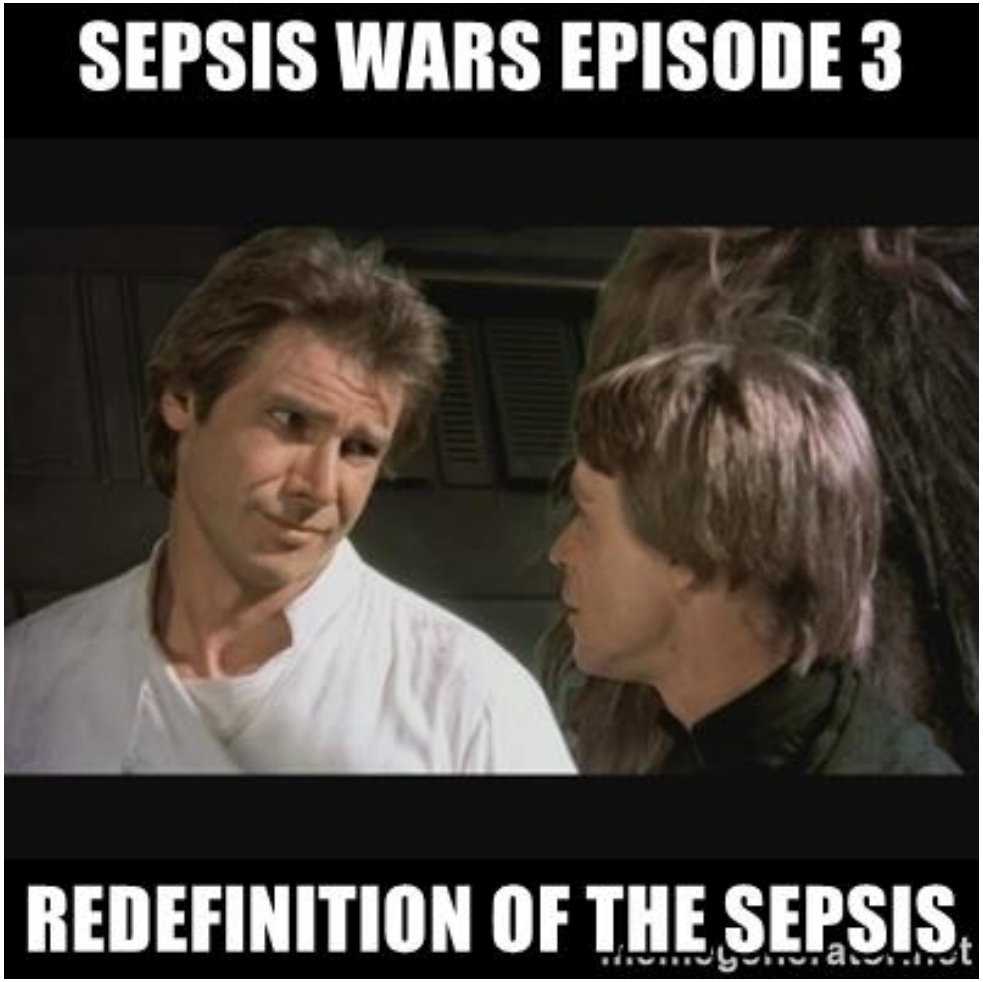
NA NOVÉ STOPĚ SEPSE? KAZUISTIKA

1. LÉKAŘSKÁ FAKULTA
Univerzita Karlova

Anesteziologicko - resuscitační klinika 1. LF UK a TN

Tomáš Nejtek


SEPSIS WARS EPISODE 3
REDEFINITION OF THE SEPSIS

February 23, 2016

The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3)

Mervyn Singer, MD, FRCP[1]; Clifford S. Deutschman, MD, MS[2]; Christopher Warren Seymour, MD, MSc[3]; et al

» Author Affiliations | Article Information

JAMA. 2016;315(8):801-810. doi:10.1001/jama.2016.0287

RECOMMENDATIONS Sepsis should be defined as life-threatening organ dysfunction caused by a dysregulated host response to infection. For clinical operationalization, organ dysfunction can be represented by an increase in the Sequential [Sepsis-related] Organ Failure Assessment (SOFA) score of 2 points or more, which is associated with an in-hospital mortality greater than 10%. Septic shock should be defined as a subset of sepsis in which particularly profound circulatory, cellular, and metabolic abnormalities are associated with a greater risk of mortality than with sepsis alone. Patients with septic shock can be clinically identified by a vasopressor requirement to maintain a mean arterial pressure of 65 mm Hg or greater and serum lactate level greater than 2 mmol/L (>18 mg/dL) in the absence of hypovolemia. This combination is associated with hospital mortality rates greater than 40%. In out-of-hospital, emergency department, or general hospital ward settings, adult patients with suspected infection can be rapidly identified as being more likely to have poor outcomes typical of sepsis if they have at least 2 of the following clinical criteria that together constitute a new bedside clinical score termed quickSOFA (qSOFA): respiratory rate of 22/min or greater, altered mentation, or systolic blood pressure of 100 mm Hg or less.

CONCLUSIONS AND RELEVANCE These updated definitions and clinical criteria should replace previous definitions, offer greater consistency for epidemiologic studies and clinical trials, and facilitate earlier recognition and more timely management of patients with sepsis or at risk of developing sepsis.

