Akutní pankreatitis.
Nové zprávy?

Jan Maňák

Interní JIP

III. interní klinika – gerontologická a metabolická

FN Hradec Králové

Universalia sunt realia

Universalia sunt nomina

- Tvorba pojmů
- Interpretace získaných poznatků

- Tvorba pojmů
  - Klasifikace

- Interpretace získaných poznatků
  - Doporučení odborných společností

- Tvorba pojmů
  - Klasifikace
    - Atlantská klasifikace, revize 2012

- Interpretace získaných poznatků
  - Doporučení odborných společností
    - American Gasteroenterological Association 2018

Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus

Peter A Banks,[1] Thomas L Bollen,[2] Christos Dervenis,[3] Hein G Gooszen,[4] Colin D Johnson,[5] Michael G Sarr,[6] Gregory G Tsiotos,[7] Santhi Swaroop Vege, Acute Pancreatitis Classification Working Group

- **Metodika:**
  - 40 předních světových odborníků publikujících o AP → oblasti k revizi, metodika (2007): *„mezinárodní, webem zprostředkovaný, mnohočetně reiterativní proces“*
  - pracovní skupina 7
  - návrh dokumentu, revidován původní skupinou 40 expertů
  - pracovní verze rozeslána všem členům 11 světových pankreatologických společností k připomínkám
  - připomínky zapracovány a dokument opět rozeslán všem členům
  - opakováno 3x
  - revize pracovní skupinou připravena k publikaci

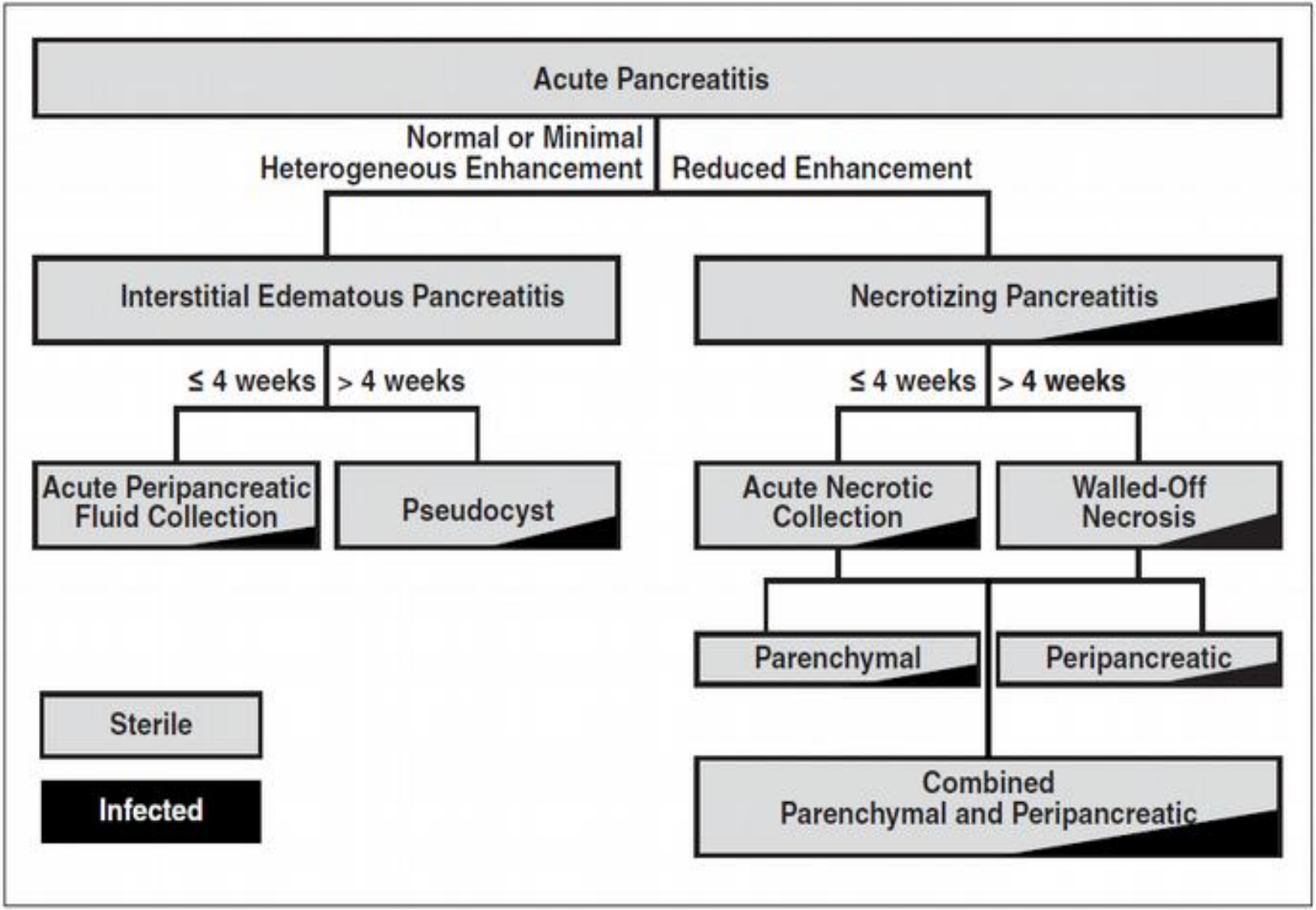
Gut 2013;**62**:102–111

AGA SECTION

American Gastroenterological Association Institute Guideline on Initial Management of Acute Pancreatitis

Seth D. Crockett,[1] Sachin Wani,[2] Timothy B. Gardner,[3] Yngve Falck-Ytter,[4,5] and Alan N. Barkun[6]; on behalf of American Gastroenterological Association Institute Clinical Guidelines Committee

Gastroenterology 2018;154:1096–1101



AJR:205, July 2015

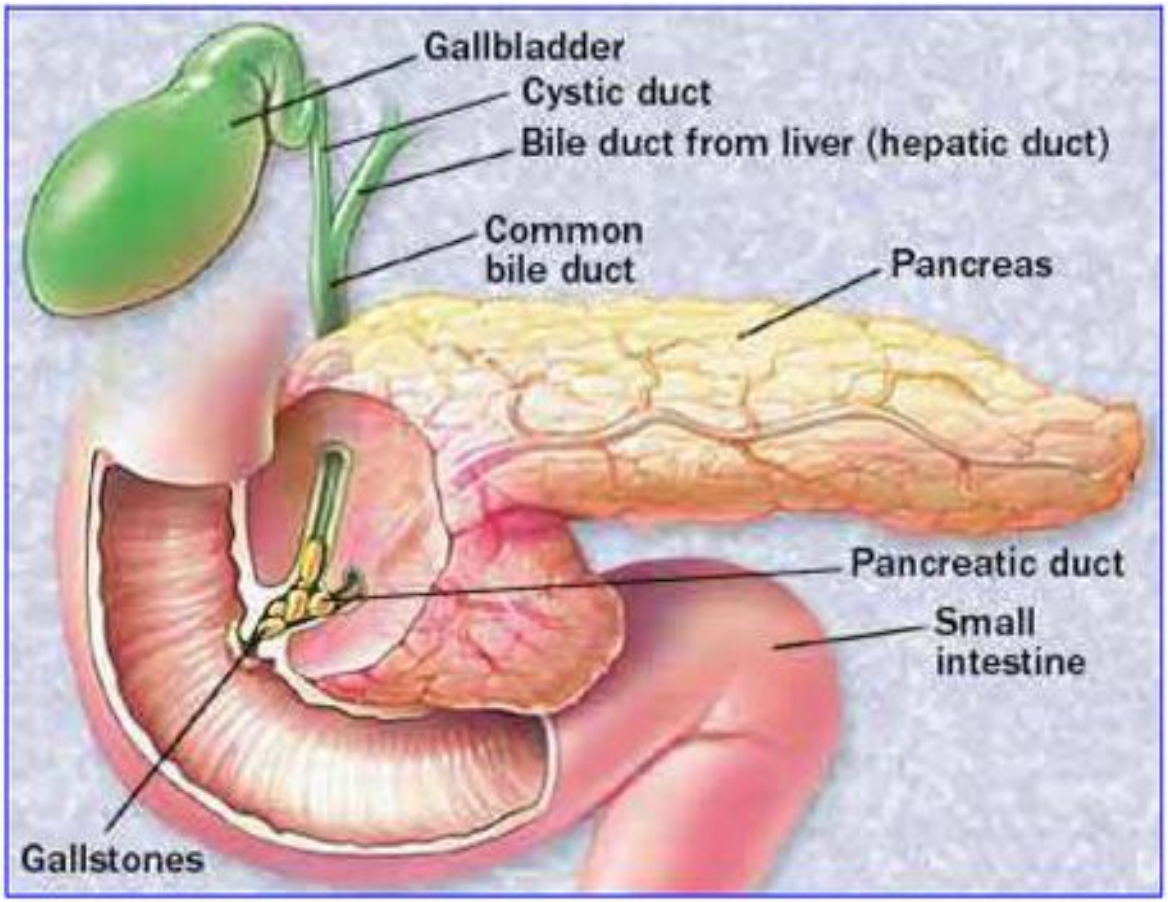
Etiologie akutní pankreatitidy

- Biliární 40%
- Alkohol 30%
- Hypertriglyceridemie
- Léky
- Traumatická
- Iatrogenní (po ERCP)
- Pancreas divisum
- Virová
- Autoimunní
- „Idiopatická“

Etiologická léčba akutní pankreatitidy?

Etiologická léčba akutní pankreatitidy?

Akutní ERCP ?


Gallbladder
Cystic duct
Bile duct from liver (hepatic duct)
Common bile duct
Pancreas
Pancreatic duct
Small intestine
Gallstones

EARLY ERCP AND PAPILLOTOMY COMPARED WITH CONSERVATIVE TREATMENT FOR ACUTE BILIARY PANCREATITIS

ULRICH R. FÖLSCH, M.D., ROLF NITSCHE, M.D., RAINER LÜDTKE, REINHARD A. HILGERS, PH.D., WERNER CREUTZFELDT, M.D., AND THE GERMAN STUDY GROUP ON ACUTE BILIARY PANCREATITIS

- Prospektivní multicentrická randomizovaná

- Akutní biliární pankreatitis
- ERCP + papilotomie (n=126) vs. konzervativní léčba (n=112)

The New England Journal of Medicine
Volume 336 Number 4 1997

EARLY ERCP AND PAPILLOTOMY COMPARED WITH CONSERVATIVE TREATMENT FOR ACUTE BILIARY PANCREATITIS

ULRICH R. FÖLSCH, M.D., ROLF NITSCHE, M.D., RAINER LÜDTKE, REINHARD A. HILGERS, PH.D., WERNER CREUTZFELDT, M.D., AND THE GERMAN STUDY GROUP ON ACUTE BILIARY PANCREATITIS

DEATH OR COMPLICATION	INVASIVE TREATMENT (N = 126)	CONSERVATIVE TREATMENT (N = 112)	ODDS RATIO (95% CONFIDENCE INTERVAL)*	P VALUE
Death (no. of patients)	14	7	2.62 (0.83–8.32)	0.10
From acute biliary pancreatitis	10	4	4.57 (0.67–62.7)	0.16
From other causes†	4	3		
Complication‡				
Respiratory failure			5.16 (1.63–22.9)	0.03
No. of patients	15	5		
No. who died	8	3		
Renal failure			2.58 (0.44–15.3)	0.10
No. of patients	9	4		
No. who died	6	3		
Cholecystitis			0.49 (0.21–1.12)	0.10
No. of patients	13	20		
No. who died	0	1		
Jaundice			0.08 (0.01–0.64)	0.02
No. of patients	1	12		
No. who died	1	3		

n.s.

The New England Journal of Medicine
Volume 336 Number 4 1997

EARLY ERCP AND PAPILLOTOMY COMPARED WITH CONSERVATIVE TREATMENT FOR ACUTE BILIARY PANCREATITIS

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- Prospektivní multicentrická randomizovaná

- Akutní biliární pankreatitis
- ERCP + papilotomie (n=126) vs. konzervativní léčba (n=112)

- Mortalita bez rozdílu
- ERCP: častější respirační selhání
- Konzervativní: častější žloutenka

- **Časné ERCP není prospěšné**

The New England Journal of Medicine
Volume 336 Number 4 1997

Early Endoscopic Intervention Versus Early Conservative Management in Patients With Acute Gallstone Pancreatitis and Biliopancreatic Obstruction

A Randomized Clinical Trial

Alejandro Oria, MD, Daniel Cimmino, MD,† Carlos Ocampo, MD,* Walter Silva, MD,* Gustavo Kohan, MD,* Hugo Zandalazini, MD,* Carlos Szelagowski, MD,‡ and Luis Chiappetta, MD**

- Ak. biliární pankreatitis bez cholangoitidy
- ERCP s papilotomií (n=51) vs. konzervativní léčba (n=51)

- **Nenalezeny rozdíly v morbiditě, mortalitě**

- **Perzistující choledocholithiasa nepřispívá ke zhoršení průběhu pankreatitidy**

- **ERCP by nemělo být prováděno**

Annals of Surgery • Volume 245, Number 1, January 2007

Recommendation 3. In patients with acute biliary pancreatitis and no cholangitis, the AGA suggests against the routine use of urgent ERCP. *Conditional recommendation, low quality evidence*.

