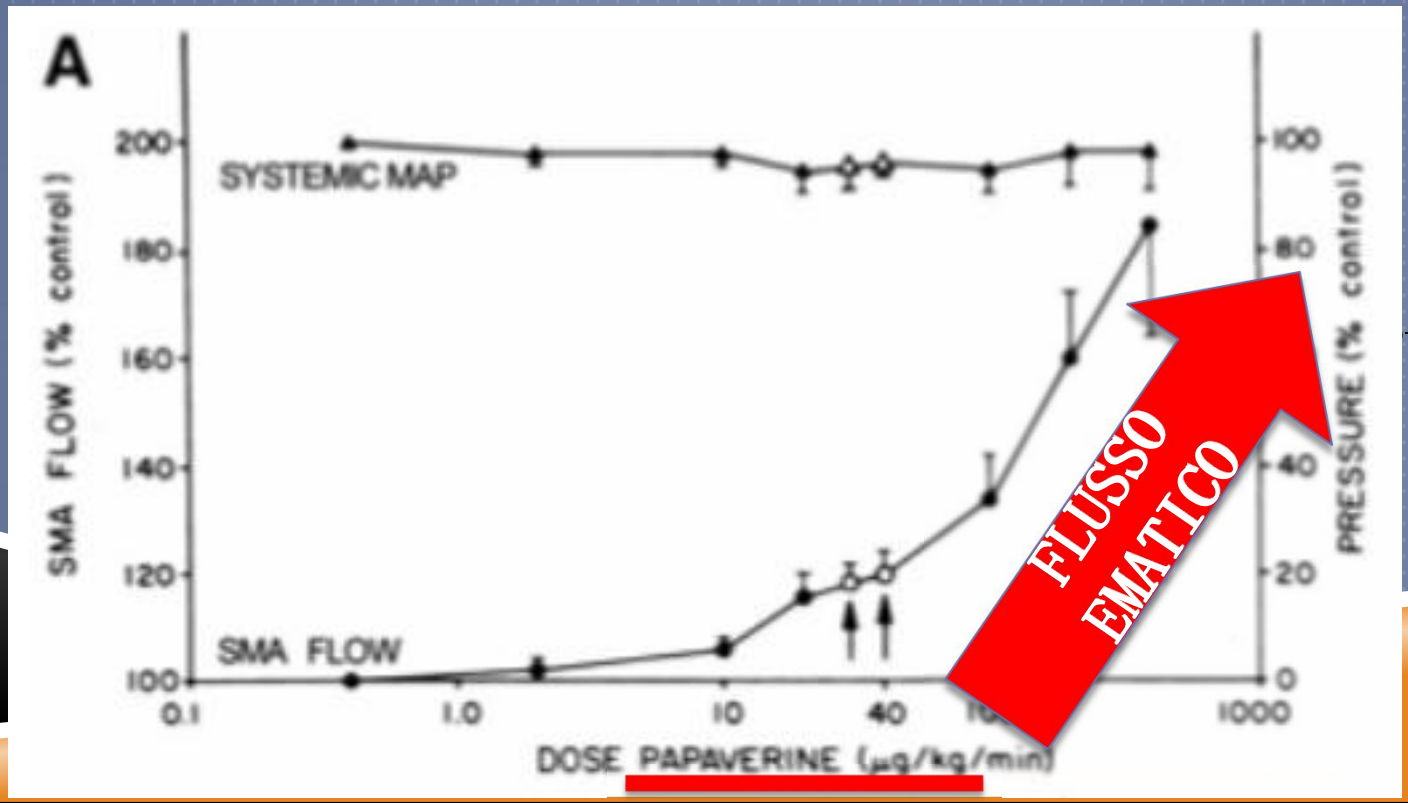
European Journal of Vascular and Endovascular Surgery Volume 47 Issue 2 p. 196–203 February/2014

Z. Jia [a], G. Jiang [a,*], F. Tian [a], J. Zhao [a], S. Li [a], K. Wang [a], Y. Wang [a], L. Jiang [a], W. Wang [b]

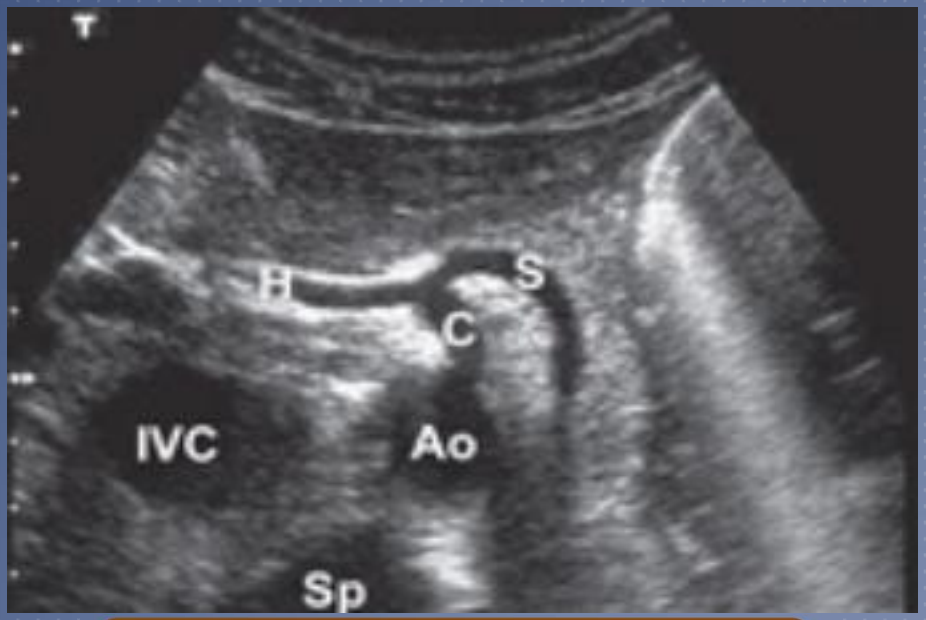
NOMI

Effect of Prolonged Selective Intramesenteric Arterial Vasodilator Therapy on Intestinal Viability After Acute Segmental Mesenteric Vascular Occlusion

John E. Meilahn, MD, Jon B. Morris, MD, Eugene P. Ceppa, BA, and Gregory B. Bulkley, MD, FACS