3. Mezinárodní „konsenzus“ definice sepse

- **Sepse**
  - život ohrožující orgánová dysfunkce na podkladě dysregulované odpovědi hostitele k infekci
  - SOFA ≥ 2
  - Mortalita > 10%
- **Septický šok**
  - + abnormality asociované s vyšší mortalitou než u samotné sepse
  - Vazopresory k udržení MAP > 65mmHg a Laktát > 2mmol/l u nehypovolemického pacienta
  - Mortalita > 40%
- **qSOFA**
  - Triáž pacientů se suspektní sepsí mimo oddělení resuscitační péče
  - DF ≥ 22/min; STK < 100mmHg; alterace vědomí
  - 0-3 bodů

Kazuistika – paní V. (1984)

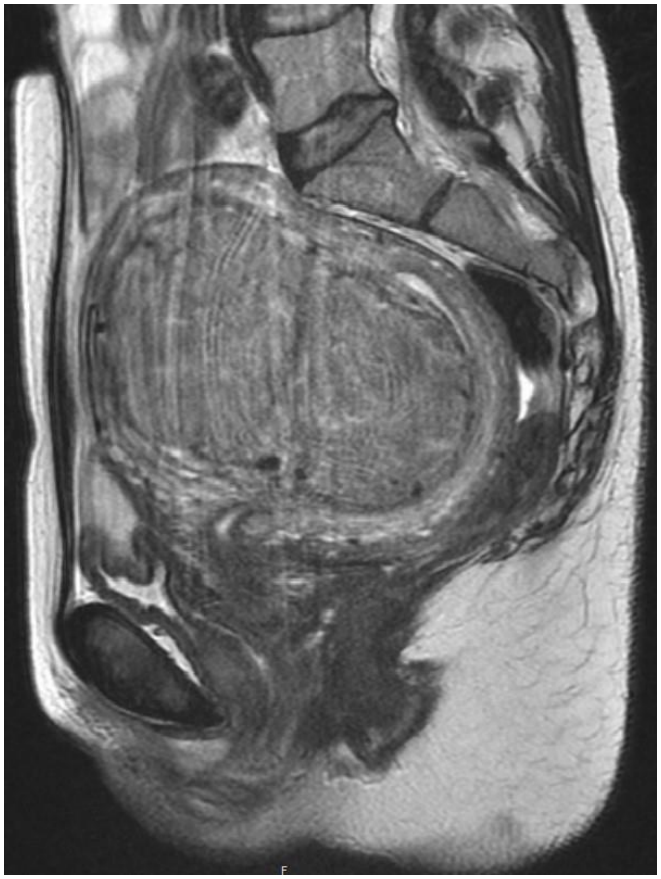
- 8/7/2017 19:46 - telefon
- žádost o konzilium ke zhoršení stavu pacientky hospitalizované (od 7/7/2017) na standardním odd. GYN-POR

Kazuistika – paní V. (1984) – den 1.

- NO: Pacientka uvádí několik dní trvající bolesti v podbřišku, cestou CHIR odeslána k dovyšetření na GYN
- RA: Bezvýznamná
- OA: Sledována pro myom dělohy (asi 8cm, cca 5 let), vegetariánka
- FA: Sorbifer 1-0-0
- GA: M14, nulligravida
- Operace: St.p. stomatochirurgickém výkonu (2001)

Kazuistika – paní V. (1984) – den 1.

- Subj.: Bolest břicha, nauzea
- Obj.: Palpační citlivost podbřišku, KP komp, menstruační krvácení, TT-38,3°C
- USG: objemný myom zadní stěny se smíšenou echogenitou (116/80mm)
- Laboratoř: CRP – 300mg/l, jinak bez pozoruhodností



Kazuistika – paní V. (1984) – den 1.

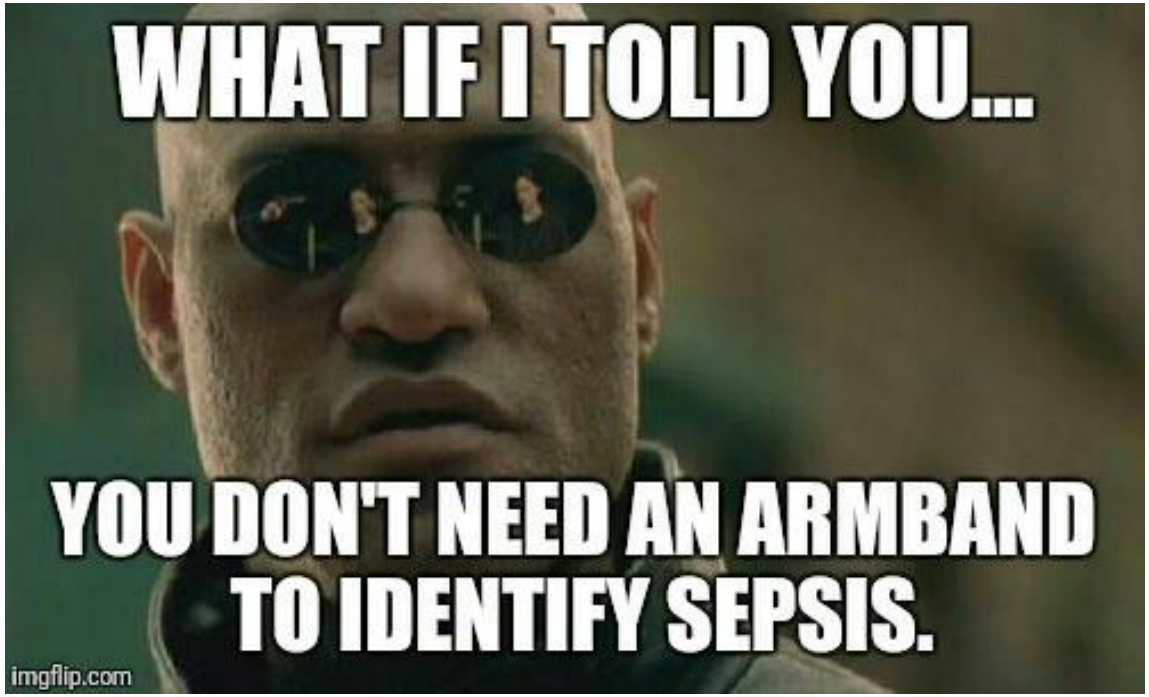
- Pracovní dg.: Endometritida myomatózní dělohy
- Pacientka uložena na standardní oddělení GYN
- Terapie:
  - 1x PŽK (20G)
  - ATB: Gentamicin 240mg i.v. á 24h; Klindamycin 600mg p.o. á 8h
  - Novalgin 1g i.v. (max á 6h)
  - Hylak Forte 2ml p.o. á 24h
  - Sorbifer 1-0-0