Gastroenterology 2018;154:1096–1101

Early biliary decompression versus conservative treatment in acute biliary pancreatitis (APEC trial): study protocol for a randomized controlled trial

Schepers *et al. Trials* (2016) 17:5

Hypertriglyceridemie

Hypertriglyceridemie

Significantly different clinical features between hypertriglyceridemia and biliary acute pancreatitis: a retrospective study of 730 patients from a tertiary center

Xiaoyao Li†, Lu Ke†, Jie Dong, Bo Ye, Lei Meng, Wenjian Mao, Qi Yang*, Weiqin Li* and Jieshou Li

Characteristic	Biliary acute Pancreatitis ($n = 425$)	Hypertriglyceridemia acute Pancreatitis ($n = 305$)	*P* value
Age, year	51(43,64)	40(33,47)	$P < 0.01$
Gender, male/female	242/183	214/91	$P < 0.01$
BMI	22.7(20.1,25.2)	27(24.9,30.4)	$P < 0.01$
APACHE II score	8(6,12.5)	11(7,18)	$P < 0.01$
Hypertension	120(28.2%)	81(26.6%)	0.675
Diabetes mellitus	55(12.9%)	98(32.1%)	$P < 0.01$
Fatty liver	64(15.1%)	134(43.9%)	$P < 0.01$
High fat diet	62(14.6%)	130(42.6%)	$P < 0.01$
Transfer from other hospitals	406(95.5%)	295(96.7%)	0.449
Time taken for the patients transfer to our center after onset of symptoms, Days	10(4,30)	6(3,17)	0.541

BMC Gastroenterology (2018) 18:89

Significantly different clinical features between hypertriglyceridemia and biliary acute pancreatitis: a retrospective study of 730 patients from a tertiary center

Xiaoyao Li†, Lu Ke†, Jie Dong, Bo Ye, Lei Meng, Wenjian Mao, Qi Yang*, Weiqin Li* and Jieshou Li

- HyperTAG pankreatitis
  - častěji MOF, ARDS, AKI, flebothrombosa
  - méně infikovaných nekros pankreatu

- Klinický průběh se liší podle etiologie
- Pravděpodobně je těžší u hyperTAG.

BMC Gastroenterology (2018) 18:89

Specifická léčba?

- TAG → hydrolýza pankreatickou lipázou → ↑ místní koncentrace FFA → poruchy mikrocirkulace → poškození žlázy

- Snížení TAG
  - heparin – uvolnění LPL z vazby na heparan
  - inzulin – syntéza a aktivace LPL
  - plazmaferéza - sníží TAG, neprokázán klinický efekt. (Načasování? Indikace?)

Chystané studie

- Intensive Insulin for Severe/ Moderate Hypertriglyceridemia Pancreatitis
  - Wenzhou Medical University, Čína
  - 3 skupiny: inzulin normoglykemie, inzulin – liberální, plazmaferéza
  - Mortalita, MOF, TAG
  - 6/2018 – 12/2020

- Plasma Exchange vs Conservative Management in Non-severe Acute Hypertriglyceridemic Pancreatitis
  - University Medical Centre Ljubljana
  - Inzulin vs. plazmaferéza u mírné hypertriglyceridemie
  - Hladina TAG, CRP, těžké formy AP
  - 6/2016 – 12/2018

Chystané studie

- Intravenous Administration of Insulin and Plasma Exchange on Triglyceride Levels in Early Stage of Hypertriglyceridemia-induced Pancreatitis
  - Peking Union Medical College Hospital, Čína
  - Inzulin vs. aferéza
  - pokles TAG
  - 11/2017 – 11/2020

Patogenetická léčba

- Tekutiny
- Výživa
- Pankreatický klid?
- Antibiotika?

Tekutiny

Fluid Therapy in Acute Pancreatitis

Anybody's Guess

	Agresívní resuscitace n/1000	Neagresívní resuscitace n/1000	RR (95% CI)	Počet pacientů	Počet studií	Kvalita důkazu (GRADE)
SIRS	174	52	**0,30** (0,2-0,46)	497	2	**low**
Orgánová dysfunkce RANDOMIZ	944	650	**0,69** (0,54-0,88)	76	1	**moderate**
Orgánová dysfunkce OBSERVAČNÍ	92	189	**2,0** (1,5-2,8)	986	5	**very low**
Rozvoj nekróz OBSERVAČNÍ	147	167	**1,1** (0,74-1,8)	454	3	**very low**
Potřeba JIP OBSERVAČNÍ	94	180	**1,9** (1,2-3,0)	533	2	**very low**
Operace OBSERVAČNÍ	139	132	**0,95** (0,56-1,6)	379	3	**very low**
Mortalita RANDOMIZ	326	131	**0,40** (0,22-0,72)	191	2	**moderate**
Mortalita OBSERVAČNÍ	53	99	**1,9** (1,2-3,0)	937	5	**very low**

Annals of Surgery • Volume 257, Number 2, February 2013

First author, year, country	Patient population	AP definition	Descriptor	Bolus	Maintenance	Crystalloids	Colloids	Crystalloid to colloid ratio	Other
Goal-directed therapy									
Mao, 2009[53] China	Inclusions: HR ≥120 beats/min, MAP ≥85 mm Hg or ≤60 mm, BLC ≥ 4 mmol/L, urine output ≤0.5 mL/kg/h, Hct ≥44%. Exclusions: age <18 y or >70 y, pregnancy, CHD, pacemaker, chronic renal failure, and SAP with uncertain etiology	None Severe per Atlanta 1992	Rapid hydration[a]	—	10–15 mL/kg/h	NS ± LR	6% HES + plasma	2:1	—
			Gradual hydration[b]	—	5–10 mL/kg/h	NS ± LR	6% HES + plasma	2:1	—
Mao, 2010[53] China	Inclusions: first AP attack within 24 h after onset symptoms, conscious, APACHE II >8, Hct ≥44% Exclusions: age <18 y or >70 y, pregnancy, CHD, pacemaker chronic renal failure and SAP with uncertain etiology	Conventional (Atlanta) definition: 2 of 3 (typical pain, >3× ULN enzymes and imaging)	Rapid hemodilution[a]	—	Rate estimated based on weight and admit/goal Hct	NS ± LR	6% HES + plasma	2:1	—
			Slow hemodilution[b]	—	Rate estimated based on weight and admit/goal Hct	NS ± LR	6% HES + plasma	2:1	—
Wu, 2011[42] USA	Inclusion: age ≥18 y, AP Exclusion: NYHA >2, myocardial ischemia, cardiovascular intervention, cirrhosis, chronic kidney disease with creatinine clearance <40 mL/min, COPD, hypo- or hypernatremia, rhabdomyolysis, IBD, autoimmune conditions, HIV, TB	Conventional (Atlanta) definition: 2 of 3 (typical pain, >3× ULN enzymes and imaging)	Goal-directed[a]	20 mL/kg	3 mL/kg/h	NS + LR	—	—	—
			Standard[b]	—	—	NS + LR	—	—	—

First author, year, country	Patient population	AP definition	Descriptor	Bolus	Maintenance	Crystalloids	Colloids	Crystalloid to colloid ratio	Other
Wang et al. 2013[90] China	Inclusion: SAP defined by Atlanta Criteria and admitted to the ICU within 24 h after onset of disease Exclusion: age <18 y or >70 y, sepsis, pregnancy, CHD, pacemaker, chronic renal failure, SAP with unknown etiology	Conventional (Atlanta) definition: 2 of 3 (typical pain, >3× ULN enzymes and imaging)	Goal-directed[a] Goal-directed[a] Goal-directed[b]	— — —	Physiologic need Physiologic need Control (Banks)	NS + LR NS + LR NS + LR	6% HES 6% HES + 2 U FFP 6% HES	2:1 2:1 2:1	— — —
Sharma, 2016[40] India	Inclusion: Predicted SAP defined by SIRS ≥2 or BISAP >2 Exclusion: Presenting >5 d after onset pain; presenting with shock, CHF, history of myocardial ischemia, cirrhosis, CKD (CrCl ≤40 mL/min), COPD, concurrent metabolic or physiologic derangement that required specific fluid management like hypo- or hypernatremia, diabetic ketoacidosis; patients transferred from other hospital after initial treatment; suspicion of chronic pancreatitis; biliary pancreatitis needing ERCP for cholangitis, pregnancy; severe lung injury precluding endoscopy and NJ tube placement.	Conventional (Atlanta) definition: 2 of 3 (typical pain, >3× ULN enzymes and imaging)	NJ goal-directed[a] IV goal-directed[b]	20 mL/kg 20 mL/kg	3 mL/kg/h 3 mL/kg/h	— LR	— —	— —	WHO ORS —

First author, year, country	Patient population	AP definition	Descriptor	Bolus	Maintenance	Crystalloids	Colloids	Crystalloid to colloid ratio	Other
Fluid type variation									
Du, 2011[31] China	Inclusion: SAP defined per 2002 World Congress of gastroenterology Guidelines and within 72 h of onset of symptoms Exclusion: allergy to starch, NYHA class 3 or 4, renal insufficiency, serum albumin <25 g/L, INR >3, possible mortality within 48 h, colloids in 24 h prior or participation in clinical drug research within 3 mo prior	None for AP. 2002 guidelines definition for SAP	LR + 6% HES[a] LR only[b]	— —	1–2 mL/kg/h 1–2 mL/kg/h	NS + LR LR	6% HES —	3:1 —	— —
Zhao, 2013[41] China	Inclusion: SAP per Atlanta criteria, age >18 y or <60 y, transfers Exclusion: heart disease, severe renal and hepatic dysfunction, coagulation disturbances, and allergy to starch or glutamine	Per Atlanta criteria for "SAP"—presumably 2/3 criteria per Atlanta paper	NS + 6% HES[a] NS + 6% HES + glutamine[b] NS[b]	1L 1L 1L	2–3 mL/kg/h 2–3 mL/kg/h 2–3 mL/kg/h	NS NS NS	6% HES 6% HES —	3:1 3:1 —	— Glutamine supplement —

Recommendation 1A. In patients with AP, the AGA suggests using goal-directed therapy for fluid management. *Conditional recommendation, very low quality evidence.*

Comment: The AGA makes no recommendation whether normal saline or Ringer's lactate is used.

Gastroenterology 2018;154:1096–1101

Recommendation 1A. In patients with AP, the AGA suggests using goal-directed therapy for fluid management. ***Conditional recommendation, very low quality evidence.***
Comment: The AGA makes no recommendation whether normal saline or Ringer's lactate is used.

Recommendation 1B. In patients with AP, the AGA suggests against the use of hydroxyethyl starch (HES) fluids. ***Conditional recommendation, very low quality evidence.***

Gastroenterology 2018;154:1096–1101

Chystané studie

- Lactated Ringer's Versus Normal Saline for Acute Pancreatitis
  - James Buxbaum, University of Southern California
  - RL vs. FR ve stejném přednastaveném algoritmu
  - SIRS, tíže pankreatitidy, LOS,…
  - 9/2018 – 8/2019

- Comparing the Effects of Lactated Ringers and Normal Saline in Acute Pancreatitis
  - USA, Washington DC, Norfolk Virginia
  - RL vs. FR **u dětí**
  - Zánětlivé známky, SIRS, LOS
  - 12/2014 – 12-2018

Chystané studie

- Early Goal-directed Volume Resuscitation in Severe Acute Pancreatitis (EAGLE)
  - W. Huber, Technische Universität München
  - PiCCO v tekutinové resuscitaci AP
  - APACHE, mortalita, LOS, MOF
  - 8/2009 - 8/2018

Výživa

Enterální vs. parenterální výživa

Randomized controlled trials of total enteral versus total parenteral nutrition in patients with acute pancreatitis.