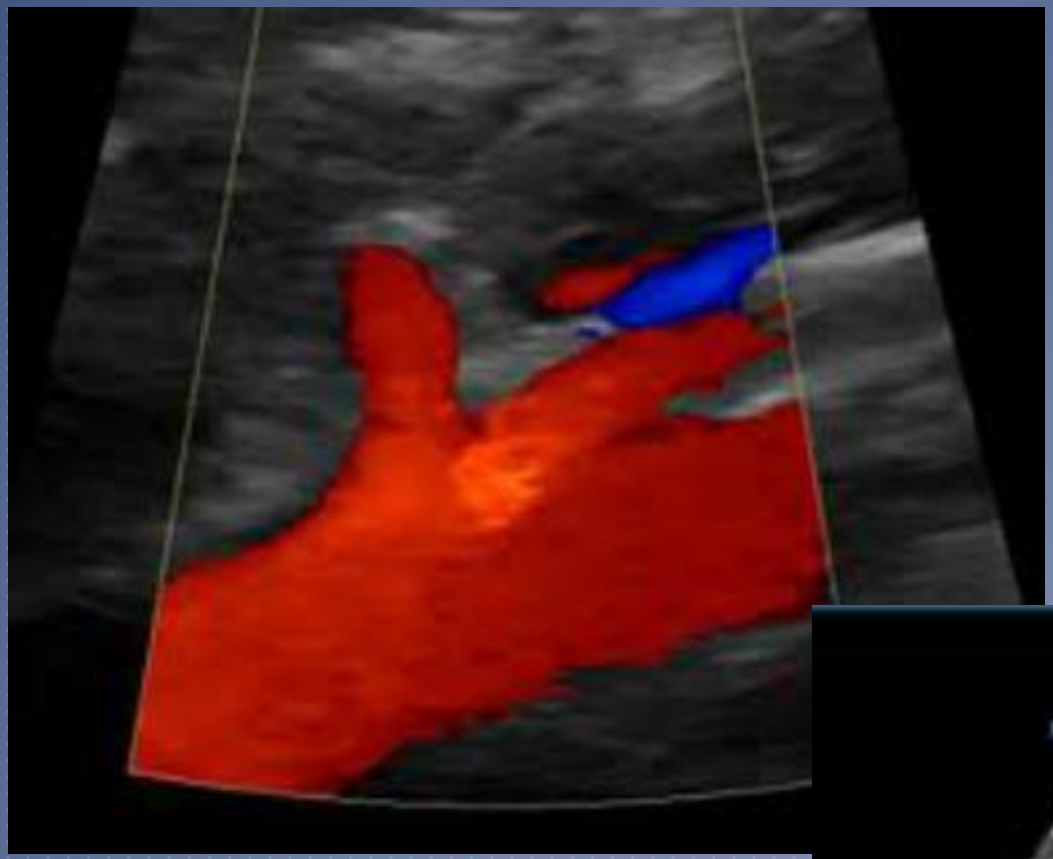


—203 February/2014



TRONCO CELIACO

ARTERIA MESENTERICA SUPERIORE



Modulo COLOR

Modulo DOPPLER

Correlazione doppler/angiografia

Label	Mean	Median	Standard deviation	Minimum	Maximum
SMA (PSV)					
Normal	161	158	39.24	117	329

Label	Mean	Median	Standard deviation	Minimum	Maximum
Celiac (PSV)					
Normal	148	153	28.42	67	187
<50	232	224	49.75	144	372
50-69	285	301	78.08	0	452
70-99	445	426	161.57	52	880
Celiac (EDV)					
Normal	40	38	13.6	19	74
<50	55	47	30.03	23	125.3
50-69	61	57	31.82	0	141
70-99	132	115	87.36	18	463

Perko MJ, , Eur J Vasc Endov Surg, 2001;21(2):106-

E le anse…

PERISTALSI

ISPESSIMENTO ANSE

VASCOLARIZ ZAZIONE

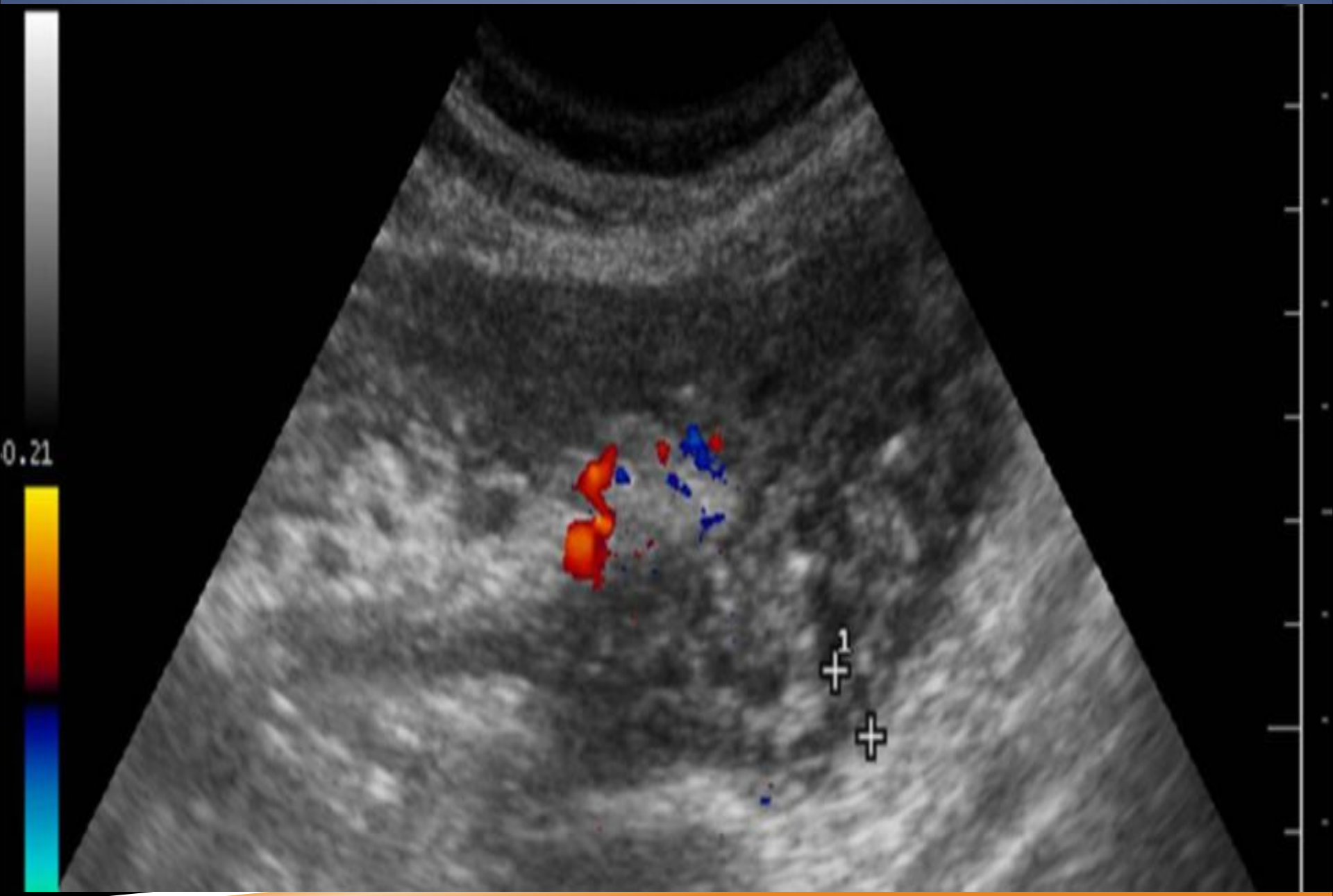
CONTENUTO

Intestinal Ischemia: US-CT findings correlations

A Reginelli[1*], EA Genovese[2], S Cappabianca[1], F Iacobellis[1], D Berritto[1], P Fonio[3], F Coppolino[4], R Grassi[1]

Despite its limitations, US could constitutes a **good imaging method as first examination in acute settings** of suspected mesenteric ischemia.