Kazuistika – paní V. (1984) – den 2.

- Ranní vizita:
  - Subj.: Ústup bolestí
  - Obj.: Palpační citlivost podbřišku, KP komp, menstruační krvácení, TT-36,6°C
- Večerní CRP: 165mg/l
- 19:46 zhoršení stavu

Kazuistika – paní V. (1984) – den 2.

- Zhoršení stavu:
  - Zimnice, třesavka, TT-39,6°C, tachykardie (125/min), **DF-22/min**, ošetřující personál uvádí **zmatenost**, **normotenze**
  - **qSOFA**



qSOFA?

February 23, 2016

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qSOFA?

Askim et al. Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine (2017) 25:56
DOI 10.1186/s13049-017-0399-4

Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine

ORIGINAL RESEARCH Open Access

Poor performance of quick-SOFA (qSOFA) score in predicting severe sepsis and mortality – a prospective study of patients admitted with infection to the emergency department

Åsa Askim[1,3,9*†], Florentin Moser[2†], Lise T. Gustad[3,8,9], Helga Stene[10], Maren Gundersen[10], Bjørn Olav Åsvold[4,6,9], Jostein Dale[2], Lars Petter Bjørnsen[2], Jan Kristian Damås[5,7,9] and Erik Solligård[1,2,3,9]

ELSEVIER

Chest

Volume 153, Issue 3, March 2018, Pages 646-655

Original Research: Critical Care

A Comparison of the Quick-SOFA and Systemic Inflammatory Response Syndrome Criteria for the Diagnosis of Sepsis and Prediction of Mortality: A Systematic Review and Meta-Analysis

Rodrigo Serafim MD [a, b, c], José Andrade Gomes MD [d], Jorge Salluh MD, PhD [a, c], Pedro Póvoa MD, PhD [e, f]

Show more

https://doi.org/10.1016/j.chest.2017.12.015

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PulmCrit – Bad news for sepsis-3.0: qSOFA fails validation

October 1, 2016 by **Josh Farkas** – 29 Comments

	Sensitivity	Specificity
SIRS ≥ 2	91%	13%
qSOFA ≥ 2	54%	67%
NEWS ≥ 7	77%	53%
NEWS ≥ 8	67%	66%
NEWS ≥ 9	54%	78%

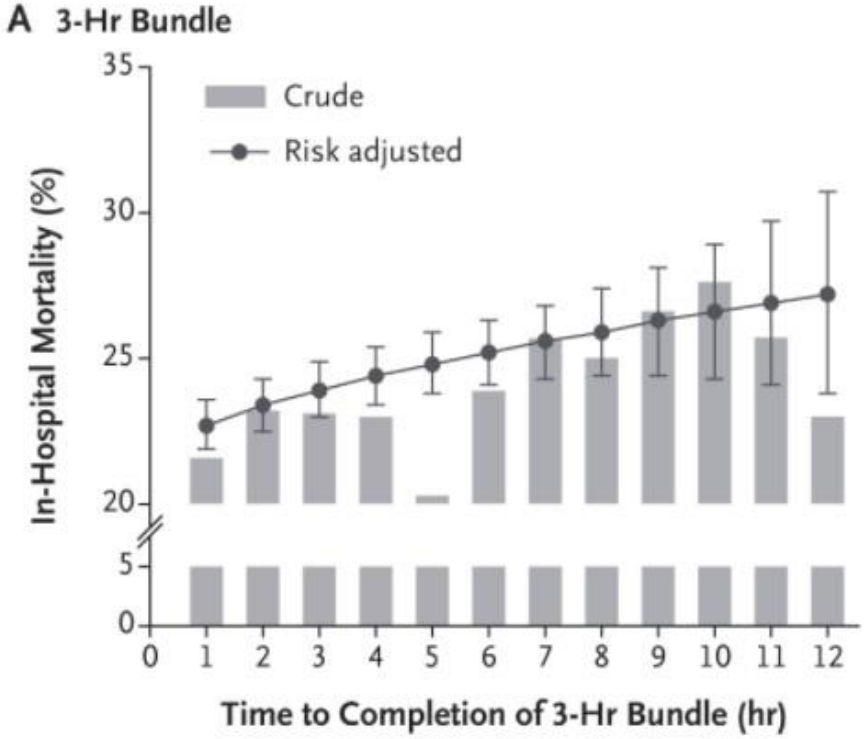

TIME HEALS ALL WOUNDS?
FALSE.
SEPSIS CAN BE FATAL.