Study ID	Year	Setting	Intervention group	Control group	No. of patients		Allocation concealment	Reduction of infectious complications and mortality
					Intervention group	Control group		
Kalfarentzos et al. [48]	1997	Greece	Enteral nutrition	Parenteral nutrition	18	20	Open-label	Significantly lower rate of pancreatic infection in the intervention group
McClave et al. [57]	1997	USA	Enteral nutrition	Parenteral nutrition	16	16	Open label	No significant difference in the outcomes
Olah et al. [56]	2002	Hungary	Enteral nutrition	Parenteral nutrition	41	48	Open-label	Non-significantly lower rate of sepsis and mortality in the intervention group
Abou-Assi et al. [58]	2002	USA	Enteral nutrition	Parenteral nuntrition	26	27	Open-label	No significant difference in the outcomes
Gupta et al. [49]	2003	UK	Enteral nutrition	Parenteral nutrition	8	9	Open-label	Non-significantly lower rate of pancreatic infection in the intervention group
Louie et al. [50]	2005	Canada	Enteral nutrition	Parenteral nutrition	10	18	Open-label	Non-significantly lower rate of pancreatic infection in the intervention group
Eckerwall et al. [51]	2006	Sweden	Enteral nutrition	Parenteral nutrition	23	25	Open-label	No significant difference in the outcomes
Petrov et al. [52]	2006	Russia	Enteral nutrition	Parenteral nutrition	35	34	Open-label	Significantly lower rate of pancreatic infection and mortality in the intervention group
Casas et al. [53]	2007	Spain	Enteral nutrition	Parenteral nutrition	11	11	Open-label	Non-significantly lower rate of pancreatic infection in the intervention group
Doley et al. [54]	2008	India	Enteral nutrition	Parenteral nutrition	25	25	Open-label	No significant difference in the outcomes
Qin et al. [59]	2008	China	Enteral nutrition	Parenteral nutrition	36	38	Single-blind	Significantly lower rate of multiple organ failure in the intervention group
Wu et al. [55]	2010	China	Enteral nutrition	Parenteral nutrition	53	54	Open-label	Significantly lower rate of pancreatic infection and mortality in the intervention group

Žádná výhoda parenterální výživy, preference enterální.

S. Stigliano et al. / Digestive and Liver Disease 49 (2017) 585–594

Enterální vs. parenterální výživa

Recommendation 5. In patients with AP and inability to feed orally, the AGA recommends enteral rather than parenteral nutrition. *Strong recommendation, moderate quality evidence.*

Gastroenterology 2018;154:1096–1101

Enterální vs. parenterální výživa

Recommendation 5. In patients with AP and inability to feed orally, the AGA recommends enteral rather than parenteral nutrition. *Strong recommendation, moderate quality evidence.*

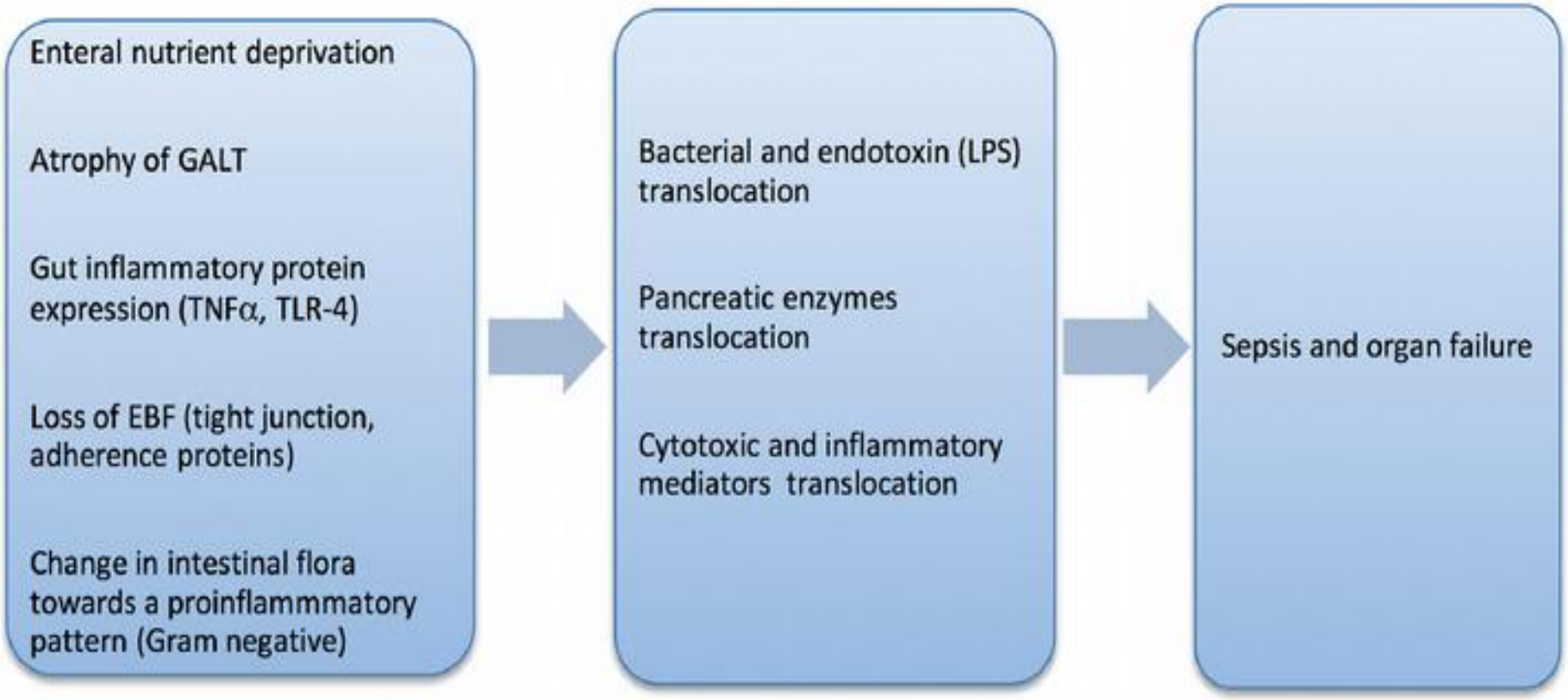
Gastroenterology 2018;154:1096–1101

Perorální příjem

- Pankreatický klid
  - nic per os → snížení stimulace zevní sekrece pankreatu → snížení zánětu žlázy

X

- Zachování střevní bariéry
  - prevence bakteriální translokace → prevence infekce nekros pankreatu



European Review for Medical and Pharmacological Sciences 2017; 21: 421-432

Early versus On-Demand Nasoenteric Tube Feeding in Acute Pancreatitis

O.J. Bakker, S. van Brunschot, H.C. van Santvoort, M.G. Besselink, T.L. Bollen, M.A. Boermeester, C.H. Dejong, H. van Goor, K. Bosscha, U. Ahmed Ali, S. Bouwense, W.M. van Grevenstein, J. Heisterkamp, A.P. Houdijk, J.M. Jansen, T.M. Karsten, E.R. Manusama, V.B. Nieuwenhuijs, A.F. Schaapherder, G.P. van der Schelling, M.P. Schwartz, B.W.M. Spanier, A. Tan, J. Vecht, B.L. Weusten, B.J. Witteman, L.M. Akkermans, M.J. Bruno, M.G. Dijkgraaf, B. van Ramshorst, and H.G. Gooszen, for the Dutch Pancreatitis Study Group

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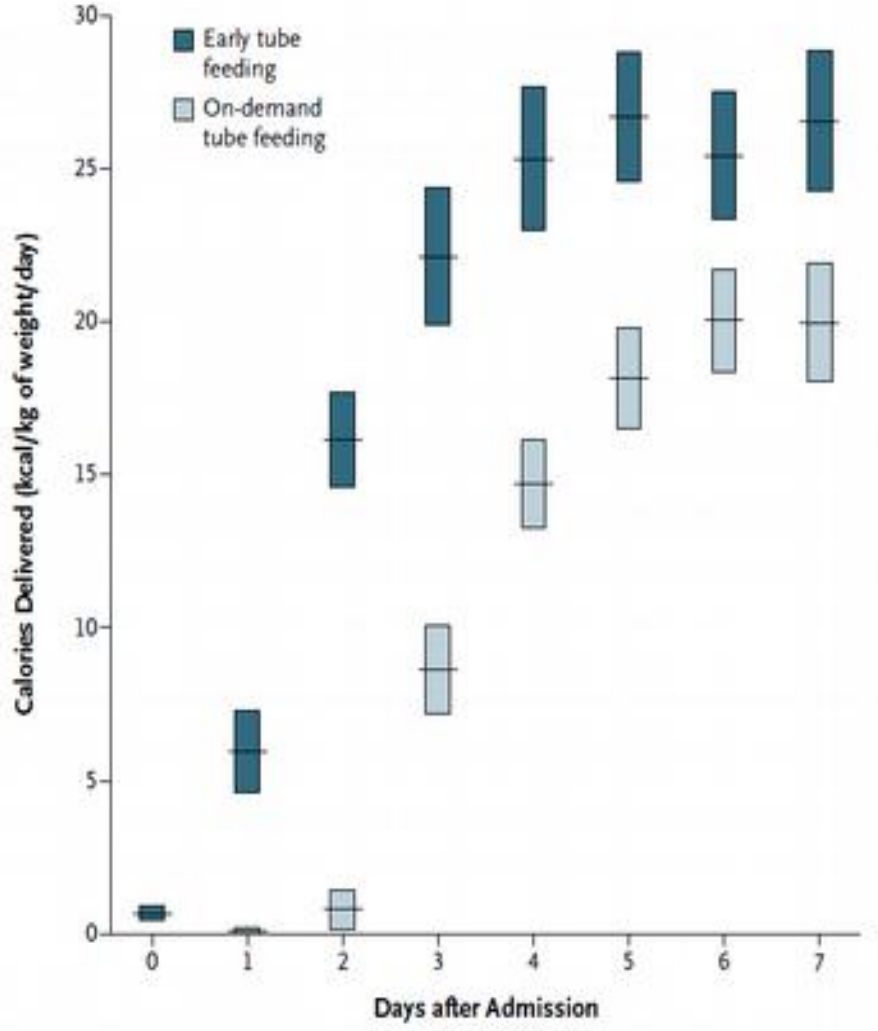
- Akutní pankreatitis s předpokladem těžkého průběhu dle skórovacích systémů
- Multicentrická, randomizovaná
- Časná enterální (<24h.) vs. perorální výživa (> 72h.)
  - pokud netolerována p.o. dieta, podáváno nasoenterální sondou
- Sledována mortalita + infekce

N ENGL J MED 371;21 NEJM.ORG NOVEMBER 20, 2014

Early versus On-Demand Nasoenteric Tube Feeding in Acute Pancreatitis



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- n= 208, 19 center
- nenalezen rozdíl v mortalitě nebo infektech
- 69% v p.o. skupině nepotřebovalo sondu

N ENGL J MED 371;21 NEJM.ORG NOVEMBER 20, 2014

Early oral refeeding based on hunger in moderate and severe acute pancreatitis: A prospective controlled, randomized clinical trial

Xian L. Zhao M.D.[a], Shi F. Zhu M.D.[a], Gui J. Xue M.S.[a], Juan Li M.D.[a], Yi L. Liu M.S.[a], Mei H. Wan M.D.[a], Wei Huang M.D.[a,b], Qing Xia M.D.[a], Wen F. Tang Ph.D., M.D.[a,*]

- Zahájení p.o. příjmu u střední a těžké ak. pankreatitidy
  - Při pocitu hladu (n=70)
  - Konvenční (pokles lab. a klin. známek) (n=76)

- Nenalezen rozdíl v komplikacích n. výsledku klin. i lab.
- P.o. příjem dle hladu 8,3 dne, kontroly 10,5 dne.
- Pobyt v nemocnici 13,7 vs. kontroly 15,7 dní

- **Časný p.o. příjem je bezpečný a může zkrátit dobu pobytu v nemocnici.**

Nutrition 31 (2015) 171–175

Early Versus Delayed Feeding in Patients With Acute Pancreatitis

A Systematic Review

Valerie M. Vaughn, MD, MSc; Dmitry Shuster, MD; Mary A.M. Rogers, PhD; Jason Mann, MSA; Marisa L. Conte, MLIS; Sanjay Saint, MD, MPH; and Vineet Chopra, MD, MSc