Reginelli et al. Critical Ultrasound Journal 2013, 5(1):S7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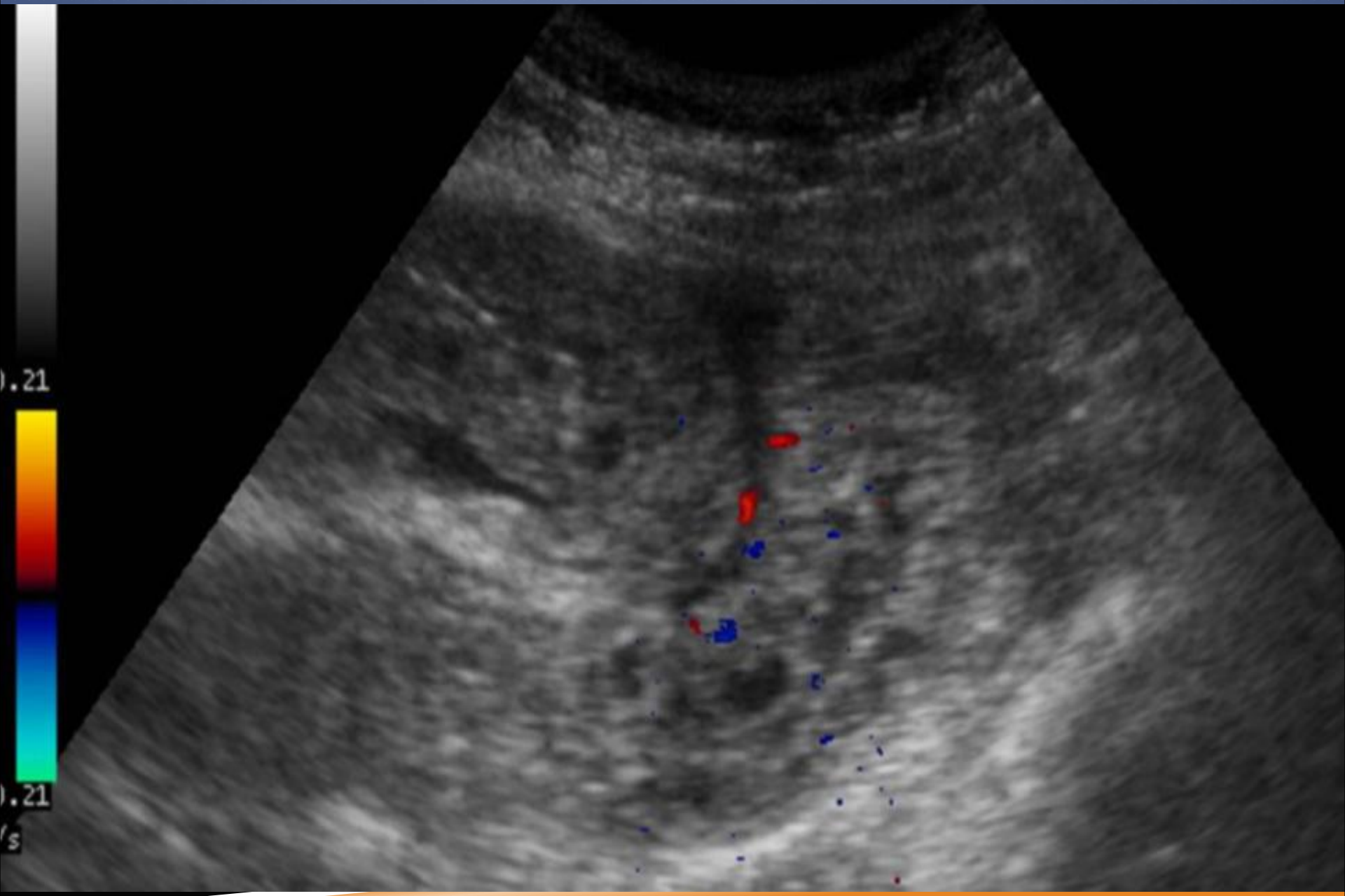