Na čase záleží

ORIGINAL ARTICLE

Time to Treatment and Mortality during Mandated Emergency Care for Sepsis

Christopher W. Seymour, M.D., Foster Gesten, M.D., Hallie C. Prescott, M.D., Marcus E. Friedrich, M.D., Theodore J. Iwashyna, M.D., Ph.D., Gary S. Phillips, M.A.S., Stanley Lemeshow, Ph.D., Tiffany Osborn, M.D., M.P.H., Kathleen M. Terry, Ph.D., and Mitchell M. Levy, M.D.

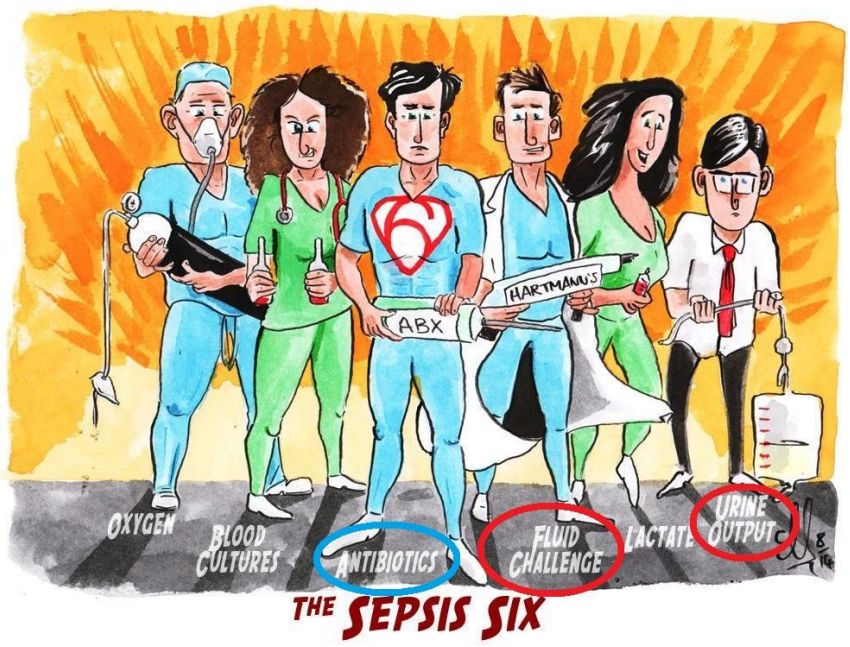


The NEW ENGLAND JOURNAL of MEDICINE

June 8, 2017
N Engl J Med 2017; 376:2235-2244
DOI: 10.1056/NEJMoa1703058

Kazuistika – paní V. (1984) – den 2.

- Pacientka uložena na JIP GYN-POR
- Monitorace: 3svod EKG, NIBP, SpO2, DF, TT
- +1x PŽK (18G); PMK
- Terapie:
  - Isolyte 1l i.v., Isolyte 300ml/h
  - Pokračující ATB terapie



Kazuistika – paní V. (1984) – den 2.

ORIGINAL ARTICLE

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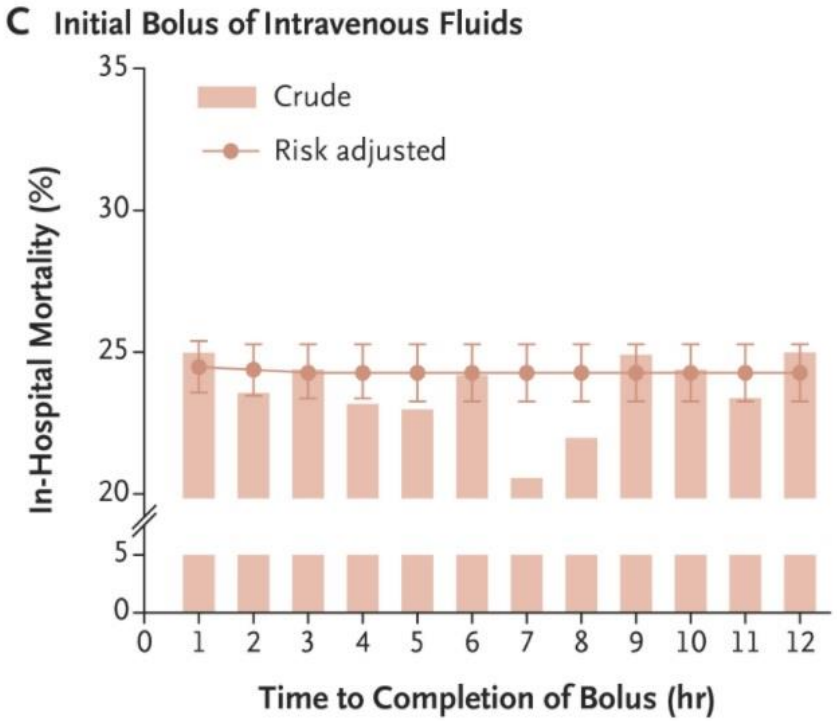
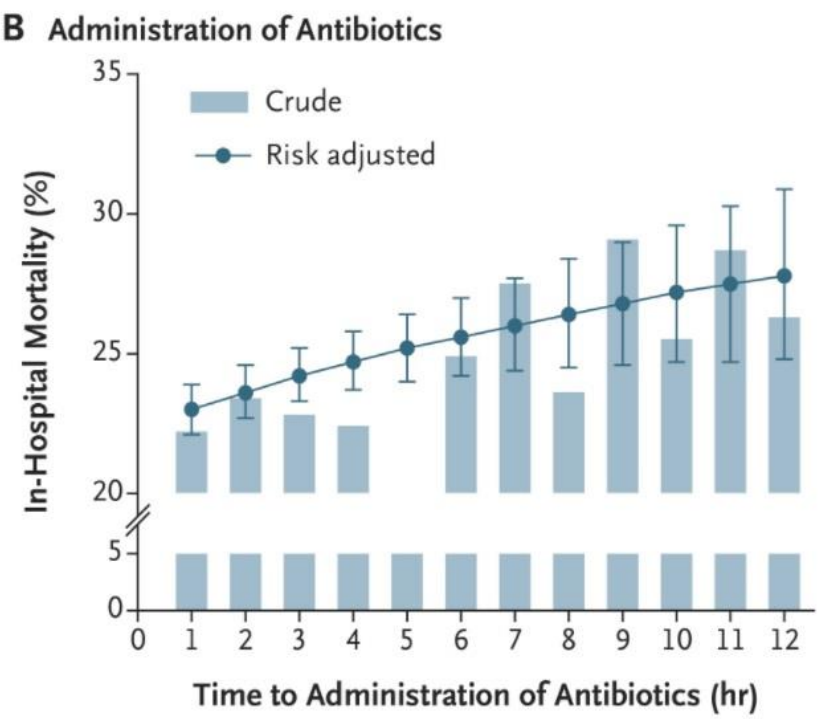