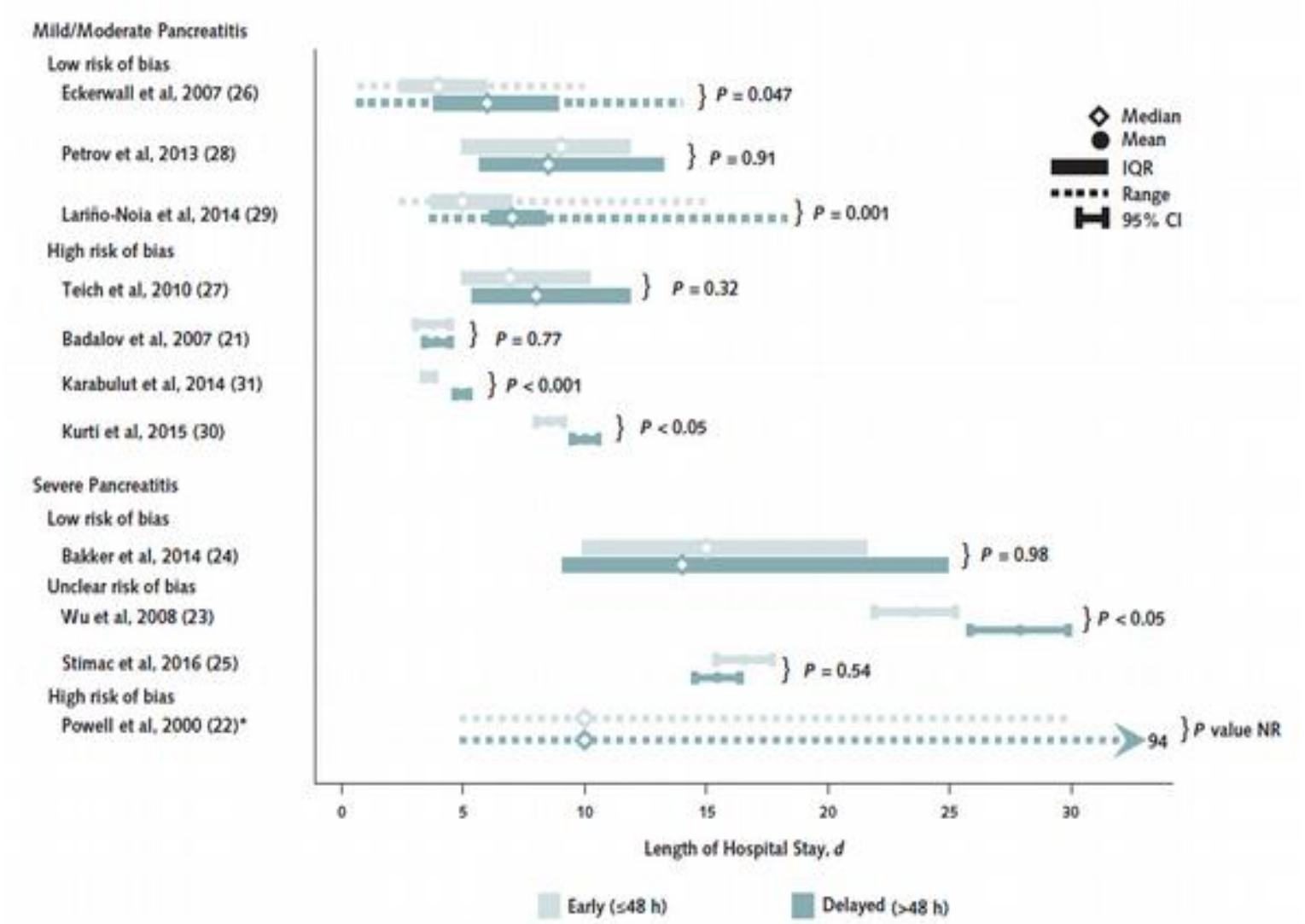
- Vliv časné versus pozdní enterální výživy na
  - mortalitu
  - délku pobytu
  - znovupřijetí do nemocnice

  - *časná ≤ 48 h., pozdní >48h.*
  - *včetně perorálního příjmu*

- 11 randomizovaných studií
- 948 pacientů

Annals of Internal Medicine • Vol. 166 No. 12 • 20 June 2017

Časná enterální výživa a délka pobytu



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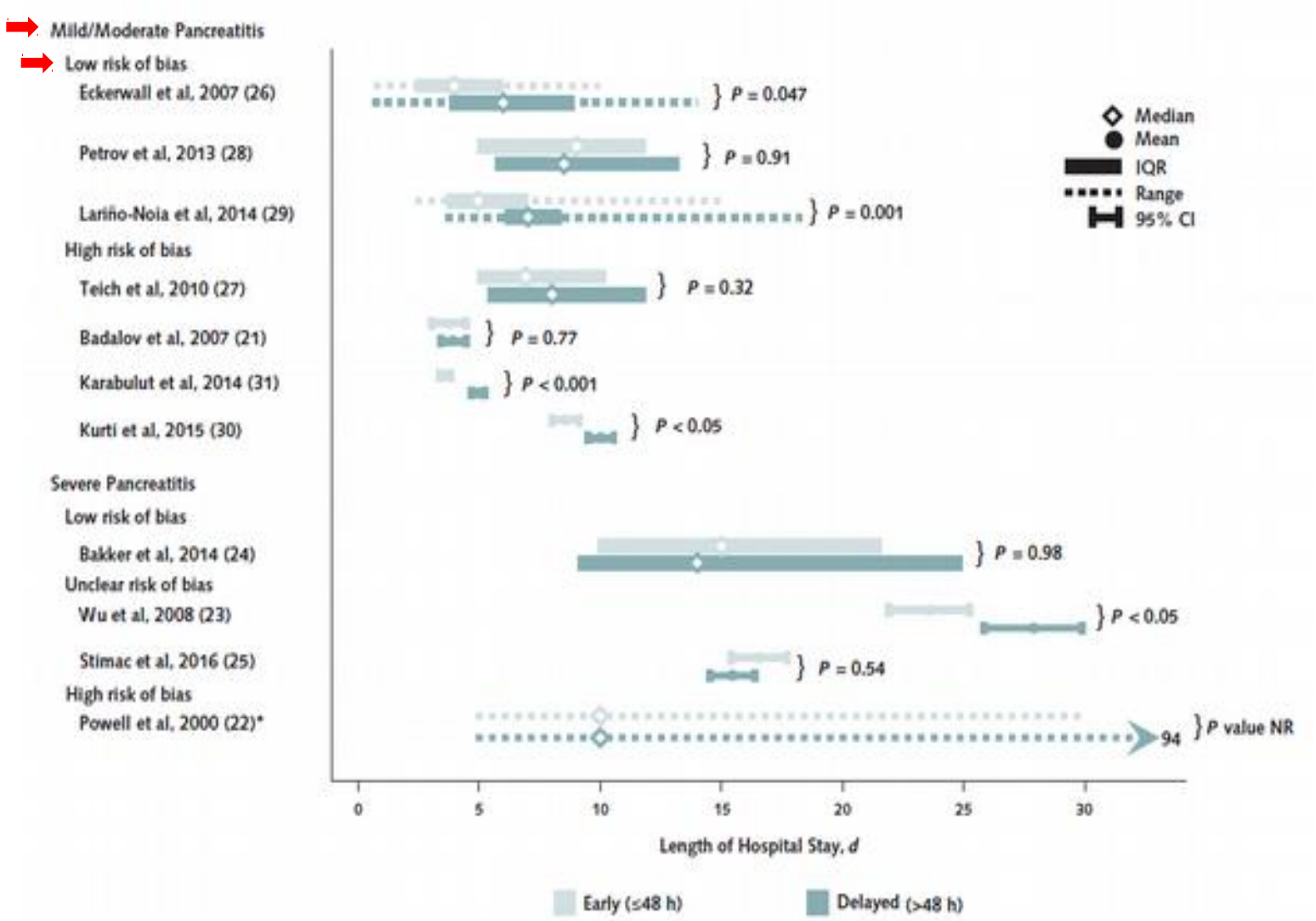

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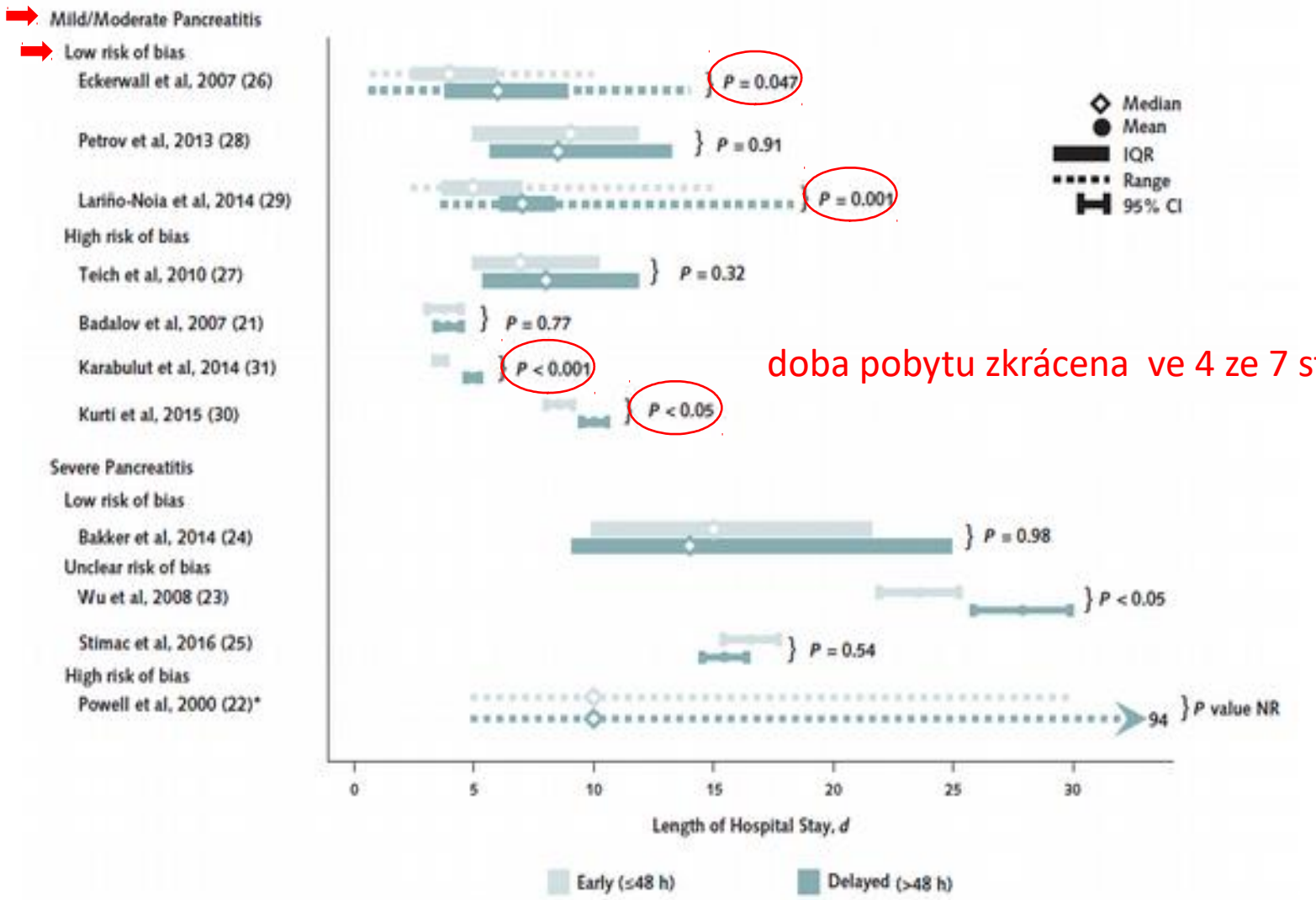
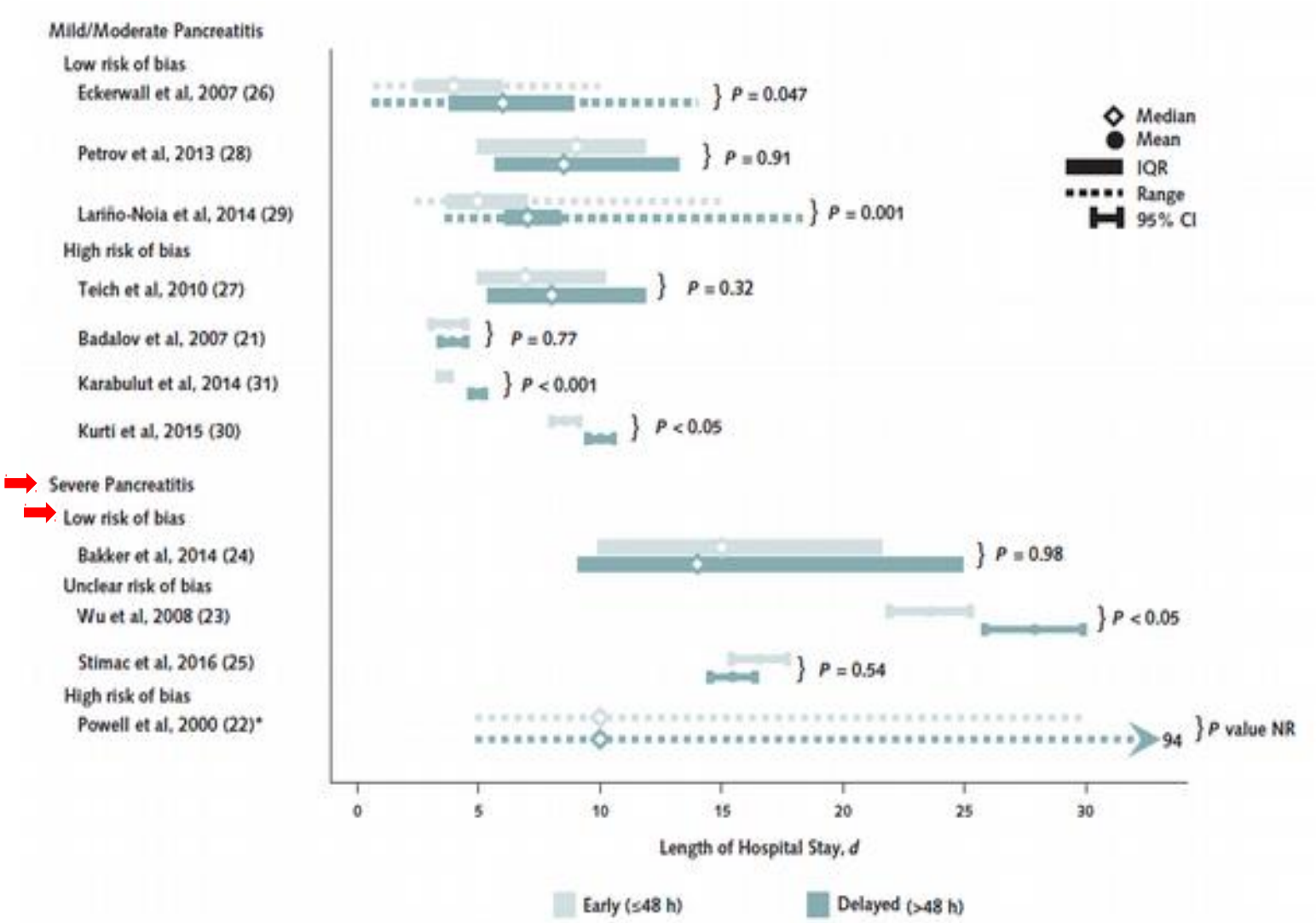