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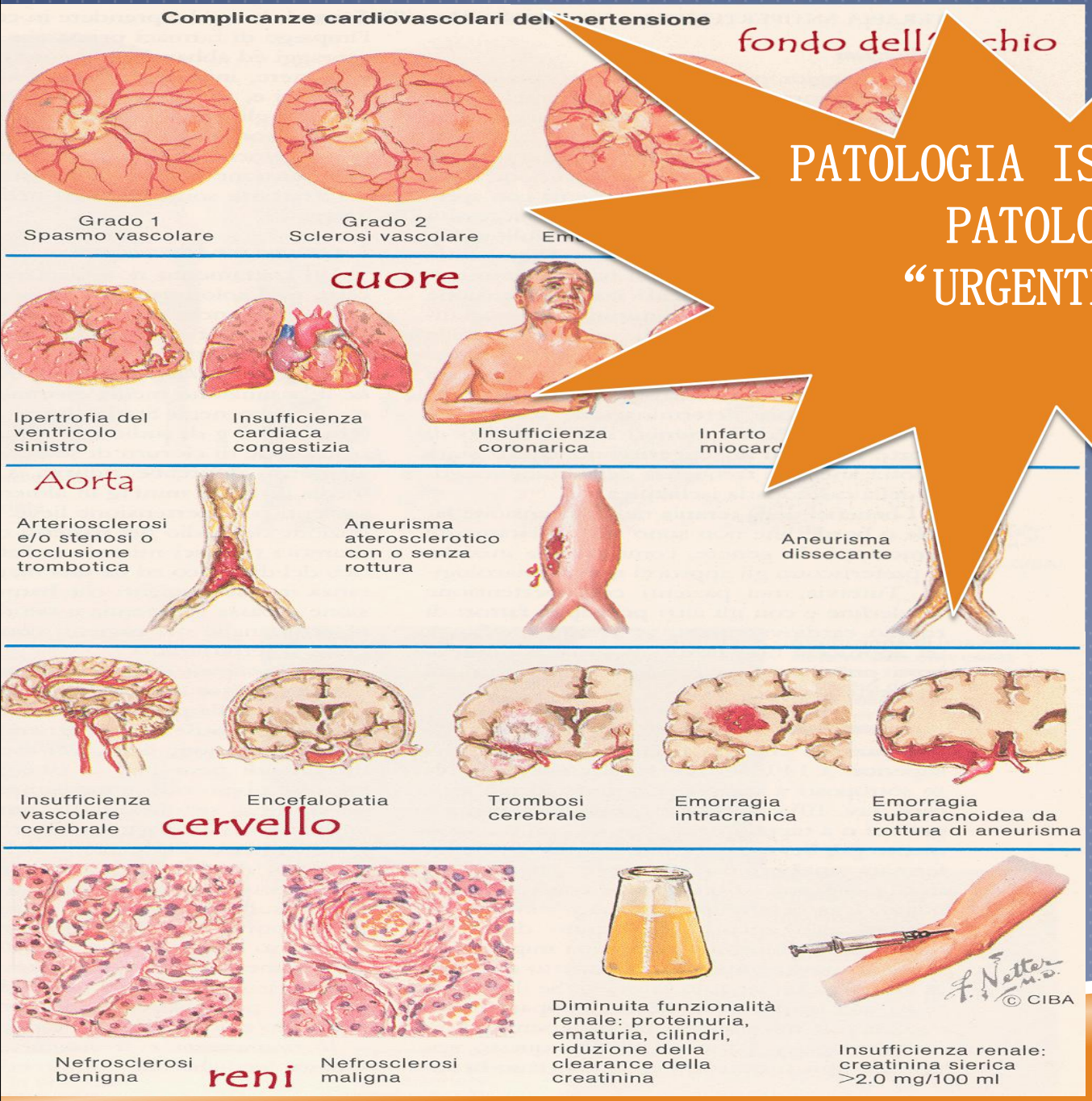
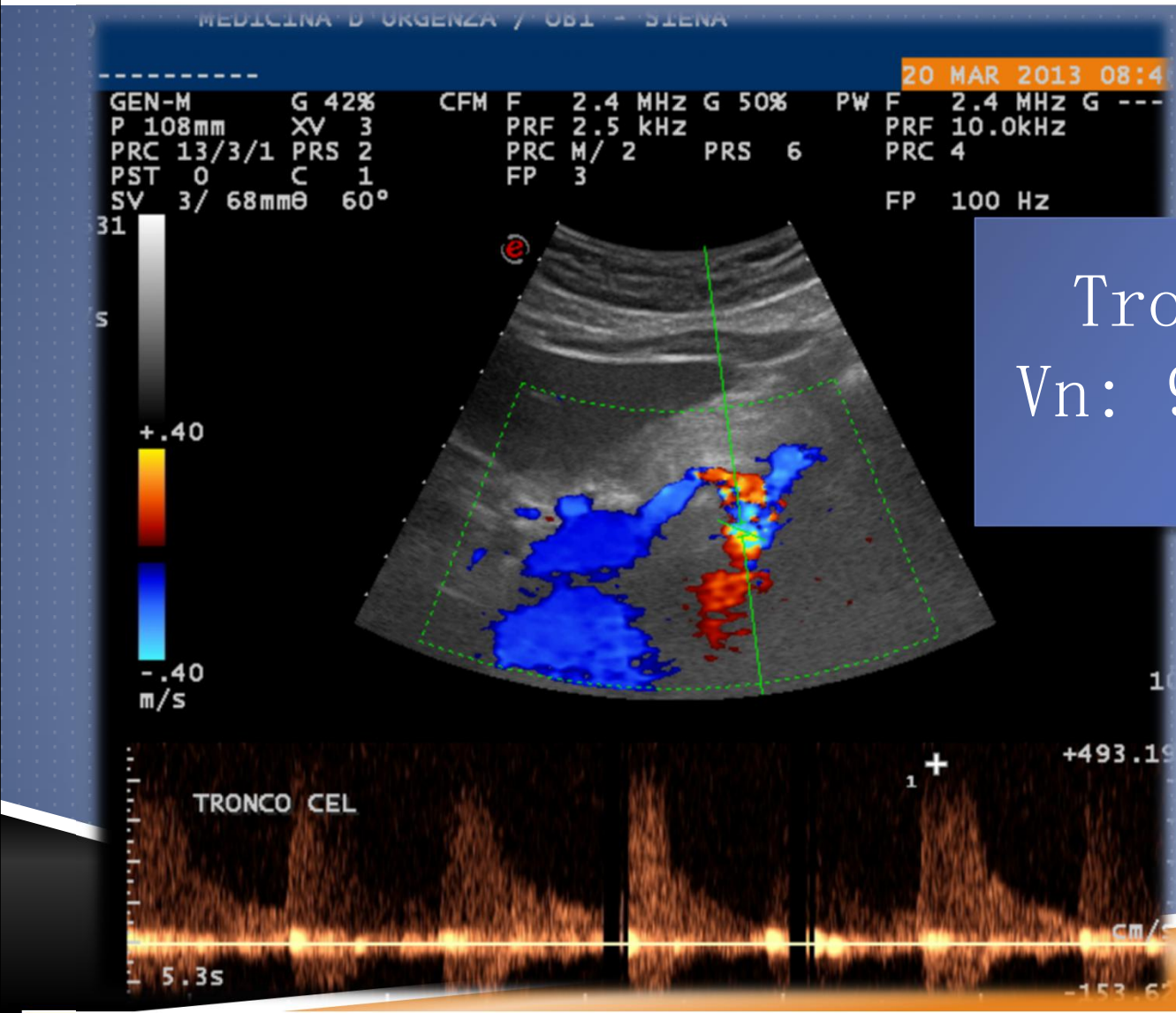