A co dál? Co se děje? Jaká vyšetření?

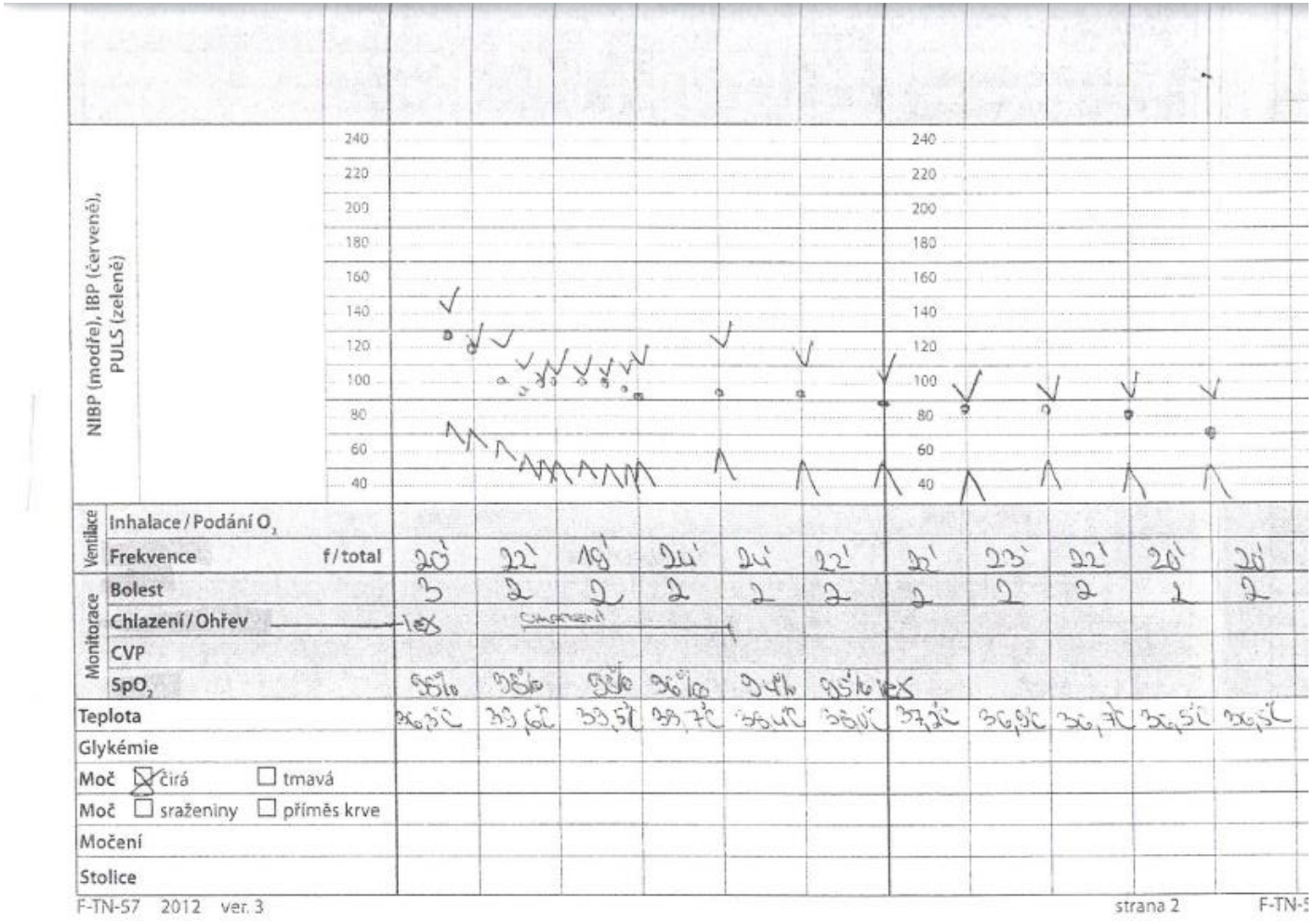
Kazuistika – paní V. (1984) – den 2.

- Pacientka si svévolně aplikovala Hylak Forte i.v.
- Hylak Forte: Bezzárodkový koncentrát metabolitů Escherichia coli, Enterococcus faecalis, Lactobacilli acidophili, Lactobacilli helvetici

Kazuistika – paní V. (1984) – den 2.