doba pobytu zkrácena ve 4 ze 7 studií

Časná enterální výživa a délka pobytu



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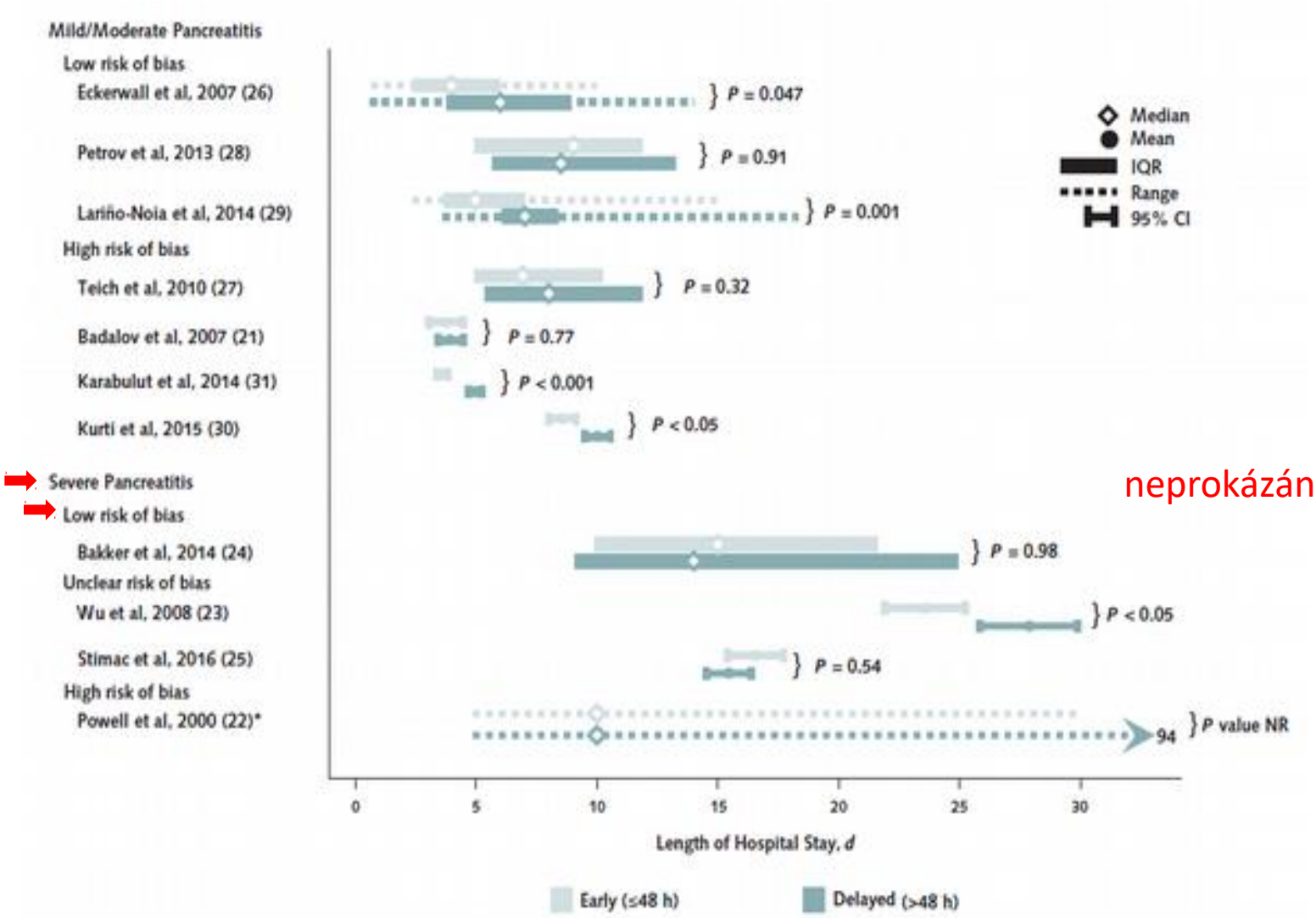

neprokázáno

Early Versus Delayed Feeding in Patients With Acute Pancreatitis

A Systematic Review

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- Časná enterální výživa **nezvyšuje počet komplikací ani mortalitu** u akutní pankreatitidy
- Časná enterální výživa **může vést ke zkrácení doby hospitalizace** u lehké a střední akutní pankreatitidy
- Data jsou limitovaná

Annals of Internal Medicine • Vol. 166 No. 12 • 20 June 2017

Perorální příjem

Recommendation 4. In patients with AP, the AGA recommends early (within 24 hours) oral feeding as tolerated rather than keeping the patient nil per os. *Strong recommendation; moderate quality evidence.*

Gastroenterology 2018;154:1096–1101

Perorální příjem

Recommendation 4. In patients with AP, the AGA recommends early (within 24 hours) oral feeding as tolerated rather than keeping the patient nil per os. *Strong recommendation; moderate quality evidence.*

„Gut rousing not gut resting“

Gastroenterology 2018;154:1096–1101

Antibiotika

Antibiotická profylaxe

Randomized controlled trials of intravenous antibiotic prophylaxis versus no antibiotics in patients with acute pancreatitis.

Study ID	Year	Setting	Intervention group	Control group	No. of patients		Allocation concealment	Main findings
					Intervention group	Control group		
Howes et al. [30]	1975	USA	Ampicillin	None	48	47	Open-label	No significant difference in any outcome
Craig et al. [31]	1975	USA	Ampicillin	None			Open-label	No significant difference in any outcome
Finch et al. [32]	1976	USA	Ampicillin	Placebo	31	27	Double-blind	No significant difference in any outcome
Pederzoli et al. [33]	1993	Italy	Imipenem	None	41	33	Open-label	Significantly lower rate of pancreatic infection in the intervention group
Sainio et al. [34]	1995	Finland	Cefuroxime	None	30	30	Open-label	Significantly lower mortality rate but not pancreatic infection, in the intervention group
Delcenserie et al. [35]	1996	France	Ceftazidime + amikacin + metronidazole	None	11	12	Open-label	No significant difference in any outcome
Schwarz et al. [36]	1997	Germany	Ofloxacin + metronidazole	None	13	13	Open-label	No significant difference in any outcome
Spicak et al. [37]	2003	Czech Republic	Meropenem	None	20	21	Open-label	No significant difference in any outcome
Isenmann et al. [40]	2004	Germany	Ciprofloxacin + metronidazole	Placebo	58	56	Double-blind	No significant difference in any outcome
Dellinger et al. [41]	2007	North America and Europe	Meropenem	Placebo	50	50	Double-blind	No significant difference in any outcome
Rokke et al. [38]	2007	Norway	Imipenem	None	36	37	Open-label	Significantly lower rate of pancreatic and extrapancreatic infection in the intervention group
Xue et al. [39]	2009	China	Imipenem	None	29	27	Open-label	No significant difference in any outcome
Garcia-Barrasa et al. [42]	2009	Spain	Ciprofloxacin	Placebo	22	19	Double-blind	No significant difference in any outcome

S. Stigliano et al. / Digestive and Liver Disease 49 (2017) 585–594

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U studií s vyšší metodologickou kvalitou efekt neprokázán.

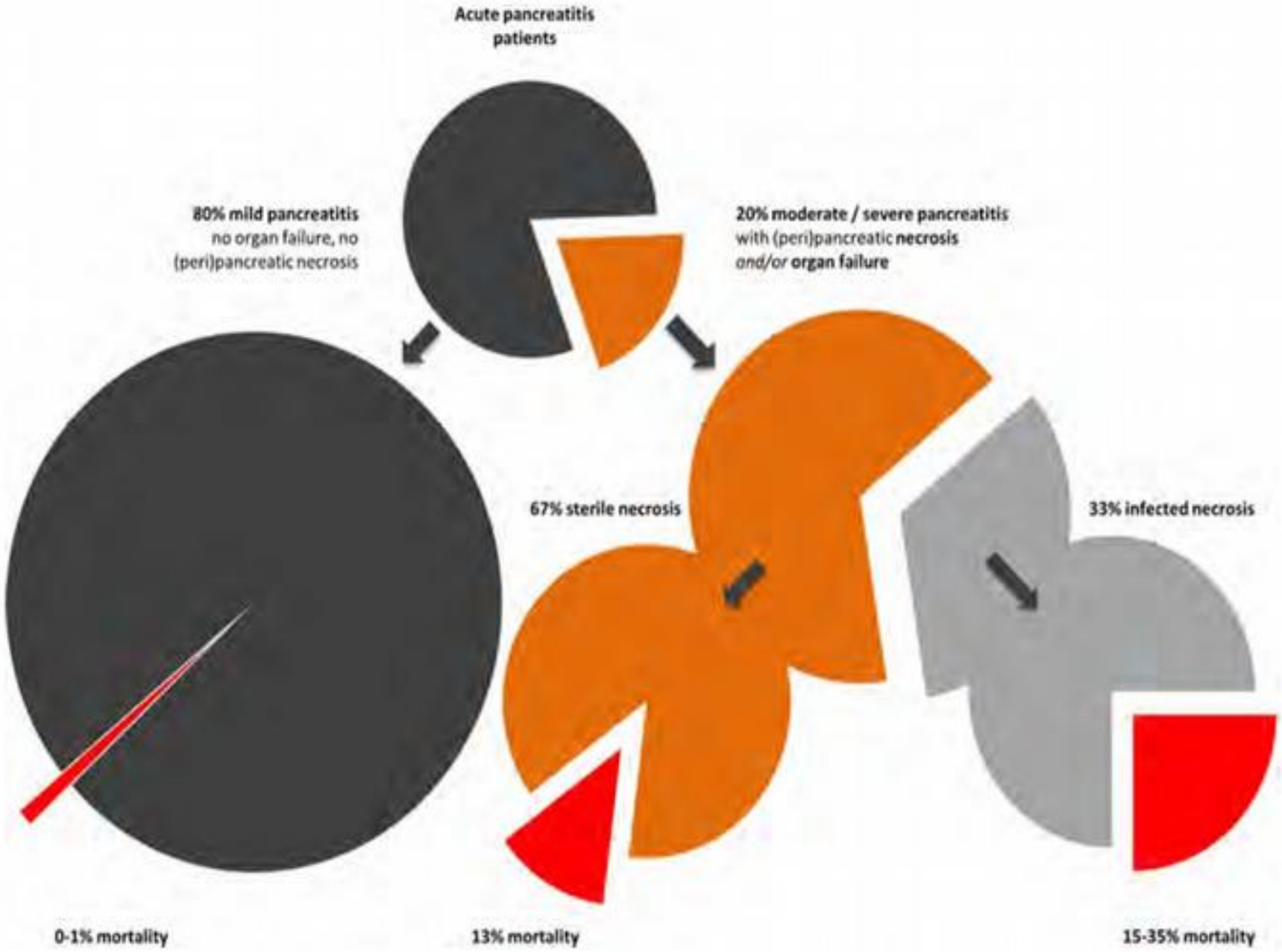
S. Stigliano et al. / Digestive and Liver Disease 49 (2017) 585–594