PATOLOGIA ISCHEMICA è PATOLOGIA "URGENTE" !!!

Duplex ultrasound in the early diagnosis of acute mesenteric ischemia: a longitudinal cohort multicentric study

Stefano Sartini[a], Guido Calosi[c], Carolina Granai[d], Tim Harris[b], Fulvio Bruni[d] and Marcello Pastorelli[d]



Tronco Celiaco
Vn: 90-190 cm/sec

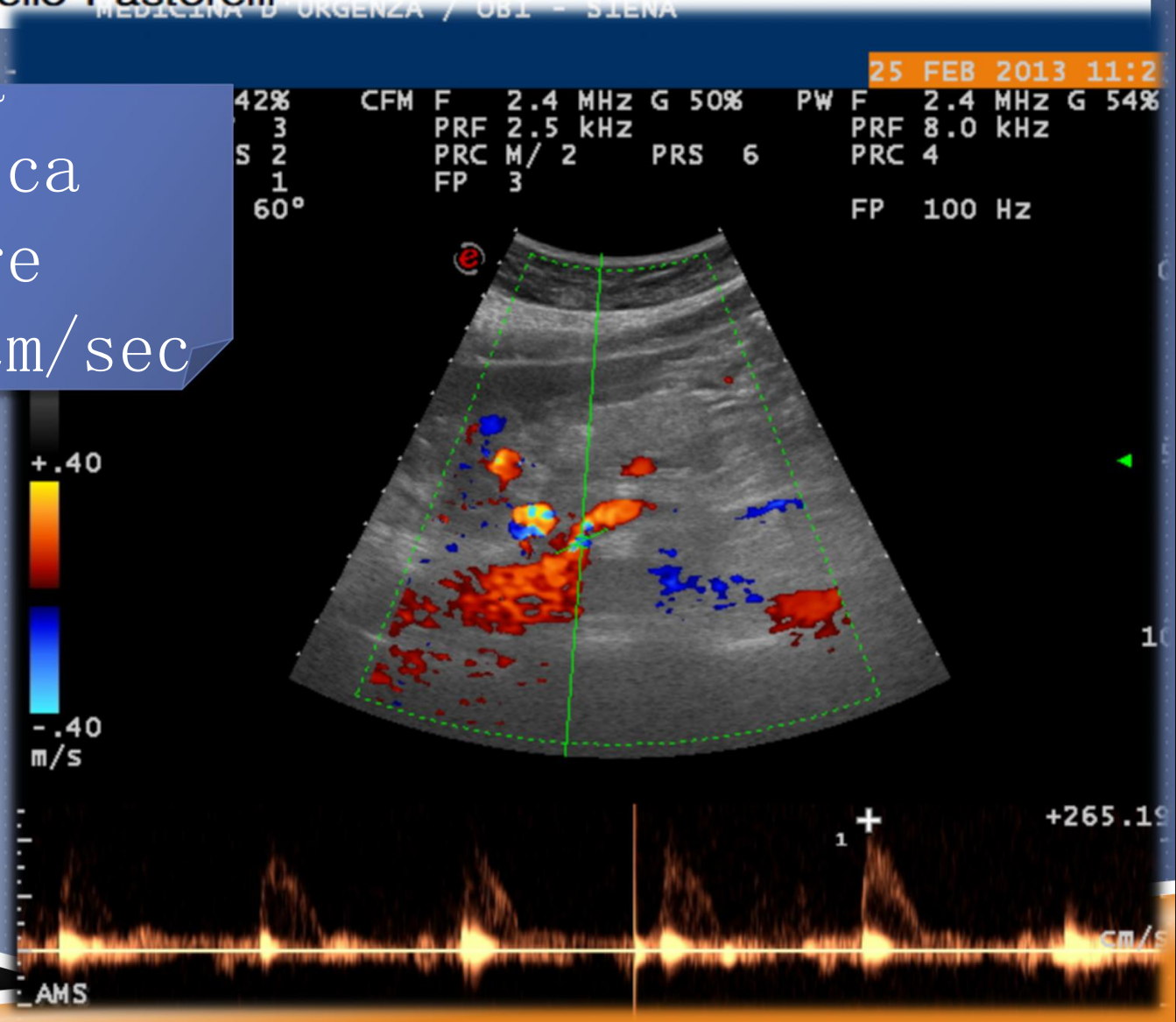
European Journal of Emergency Medicine. 2017 - Volume 24 - Issue 6 - p