- Pacientka uložena na JIP GYN-POR
- Monitorace: 3svod EKG, NIBP, SpO2, DF, TT
- +1x PŽK (18G); PMK
- Terapie:
  - Isolyte 1l i.v., Isolyte 300ml/h
  - Pokračující ATB terapie
  - Kontaktován TIS – není znám žádný precedens
  - Dithiaden 1 amp. i.v.
  - Hydrokortizon 100mg i.v. + 100mg/24h i.v. kontiunálně

Kazuistika – paní V. (1984) – den 2.



Kazuistika – paní V. (1984) – den 3. – 7.

- Kulminace stavu cca po 2h
- Postupná stabilizace stavu
- 4. den přeložena zpět na standardní oddělení GYN
- 7. den pacientka propuštěna domů

Na nové stopě sepse?

Intensive Care Med. 1998 Aug;24(8):888-9.

Kinetics of procalcitonin in iatrogenic sepsis.

Brunkhorst FM, Heinz U, Forycki ZF.

PMID: 9757936

[Indexed for MEDLINE]

- Téměř před dvaceti lety objev prokalcitoninu u iatrogenně navozené sepse
- Přesto PCT nesplňuje podmínky „ideálního biomarkeru“, po kterém se nadále pátrá

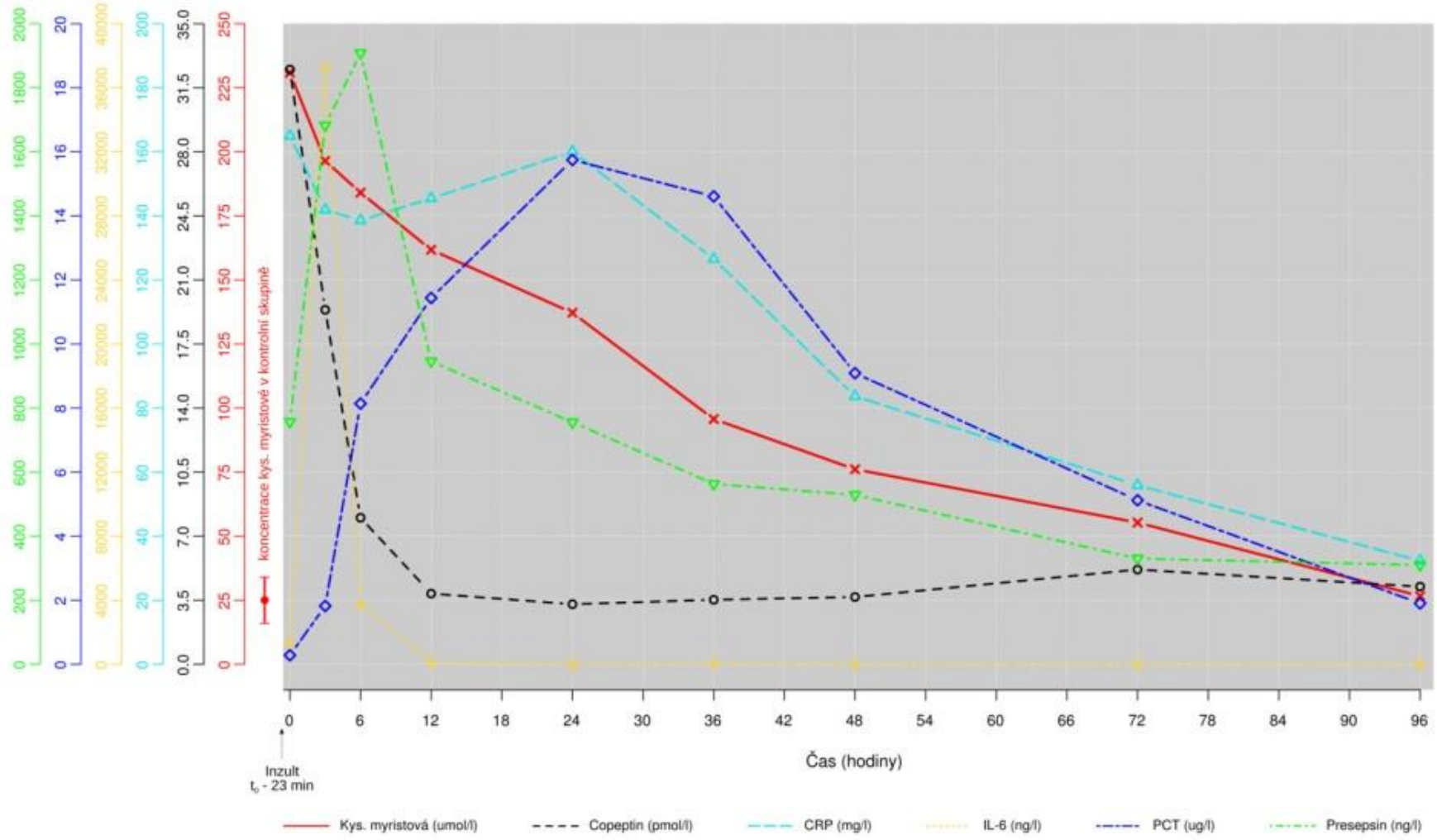
Na nové stopě sepse?

- Pacientce byly odebrány krevní vzorky v časech t, t+3h, t+6h, t+12h, t+24h, t+36h, t+48h, t+72h, t+96h (t=čas „septického“ inzultu)
- Vyšetřeny hladiny následujících biomarkerů:
  - PCT
  - CRP
  - IL-6
  - Kyselina myristová
  - Copeptin
  - Presepsin

Na nové stopě sepse?