Antibiotická profylaxe

Recommendation 2. In patients with predicted severe AP and necrotizing pancreatitis, the AGA suggests against the use of prophylactic antibiotics. *Conditional recommendation, low quality evidence.*

Gastroenterology 2018;154:1096–1101

Léčba komplikací



van Dijk SM, *et al*. *Gut* 2017;**66**:2024–2032

A Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis

Hjalmar C. van Santvoort, M.D., Marc G. Besselink, M.D., Ph.D.,

- Prospektivní multicentrická (19 nemocnic v Holandsku)
- Pankreatická n. peripankreatická nekrosa
- randomizace **otevřená nekrektomie** vs. **„step-up approach“**, tj. miniinvazívní postup
- **cíl: incidence velkých komplikací nebo úmrtí**

N ENGL J MED 362;16 NEJM.ORG APRIL 22, 2010

A Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis

Hjalmar C. van Santvoort, M.D., Marc G. Besselink, M.D., Ph.D.,

Miniinvazívní techniky:

- Perkutánní drenáž
- Endoskopická transgastrická drenáž
- Minimálně invazívní retroperitoneální nekrektomie (VARD)

„Step-up approach“:

Kontrola zdroje infekce, ne úplné odstranění infik. nekros

N ENGL J MED 362;16 NEJM.ORG APRIL 22, 2010

A Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis

Hjalmar C. van Santvoort, M.D., Marc G. Besselink, M.D., Ph.D.,

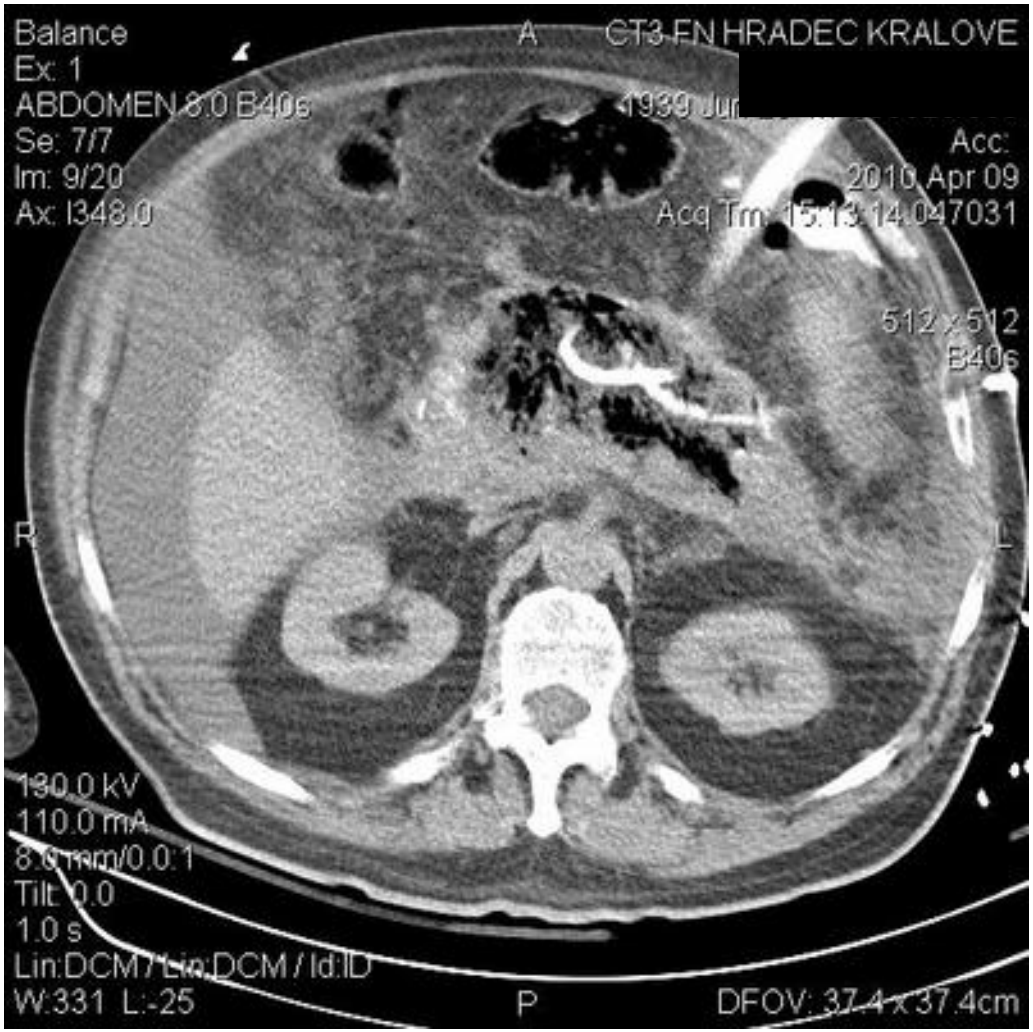
- n=88
- **Úmrtí nebo velké komplikace:**
  - Laparotomie: **69%**
  - „Step up“ **40%** (**RR 0,57**, CI 0,38-0,97, p=0,006)

- **Step up:**
  - 40% jen perkutánní drenáž
  - méně nových MOF: 12% vs. 40% (p=0,002)
  - méně čerstvých diabetiků: 16% vs. 38%, (p= 0,02)
  - menší potřeba substituce enzymů: 7% vs. 33% (p=0,002)

Není třeba odstranit nekrosy, jen infikovanou tekutinu.

Menší devastace viabilní tkáně u miniinvazívních technik → menší trvalé následky.

N ENGL J MED 362;16 NEJM.ORG APRIL 22, 2010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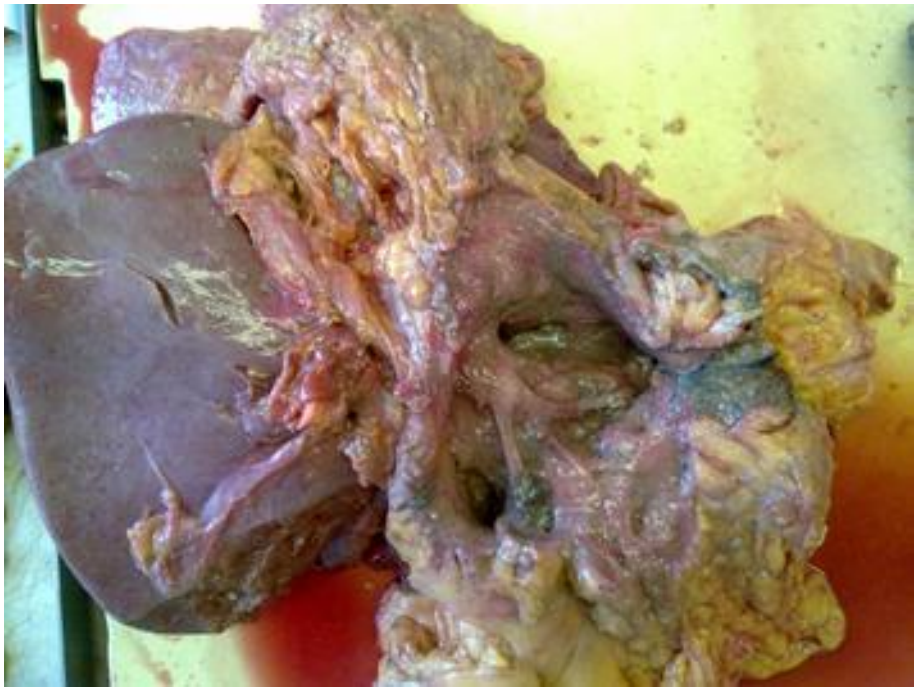
Se: 7/7
Im: 9/20
Ax: I348.0
A
CT3 FN HRADEC KRALOVE
Acc:
2010 Apr 09
512 x 512
B40s
R
L
130.0 kV
110.0 mA
Tilt: 0.0
1.0 s
W:331 L:-25
P
DFOV: 37.4 x 37.4cm

Muž, 71 let

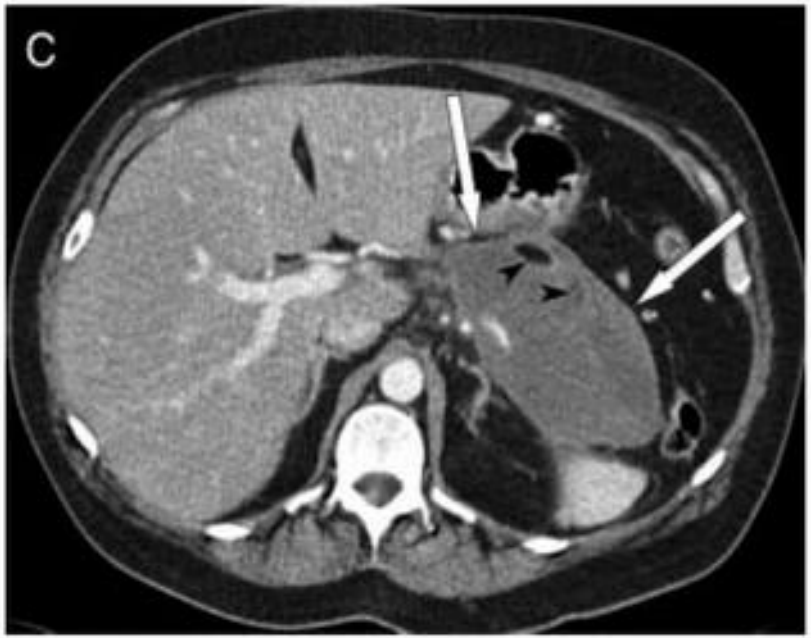
Muž, 71 let

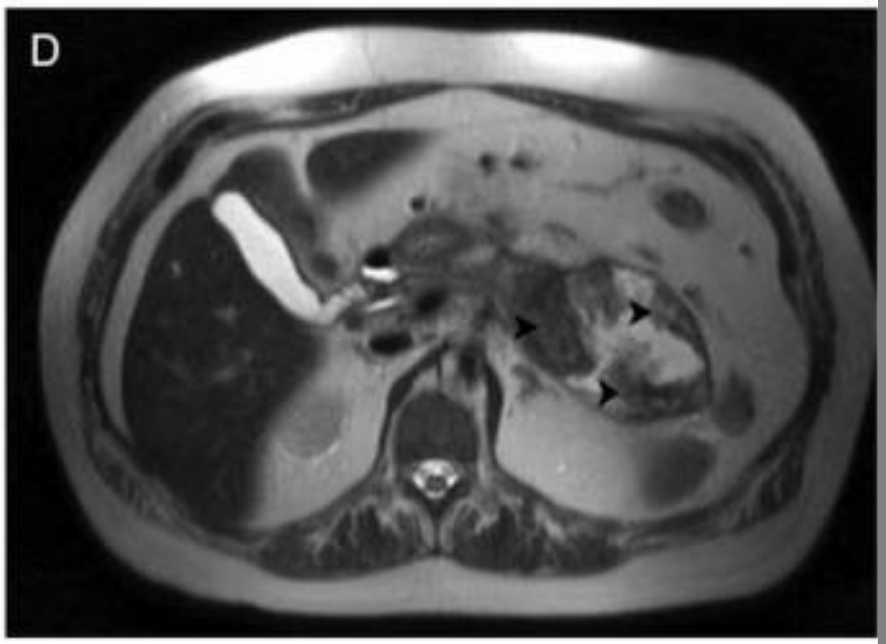


Muž, 71 let

Classification of acute pancreatitis—2012: revision of the Atlanta classification and definitions by international consensus