Duplex ultrasound in the early diagnosis of acute mesenteric ischemia: a longitudinal cohort multicentric study

Stefano Sartini[a], Guido Calosi[c], Carolina Granai[d], Tim Harris[b], Fulvio Bruni[d] and Marcello Pastorelli[d]

Arteria Mesenterica Superiore

Vn: 80-200 cm/sec



European Journal of Emergency Medicine. 2017 - Volume 24 - Issue 6 - p

Duplex ultrasound in the early diagnosis of acute mesenteric ischemia: a longitudinal cohort multicentric study

Stefano Sartini[a], Guido Calosi[c], Carolina Granai[d], Tim Harris[b], Fulvio Bruni[d] and Marcello Pastorelli[d]

Table 5 SMA PSV performance to diagnose AMI, OMI, and

	AMI ($n=15$) $P=0.0028$
Sensitivity	78.57% (95% CI = 49–95%)
Specificity	64.52% (95% CI = 45–80%)
PPV	50% (95% CI = 28–71%)
NPV	86.9% (95% CI = 66–97%)

AMI, acute mesenteric ischemia; CI, confidence interval; NOMI, nonoc
PPV, p

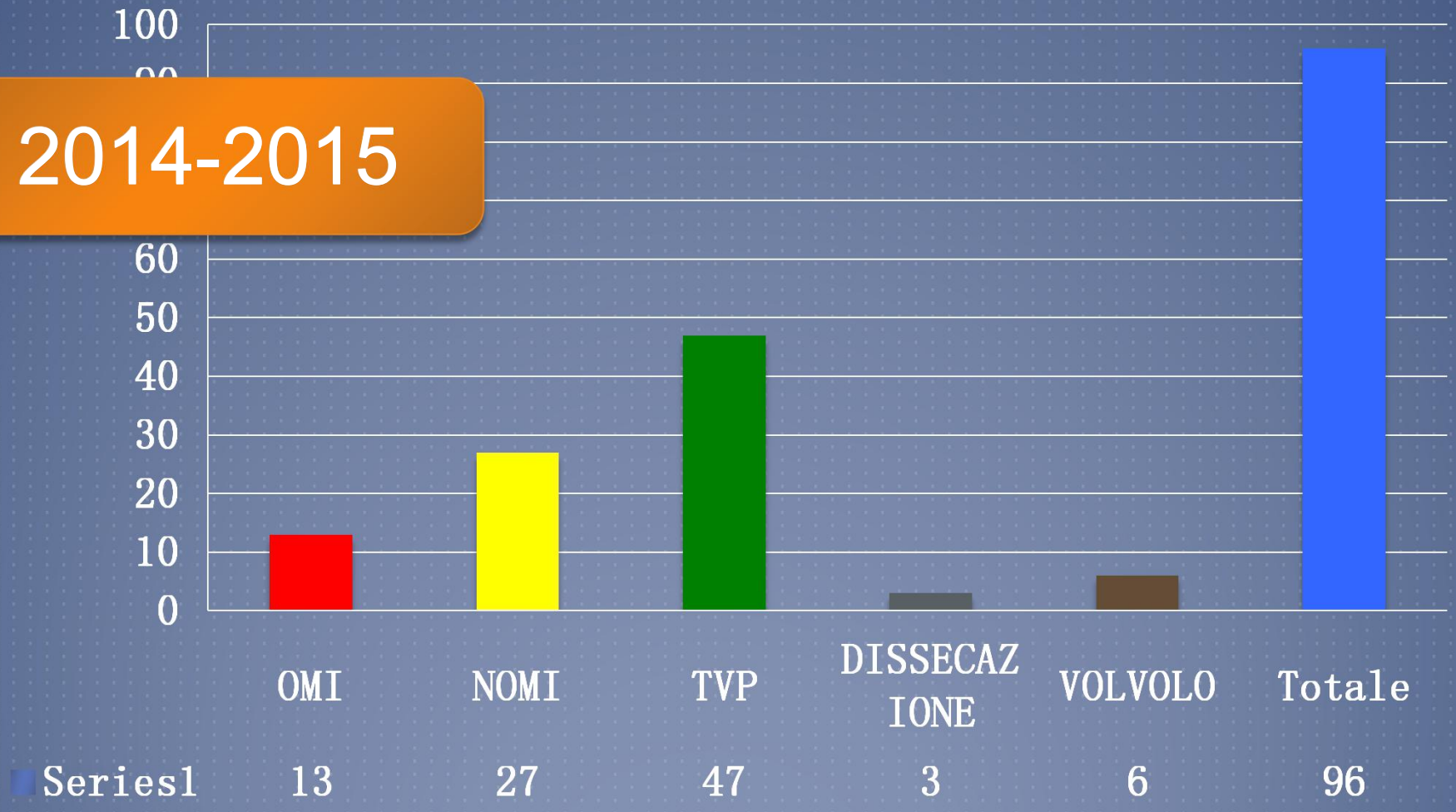
	OMI ($n=6$) $P=0.005$	NOMI ($n=9$) $P=0.13$
Sensitivity	100% (95% CI = 54–100%)	66% (95% CI = 57–79%)
Specificity	64% (95% CI = 64–78%)	63% (95% CI = 48–81%)
PPV	30% (95% CI = 12–54%)	31% (95% CI = 9–59%)
NPV	100% (95% CI = 86–100%)	88% (95% CI = 78–97%)

AMI, acuteric ischemia; NPV, negative predusive mesenteric ischemia; PPV, positartery.