Časy odběrů	t	t+3	t+6	t+12	t+24	t+36	t+48	t+72	t+96
Kys. myristová (umol/l)	231	197	184	162	137	96	76	55	27
PCT (ug/l)	0,3	1,8	8,1	11,4	15,8	14,6	9,1	5,1	1,9
CRP (mg/l)	165	142	139	146	160	127	84	56	48
Copeptin (pmol/l)	33	19	8	4	3	4	4	5	4,2
Presepsin (ng/l)	757	1683	1909	946	756	563	529	310	332
IL-6 (ng/l)	1290	37275	3688	139	15	33	4	4	29

Na nové stopě sepse?



Na nové stopě sepse?

Copeptin

Copeptin (CT-proAVP) is a 39-aminoacid glycopeptide—the C-terminal part of pre-provasopressin and was first described in 1972 by Holwerda [31].

From: Advances in Clinical Chemistry, 2016

- Copeptin byl využit jako marker v mnoha studiích (především SS, IM, PKD,…) – nepříliš specifický marker sepse

Na nové stopě sepse?

- Kyselina myristová je jednosytná organická kyselina lineární struktury s aterogenním a trombogenním potenciálem

Intake of individual saturated fatty acids and risk of coronary heart disease in US men and women: two prospective longitudinal cohort studies

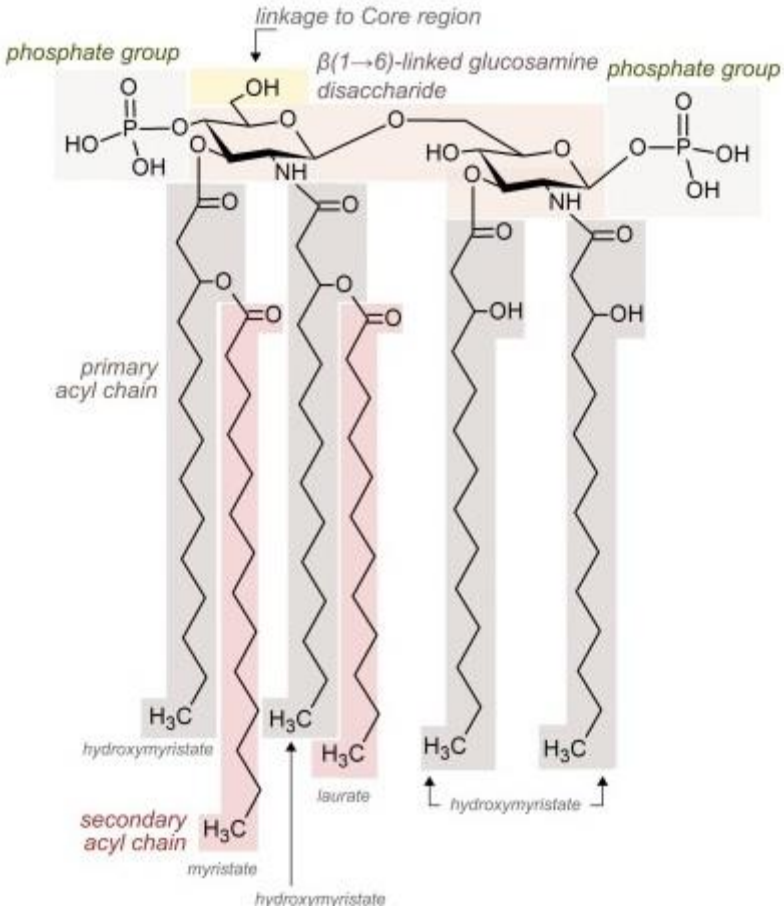
BMJ 2016 ; 355 doi: https://doi.org/10.1136/bmj.i5796 (Published 23 November 2016)
Cite this as: *BMJ* 2016;355:i5796

Na nové stopě sepse?

International Journal of Medical Microbiology
Volume 306, Issue 5, August 2016, Pages 290-301

Structure and function: Lipid A modifications in commensals and pathogens

Alex Steimle, Ingo B. Autenrieth, Julia-Stefanie Frick



Na nové stopě sepse?

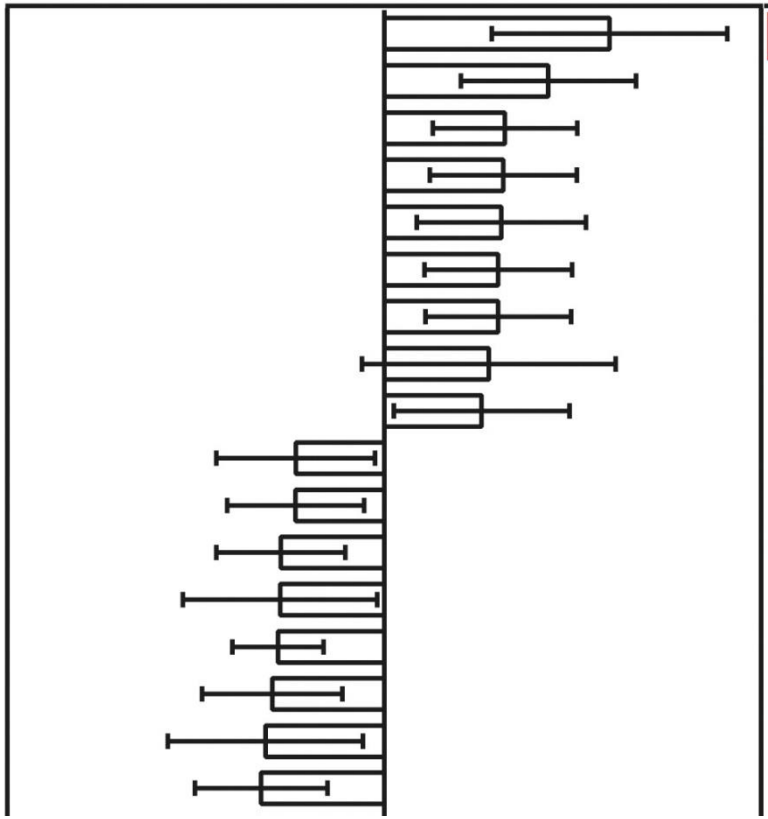
- Kyselina myristová se však jeví významnou i z pohledu systémového zánětu s infekcí