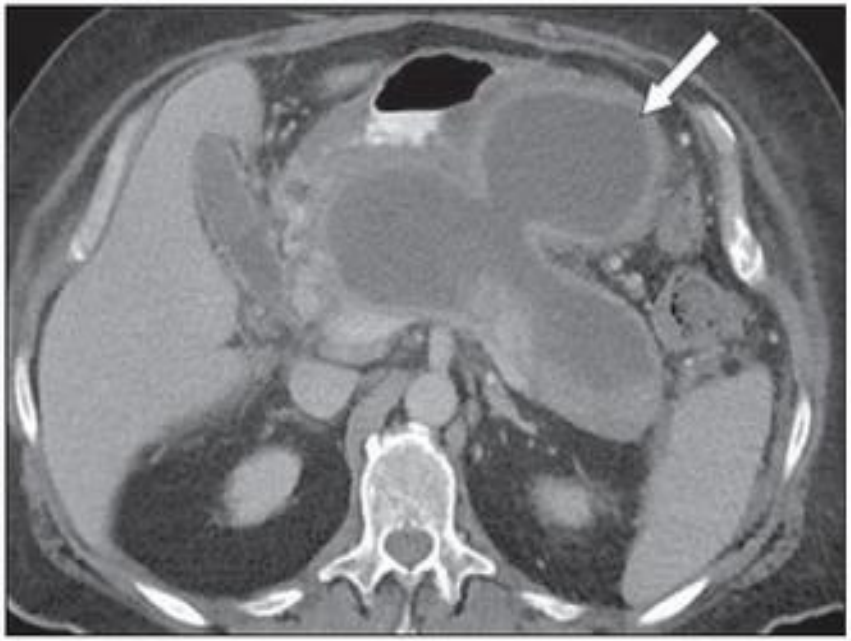
Peter A Banks,[1] Thomas L Bollen,[2] Christos Dervenis,[3] Hein G Gooszen,[4] Colin D Johnson,[5] Michael G Sarr,[6] Gregory G Tsiotos,[7] Santhi Swaroop Vege, Acute Pancreatitis Classification Working Group





Gut 2013;**62**:102–111

CT vs. MRI



AJR:205, July 2015

Endoscopic Transgastric vs Surgical Necrosectomy for Infected Necrotizing Pancreatitis

A Randomized Trial

Olaf J. Bakker, MD

- Transgastrická drenáž
  - transgastrická punkce, balonová dilatace, drenáž
  - endoskopická nekrektomie

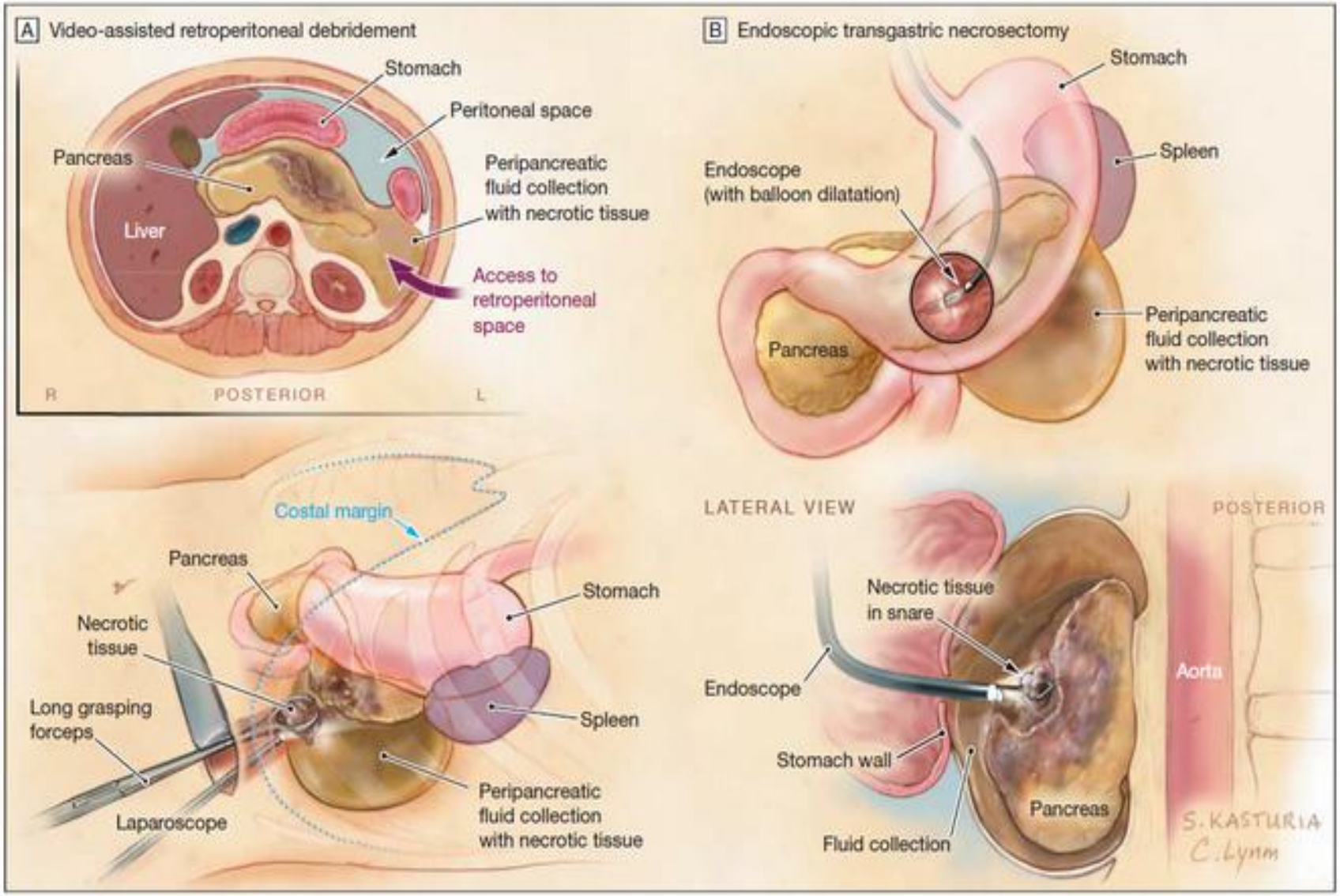
X

- Chirurgická nekrektomie
  - video-asistovaná retroperitoneální drenáž

- Sledování:
  - Zánětlivá odpověď na proceduru (IL-6)
  - Velké komplikace (MOF, krvácení, píštěle)
  - Mortalita

JAMA, March 14, 2012—Vol 307, No. 10

Endoscopic Transgastric vs Surgical Necrosectomy for Infected Necrotizing Pancreatitis



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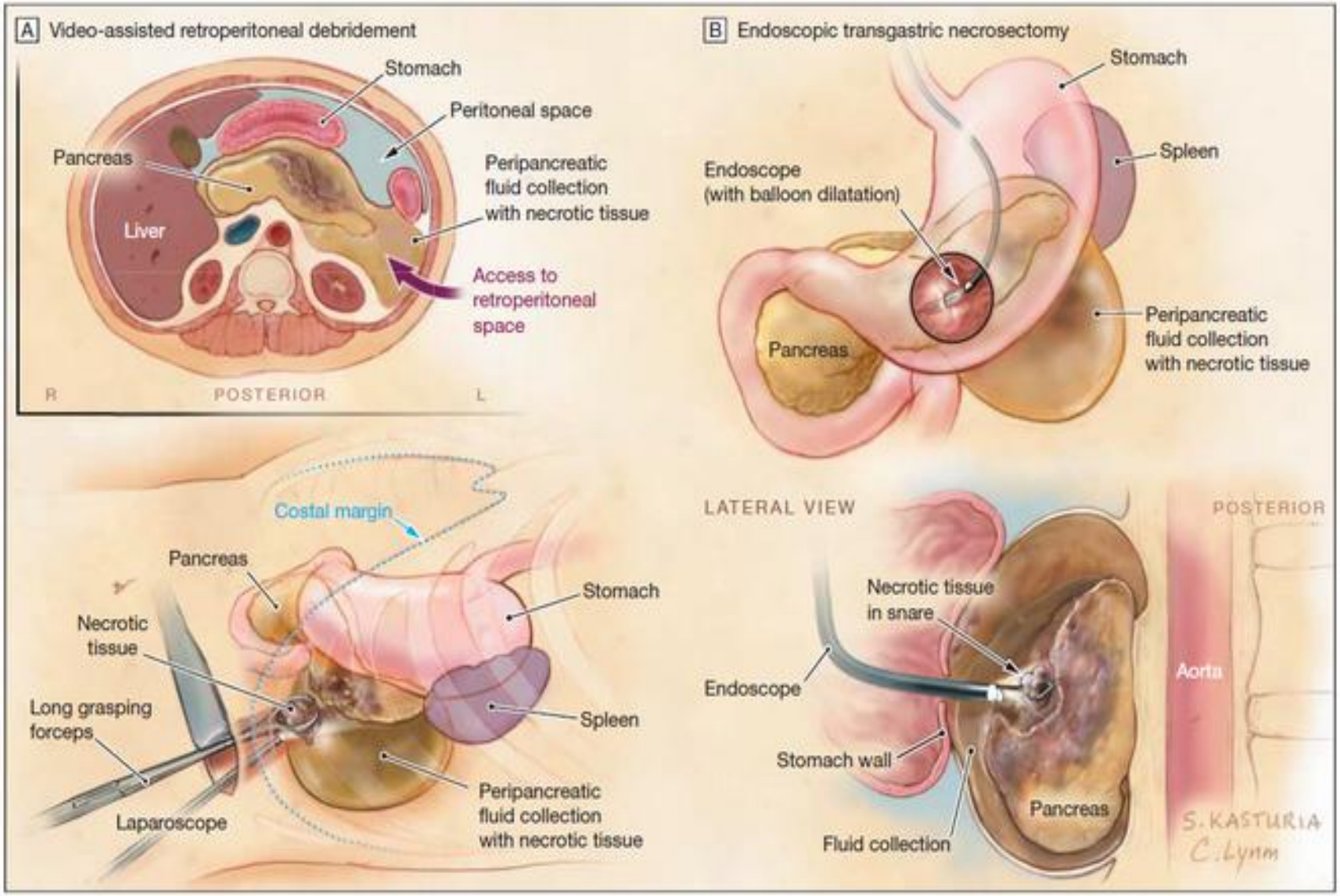

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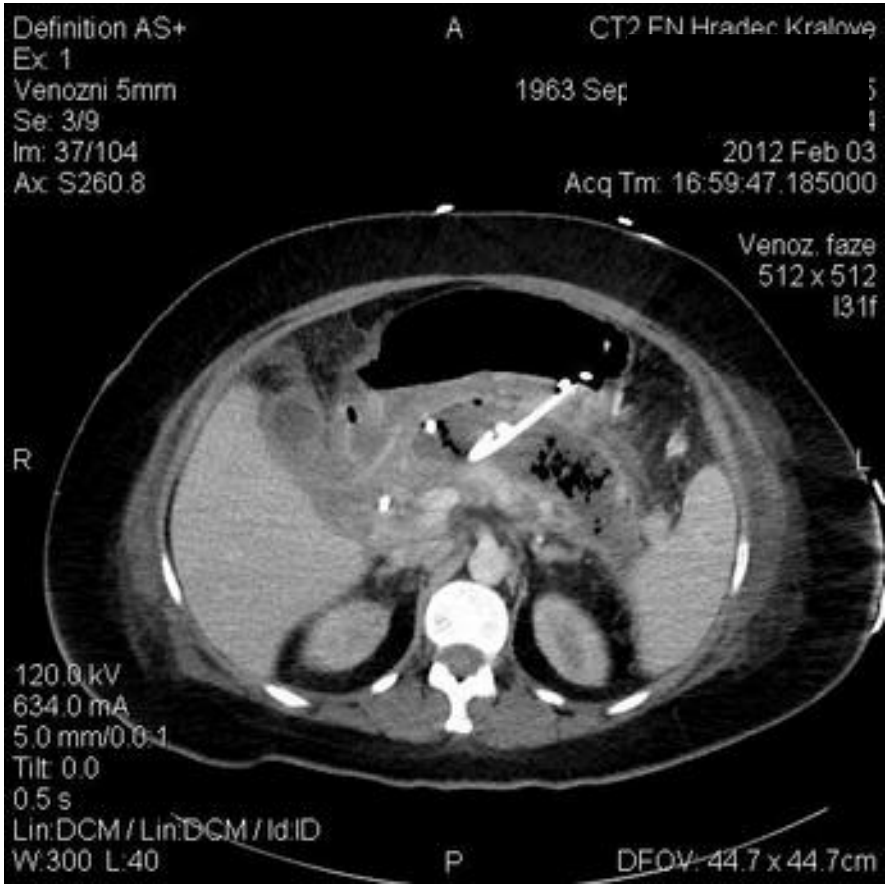
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1963 Sep
Se: 3/9
Im: 37/104
2012 Feb 03
Ax: S260.8
Acq Tm: 16:59:47.185000
Venoz. faze
512 x 512
I31f
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L
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634.0 mA
5.0 mm/0.0:1
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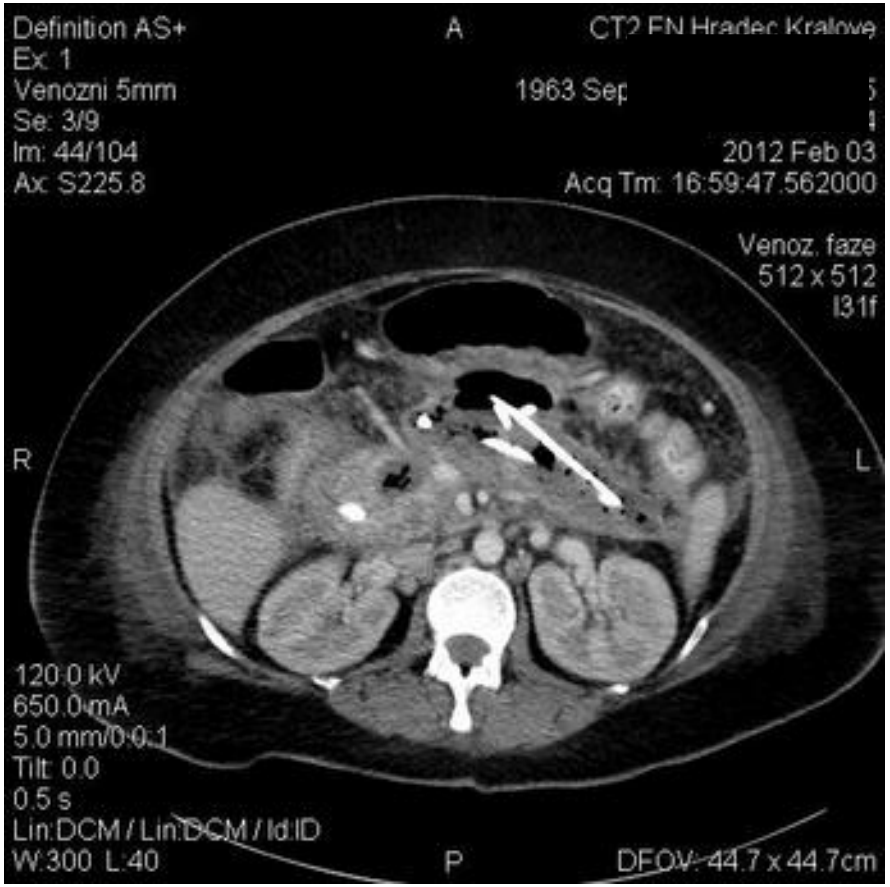
Lin:DCM / Lin:DCM / Id:ID
W:300 L:40
P
DFOV: 44.7 x 44.7cm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650.0 mA
5.0 mm/0.0:1
Tilt: 0.0
0.5 s
Lin:DCM / Lin:DCM / Id:ID
W:300 L:40
P
DFOV: 44.7 x 44.7cm