ESPERIENZA ALL'OSPEDALE POLICLINICO SAN MARTINO DI GENOVA

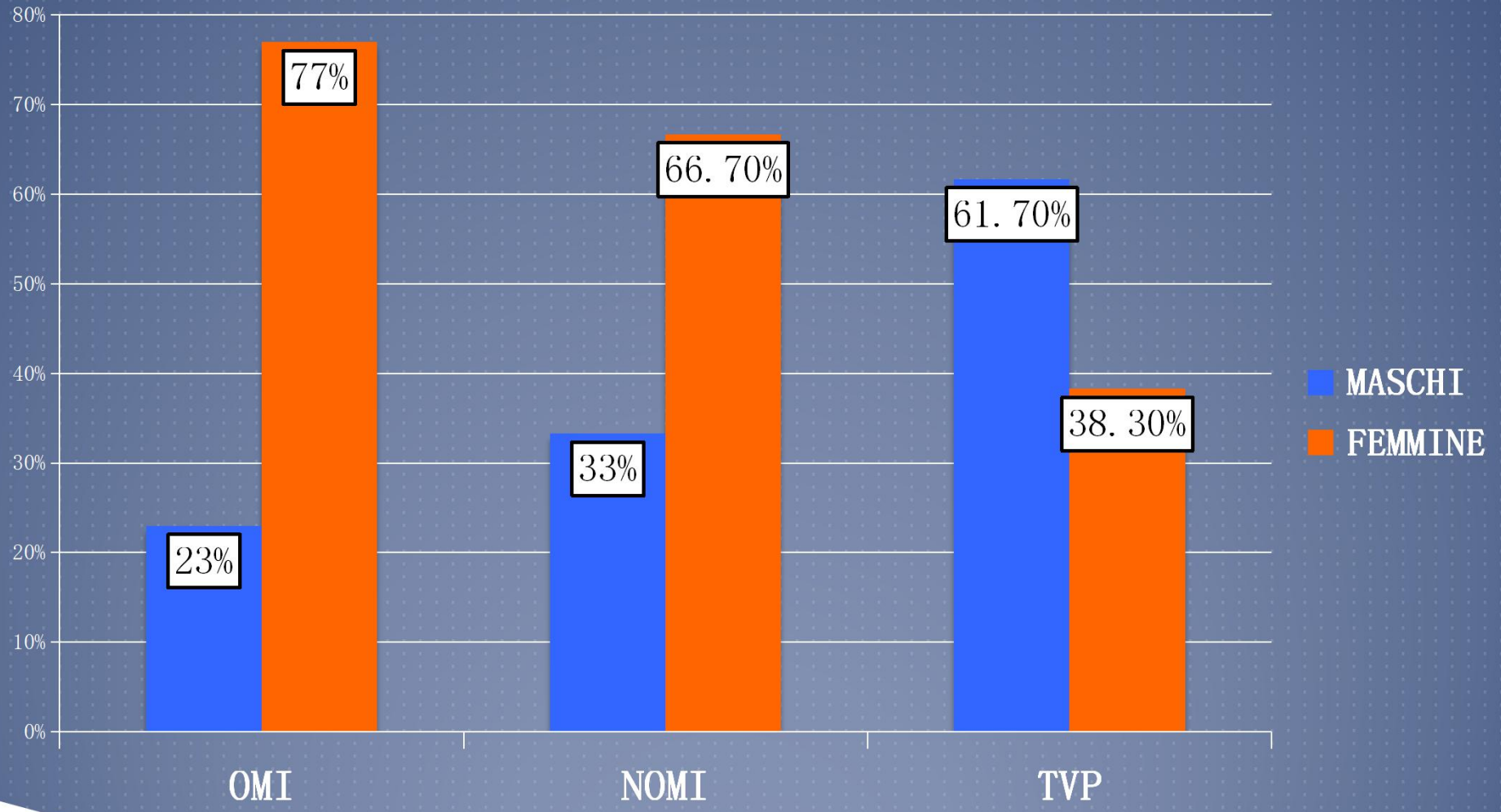
DIAGNOSI FINALI IMA

2014-2015



Policlinico San Martino, Genova

TIPO DI IMA

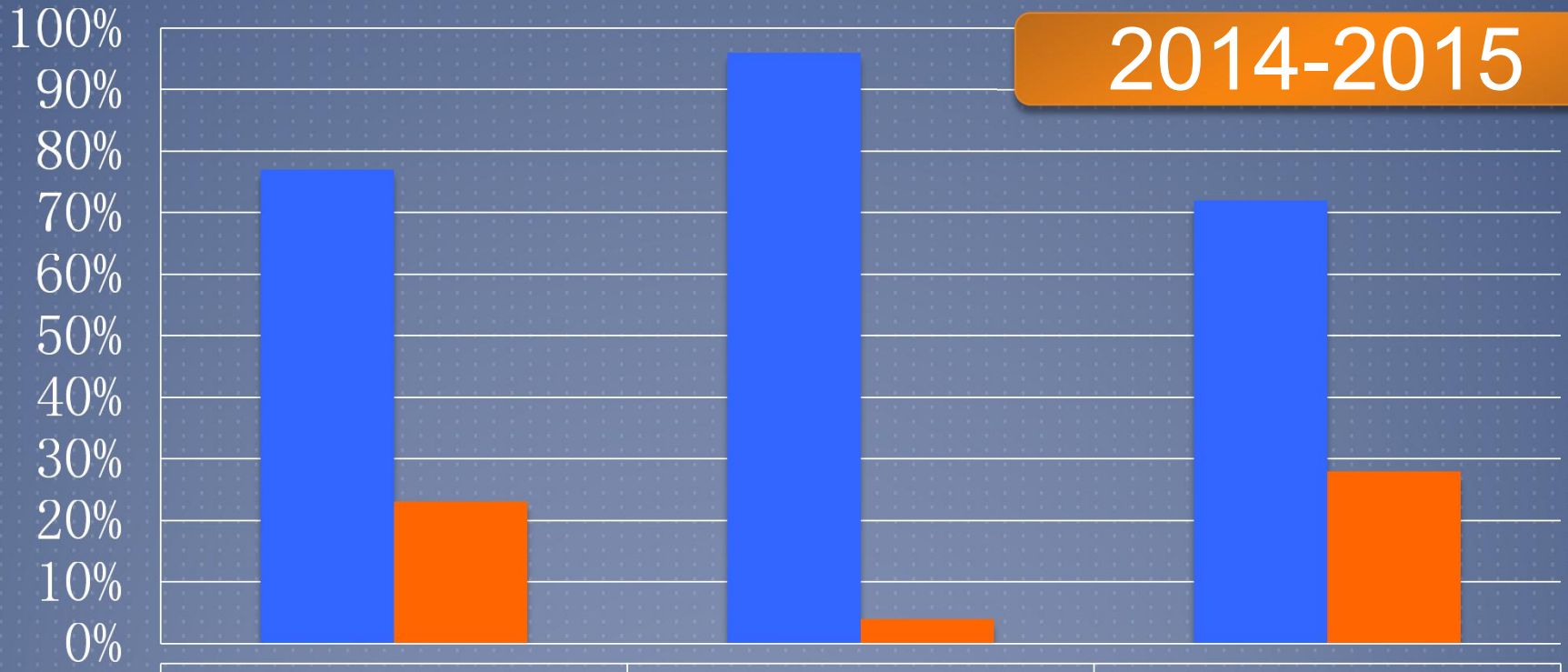


2014-2015

Policlinico San Martino, Genova

TRATTAMENTO ENDOVASCOLARE

2014-2015



	OMI	NOMI	TVP
NO	77%	96%	72. 00%
SI	23%	4%	28%

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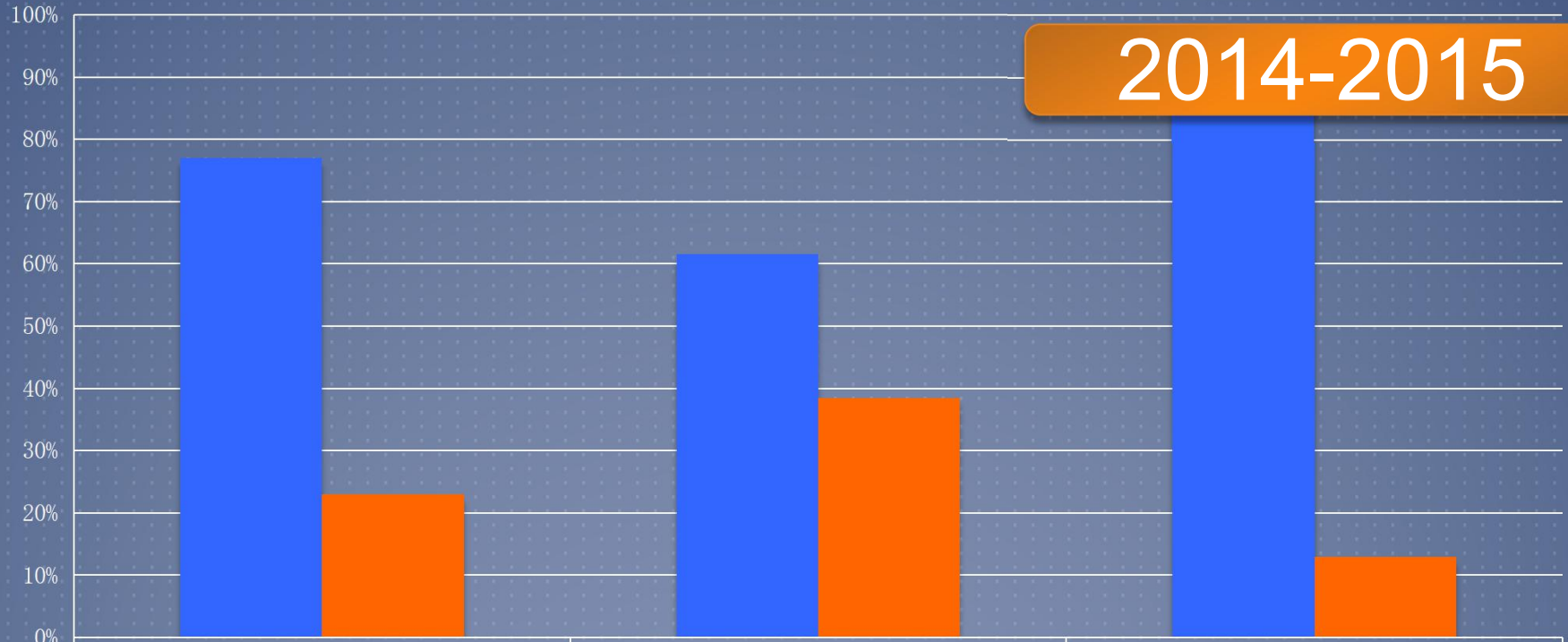
TRATTAMENTO CHIRURGICO