Metabolites in Blood for Prediction of Bacteremic Sepsis in the Emergency Room

Anna M. Kauppi, Alicia Edin, Ingrid Ziegler, Paula Mölling, Anders Sjöstedt, Åsa Gylfe, Kristoffer Strålin, Anders Johansson

Published: January 22, 2016 • https://doi.org/10.1371/journal.pone.0147670

Na nové stopě sepse?



Metabolite	P value
Myristic acid	1.2E-05
Pyruvic acid	0.0013
Lactose	0.0245
Maltose	0.0245
Inositol	0.0163
Laminarabinose	0.0299
Nigerose	0.0313
Spermidine	0.0392
Pseudouridine	0.0337
Lysine	0.0234
Isoleucine	0.0392
Norleucine	0.0234
Glyceric acid 3-phosphate	0.0448
Glutamine	0.0103
Serine	0.0208
Glyceric acid	0.0234
Pyroglutamic acid	0.0208

Na nové stopě sepse?

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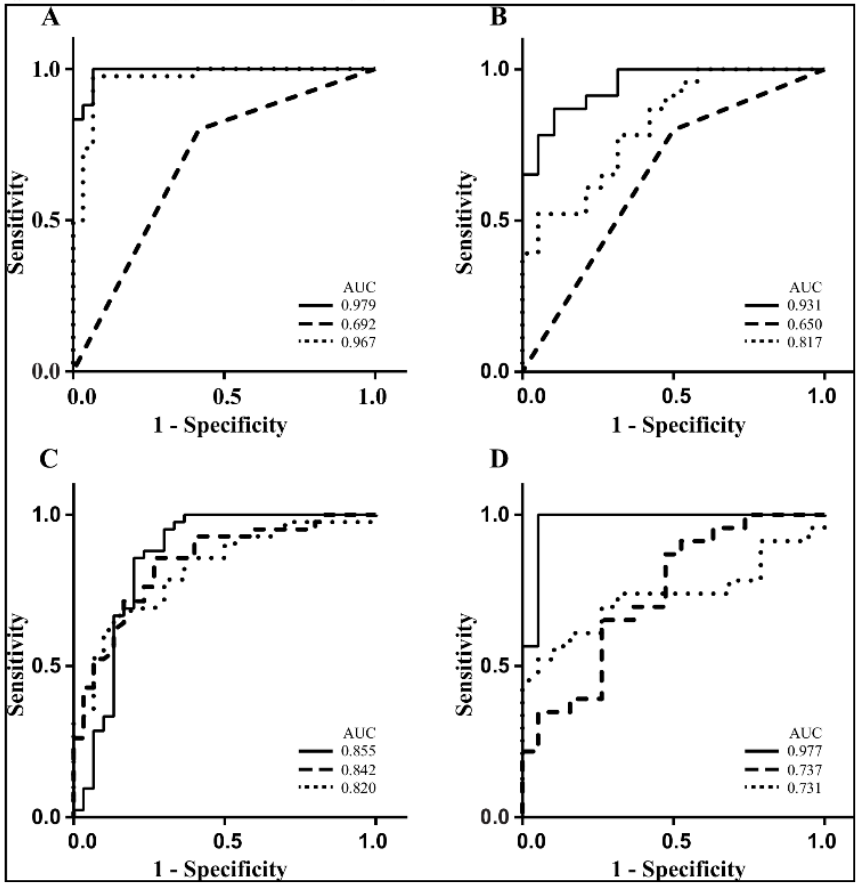
- Metabolit s nejvyšší **senzitivitou** 1,00 (95 % CI 0,85 - 1,00) a **specificitou** 0,95 (95 % CI 0,74 - 0,99) v matabolomu septických pacientů s bakteriemií



Na nové stopě sepse? - Diskuze

- Míra ovlivnění výsledků primárním onemocněním?
  - Zlepšení klinického stavu, pokles CRP
  - První hodnota PCT naměřená v čase inzultu – 0,3

Procalcitonin Predicts Real-Time PCR Results in Blood Samples from Patients with Suspected Sepsis

Antonella Mencacci, Christian Leli, Angela Cardaccia, Marta Meucci, Amedeo Moretti, Francesco D'Alò, Senia Farinelli, Rita Pagliochini, Mariella Barcaccia, Francesco Bistoni

Published: December 27, 2012 • https://doi.org/10.1371/journal.pone.0053279

Conclusion

PCT can be used in febrile patients with suspected sepsis to predict SF positive or negative results. A cut-off value of 0.37 ng/ml can be considered for optimal sensitivity, so that, in the routine laboratory activity, SF assay should not be used for diagnosis of sepsis in an unselected patient population with a PCT value <0.37 ng/ml.

Na nové stopě sepse?

- S cíleným sledováním kyseliny myristové u septických pacientů nadále pokračujeme

Podpořeno MZ ČR – RVO (Thomayerova nemocnice – TN, 00064190)

Děkuji za pozornost