Žena, 48 let

Endoscopic Transgastric vs Surgical Necrosectomy for Infected Necrotizing Pancreatitis

A Randomized Trial

Olaf J. Bakker, MD

- Endoskopie n=10, chirurgie n=12
- IL-6 po výkonu: u endoskopie významně nižší (p=0,04)
- Nové MOF : endoskopie 0%, chirurgie 50% (p=0,03)
- Pankreatická píštěl: endo 10 % vs. chir. 70% (p=0,02)
- Mortalita bez rozdílu
- Počet procedur/pac.: endoskopie 3x vs. chirurgie 1x

JAMA, March 14, 2012—Vol 307, No. 10

Endoscopic Transgastric vs Surgical Necrosectomy for Infected Necrotizing Pancreatitis

A Randomized Trial

Olaf J. Bakker, MD

- Endoskopická nekrektomie se zdá šetrnější
- Je potřeba další studie

JAMA, March 14, 2012—Vol 307, No. 10

Endoscopic or surgical step-up approach for infected necrotising pancreatitis: a multicentre randomised trial

Sandra van Brunschot, Janneke van Grinsven, Hjalmar C van Santvoort, Olaf J Bakker, Marc G Besselink, Marja A Boermeester, Thomas L Bollen, Koop Bosscha, Stefan A Bouwense, Marco J Bruno, Vincent C Coppendijk, Esther C Consten, Cornelis H Dejong, Casper H van Eijck, Willemien G Erkelens, Harry van Goor, Wilhelmina M U van Grevenstein, Jan-Willem Haveman, Sijbrand H Hofker, Jeroen M Jansen, Johan S Laméris, Krijn P van Lienden, Maarten A Meijssen, Chris J Mulder, Vincent B Nieuwenhuijs, Jan-Werner Poley, Rutger Quispel, Rogier J de Ridder, Tessa E Römkens, Joris J Schepers, Nicolien J Schepers, Matthijs P Schwartz, Tom Seerden, B W Marcel Spanier, Jan Willem A Straathof, Marin Strijker, Robin Timmer, Niels G Venneman, Frank P Vleggaar, Rogier P Voermans, Ben J Wittemen, Hein G Gooszen, Marcel G Dijkgraaf, Paul Fockens, for the Dutch Pancreatitis Study Group*

- Srovnání endoskopického a chirurgického řešení infikovaných nekros pankreatu

- Step–up approach

  - Endoskopie: transluminální drenáž + event. endoskopická nekrektomie

    X

  - Chirurgie: perkutánní drenáž + event. VARD

- Mortalita a velké komplikace do 6 měsíců

www.thelancet.com Vol 391 January 6, 2018

Endoscopic or surgical step-up approach for infected necrotising pancreatitis: a multicentre randomised trial

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- Endoskopicky 51 pacientů
- Chirurgicky 47 pac.

- MortalitaNS
- Velké komplikace NS
- Pankreatická píštěl endoskopie lepší (5 vs. 32%)
- Pobyt v nemocnici endoskopie lepší (53 vs. 69 dní)
- Doba do výkonu endoskopie dřív (10 vs. 23 dní)

www.thelancet.com Vol 391 January 6, 2018

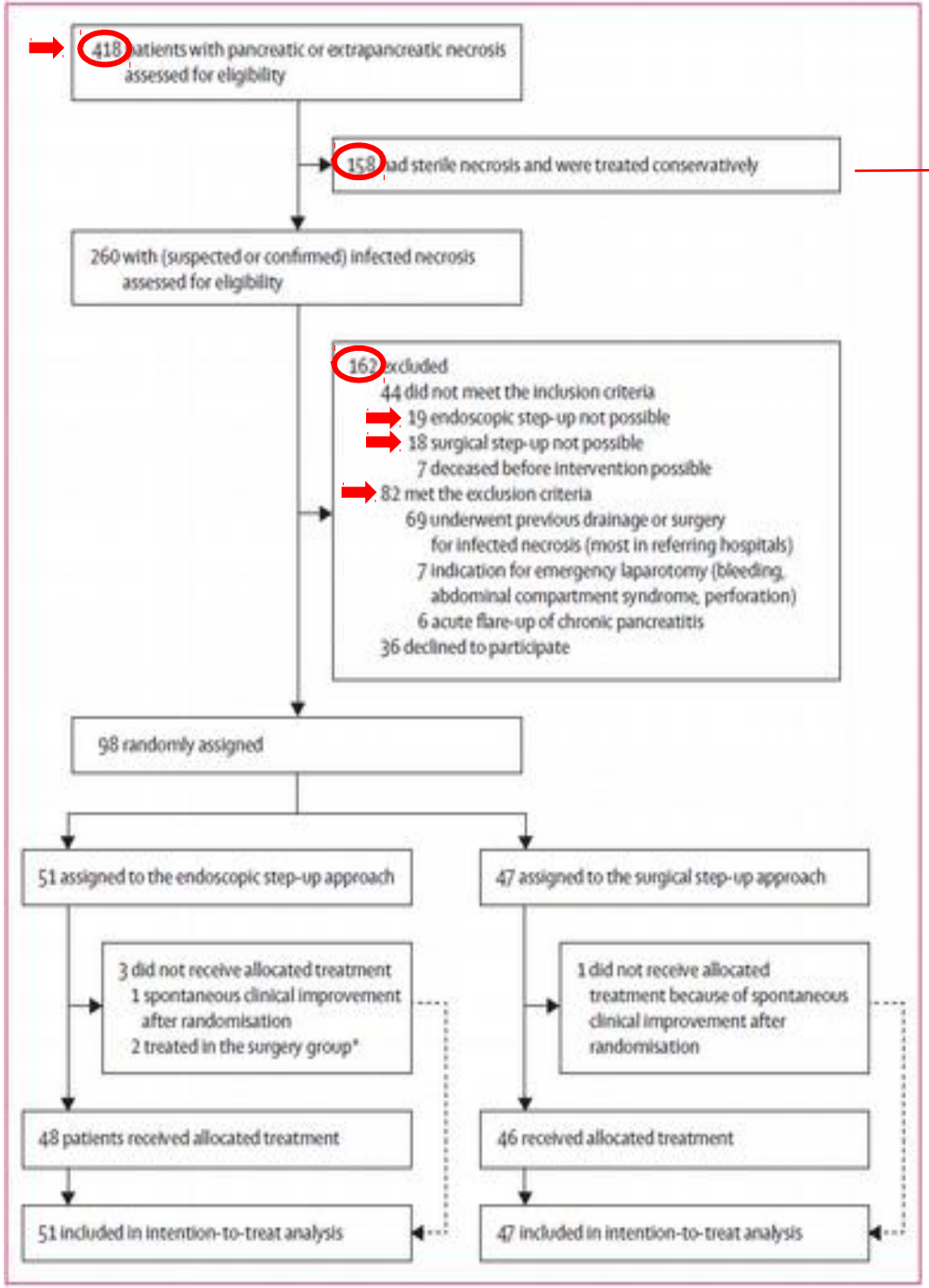
Endoscopic or surgical step-up approach for infected necrotising pancreatitis: a multicentre randomised trial

Sandra van Brunschot, Janneke van Grinsven, Hjalmar C van Santvoort, Olaf J Bakker, Marc G Besselink, Marja A Boermeester, Thomas L Bollen, Koop Bosscha, Stefan A Bouwense, Marco J Bruno, Vincent C Coppendijk, Esther C Consten, Cornelis H Dejong, Casper H van Eijck, Willemien G Erkelens, Harry van Goor, Wilhelmina M U van Grevenstein, Jan-Willem Haveman, Sijbrand H Hofker, Jeroen M Jansen, Johan S Laméris, Krijn P van Lienden, Maarten A Meijssen, Chris J Mulder, Vincent B Nieuwenhuijs, Jan-Werner Poley, Rutger Quispel, Rogier J de Ridder, Tessa E Römkens, Joris J Schreurs, Nicolien J Schreurs, Matthijs P Schwartz, Tom Seerden, B W Marcel Spanier, Jan Willem A Straathof, Marin Strijker, Robin Timmer, Niels G Venneman, Frank P Vleggaar, Rogier P Voermans, Ben J Wittemen, Hein G Gooszen, Marcel G Dijkgraaf, Paul Fockens, for the Dutch Pancreatitis Study Group*

- Závěry:
  - Mortalita infikovaných nekros vysoká přes moderní metody drenáže (endo 18%, chir. 13%, NS)
  - Endoskopické metody nabývají na významu
    - Neprokázán vliv na velké komplikace a mortalitu
    - Nižší výskyt pankreatických píštělí
    - Kratší doba hospitalizace
    - Nižší náklady

Nemocní by měli být ošetřeni ve velkých centrech , kde je dostupná celá paleta možností.

www.thelancet.com Vol 391 January 6, 2018



Negativní kultivace FNA
Chybí bubliny plynu na CT
Sepse vysvětlitelná jinak

= ?

Chystané studie

- EndoRotor DEN (Direct Endoscopic Necrosectomy)Trial
  - 8 univerzit v USA, Německu a Holandsku
  - Interscope EndoRotor® Resection Systém u ohraničené nekrózy
  - Bezpečnost a efektivita zákroku
  - 10/2018 – 12/2018

- A Trial of Early Percutaneous Catheter Drainage of Sterile Pancreatic Fluid Collections in Severe Acute Pancreatitis (EPCDSAP)
  - Zheijang, Čína
  - Punkce sterilních kolekcí pankreatu vs. konzervativní postup
  - Mortalita, infekce, LOS, MOF, komplikace
  - 10/2017 – 10/2020

Chystané studie

- Endoscopic Large Caliber Drainage vs. Complete Necrosectomy for Treatment of Walled-off Pancreatic Necrosis
  - Mayo Clinic
  - Dvojitý pigtail nebo samoexpandující kovový stent, endoskopická drenáž
  - Radiologický a klinický efekt zákroku, komplikace, doba pobytu
  - 2/2019 - 12/2020

Závěry

- Akutní ERCP u bilární pankreatitidy není nutné, pouze při cholangoitidě
- Hypertriglyceridemická pankreatitis probíhá tíže než biliární, zvážit plazmaferézu
- Tekutiny: krystaloidy, podle fyziologických cílů
- Časná perorální n. gastrická výživa možná
- Kolekce tekutin: punkční metody preferovány
- Nekrektomie: endoskopicky > videoasistovaně > chirurgicky
- Komplikovaná akutní pankreatitis patří do velké nemocnice

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