2014-2015

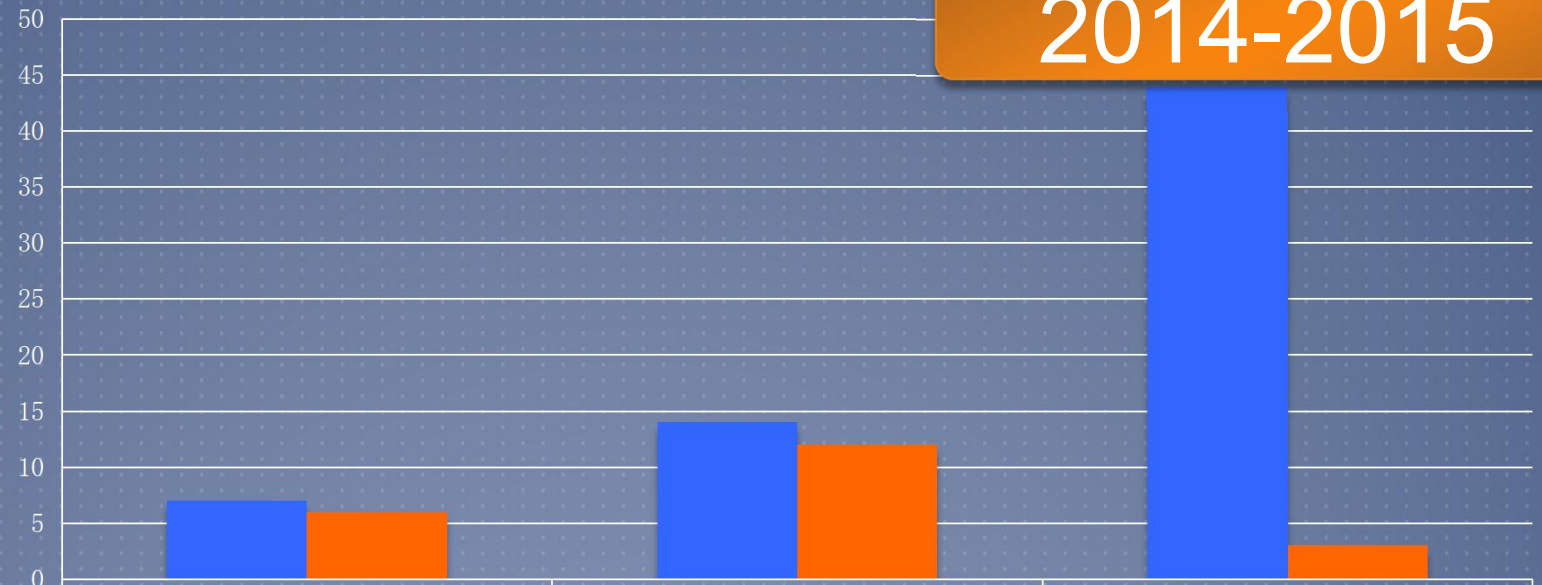


	OMI	NOMI	TVP
NO	77%	61.50%	87%
SI	23%	38.50%	13.00%

Policlinico San Martino, Genova

ESITO FINALE

2014-2015



	OMI	NOMI	TVP
DIMESSO	7	14	44
DECEDUTO	6	12	3

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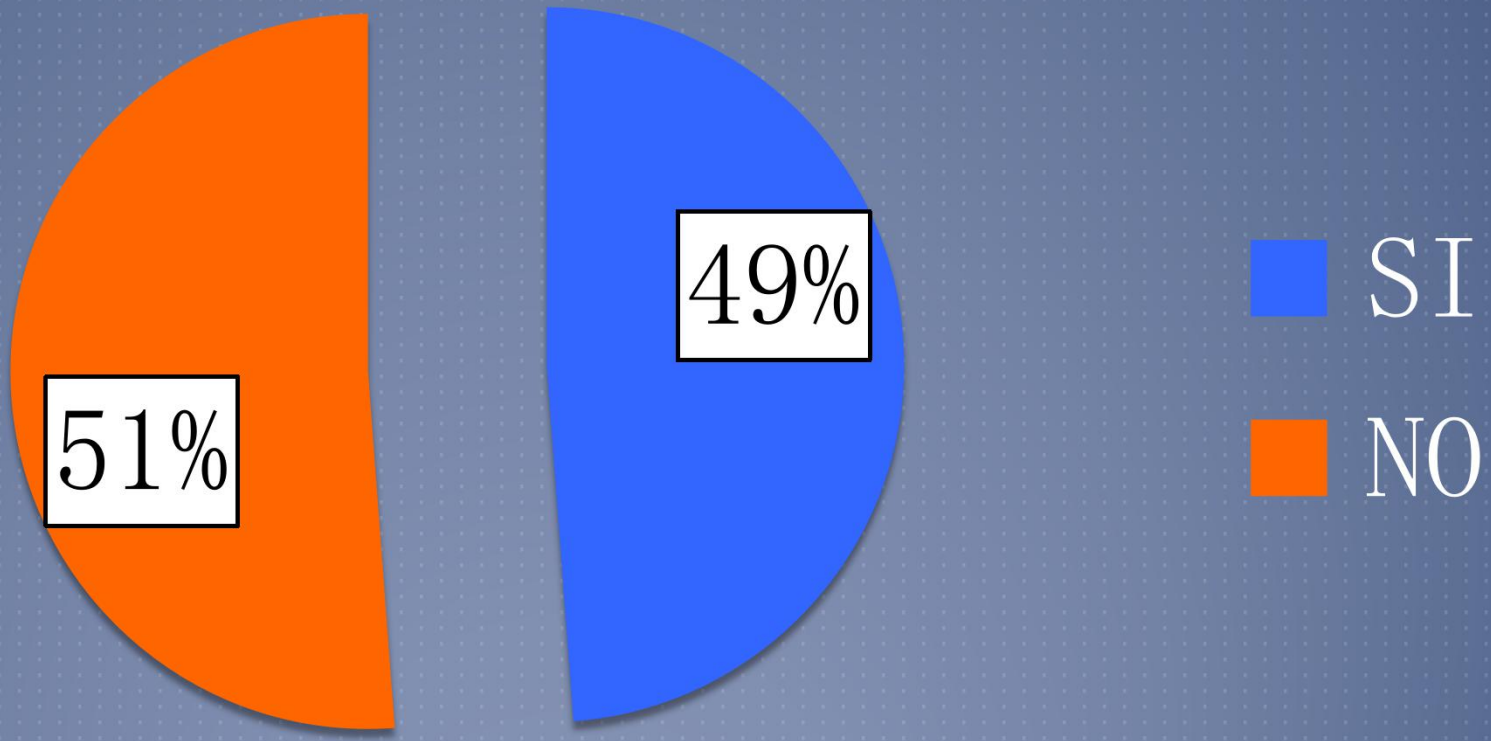
PERCHE’ IL MEU DOVREBBE OCCUPARSENE?

DIAGNOSI IMA DA PS



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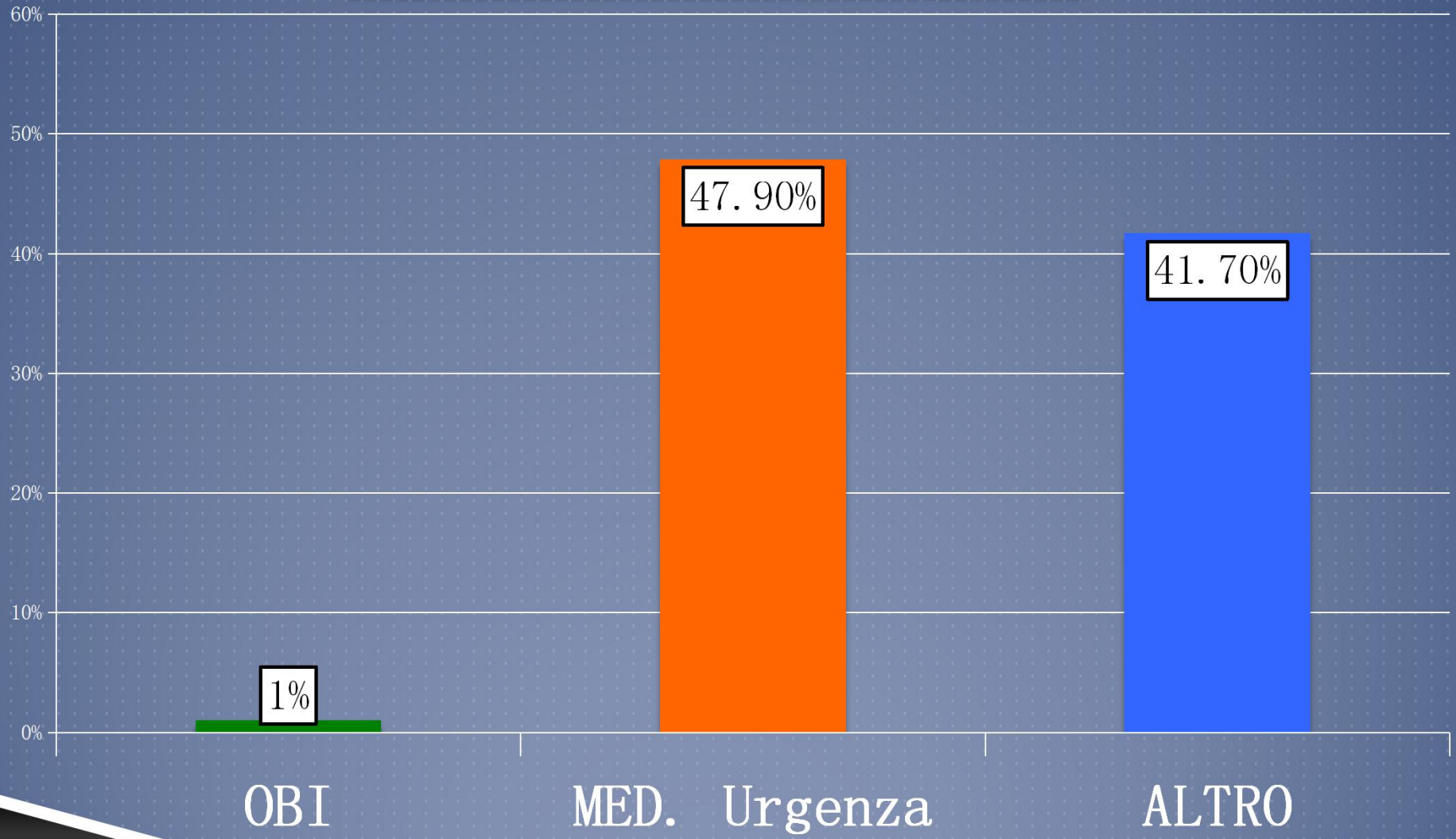
DOVE VANNO?!?!?



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Gli argomenti contro ciò che è nuovo evolvono solitamente attraverso tre fasi distinte:
da “Non è vero” a
“Forse è vero, ma non è importante” a
“È vero ed è importante, ma non è una novità: l’abbiamo sempre saputo”

SAGGEZZA IMPOPOLARE