



Supplement of

High preoperative CONUT score is associated with treatment failure and mortality after surgery for acute periprosthetic joint infection: a single-centre retrospective cohort study

Víctor Otero-Naveiro et al.

Correspondence to: Víctor Otero-Naveiro (correodevictorotero@hotmail.com)

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1 **Supplementary Table S1. Calculation and interpretation of the CONUT score**

Parameter	Normal	Mild	Moderate	Severe
Serum albumin, g/dL	≥3.5 0 points	3.0–3.49 2 points	2.5–2.99 4 points	<2.5 6 points
Total lymphocyte count, cells/μL	≥1600 0 points	1200–1599 1 point	800–1199 2 points	<800 3 points
Total cholesterol, mg/dL	>180 0 points	140–180 1 point	100–139 2 points	<100 3 points
Total CONUT score	0–1	2–4	5–8	9–12

2 The total CONUT score is obtained by adding the component scores. In the present study, scores <5 were
3 classified as low CONUT (normal-to-mild) and scores ≥5 as high CONUT (moderate-to-severe). CONUT:
4 Controlling Nutritional Status.

5 **Supplementary Table S2. Comparison between included patients and patients excluded because of**
6 **missing CONUT components**

Variable	Included patients n=90	Excluded patients n=59	p value
Age, years (mean ± SD)	76.6 ± 10.6	73.8 ± 9.9	0.117
Age ≥ 80 years, n (%)	35 (38.9)	16 (27.1)	0.139
Female sex, n (%)	58 (64.4)	31 (52.5)	0.147
Diabetes mellitus, n (%)	23 (25.6)	14 (23.7)	0.801
Dementia, n (%)	15 (16.7)	7 (11.9)	0.419
Malignancy, n (%)	21 (23.3)	8 (13.6)	0.141
Fracture/revision indication, n (%)	37 (41.1)	19 (32.2)	0.272
Acute haematogenous infection, n (%)	22 (24.4)	19 (32.2)	0.300

McPherson host grade C, n (%)	27 (30.0)	13 (22.0)	0.283
High JS-BACH, n (%)	67 (74.4)	36 (61.0)	0.083
CRP, mg/L (median [IQR])	50.5 [17.5–145.1]	62.7 [16.5–170.2] ¹	0.729
Polymicrobial infection, n (%)	20 (22.2)	12 (20.3)	0.784
<i>Staphylococcus aureus</i> , n (%)	33 (36.7)	25 (42.4)	0.485
Coagulase-negative staphylococci (CoNS), n (%)	19 (21.1)	12 (20.3)	0.910
Positive blood cultures, n (%)	23 (25.6)	19 (32.2)	0.378

7 ¹ Preoperative CRP was available in 90/90 patients with CONUT values and in 53/59 patients with missing
8 CONUT components. CONUT: Controlling Nutritional Status; SD: standard deviation; IQR: interquartile
9 range; JS-BACH: Joint-Specific BACH classification; CoNS: coagulase-negative staphylococci.

10 **Supplementary Table S3. Expanded microbiology according to CONUT group**

Variable	Overall cohort n= 90	High CONUT n=42	Low CONUT n=48	p value
Polymicrobial infection, n (%)	20 (22.2)	7 (16.7)	13 (27.1)	0.236
<i>Staphylococcus aureus</i> , n (%)	33 (36.7)	20 (47.6)	13 (27.1)	0.044
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA), n (%)	10 (11.1)	6 (14.3)	4 (8.3)	0.505
Coagulase-negative staphylococci (CoNS), n (%)	19 (21.1)	3 (7.1)	16 (33.3)	0.002
Difficult-to-treat organisms (DTT), n (%)	11 (12.2)	7 (16.7)	4 (8.3)	0.335
Gram-negative bacilli (GNB), n (%)	28 (31.1)	16 (38.1)	12 (25.0)	0.181
Culture-negative infection, n (%)	7 (7.8)	2 (4.8)	5 (10.4)	0.442
Positive blood cultures, n (%)	23 (25.6)	17 (40.5)	6 (12.5)	0.002

11 Bold indicates statistically significant differences ($p < 0.05$). Microbiological categories were not mutually
 12 exclusive. Difficult-to-treat organisms were defined using criteria adapted from Wimmer et al. (2020); fungi
 13 were included and *Cutibacterium acnes* was excluded, as it primarily represents diagnostic rather than
 14 therapeutic difficulty. CONUT: Controlling Nutritional Status; MRSA: methicillin-resistant *Staphylococcus*
 15 *aureus*; CoNS: coagulase-negative staphylococci; DTT: difficult-to-treat; GNB: Gram-negative bacilli.

16 **Supplementary Table S4. MSIS-ORT distribution according to CONUT group.** Data are presented as
 17 n (%)

MSIS-ORT category	Overall cohort n=90	High CONUT n=42	Low CONUT n=48
Tier 1. Infection control with no continued antibiotic therapy	42 (46.7)	9 (21.4)	33 (68.8)
Tier 2. Infection control with suppressive antibiotic therapy	0 (0.0)	0 (0.0)	0 (0.0)
Tier 3A. Aseptic revision at >1 year from initiation of PJI treatment	2 (2.2)	1 (2.4)	1 (2.1)
Tier 3B. Septic revision at >1 year from initiation of PJI treatment	2 (2.2)	2 (4.8)	0 (0.0)
Tier 3C. Aseptic revision at ≤1 year from initiation of PJI treatment	2 (2.2)	2 (4.8)	0 (0.0)
Tier 3D. Septic revision (including DAIR) at ≤1 year from initiation of PJI treatment	13 (14.4)	8 (19.0)	5 (10.4)
Tier 3E. Amputation, resection arthroplasty, or arthrodesis	3 (3.3)	3 (7.1)	0 (0.0)
Tier 3F. Retained spacer	0 (0.0)	0 (0.0)	0 (0.0)
Tier 4A. Death ≤1 year from initiation of PJI treatment	10 (11.1)	9 (21.4)	1 (2.1)
Tier 4B. Death >1 year from initiation of PJI treatment	16 (17.8)	8 (19.0)	8 (16.7)

18 Among the 2 tier 3B cases, the same pathogen as previously identified was isolated in 2/2 (100%). Among
 19 the 13 tier 3D cases, the same pathogen was isolated in 1/13 (7.69%), cultures were negative in 8/13

(61.54%), and superinfection occurred in 4/13 (30.77%) (2 methicillin-resistant *Staphylococcus epidermidis*; 1 methicillin-resistant *Staphylococcus aureus* and 1 *Proteus mirabilis*).

Supplementary Table S5. Exploratory biomarkers across outcomes. Values are presented as median [IQR] for patients with versus without each outcome.

Biomarker	Failure	p value	Total failure	p value	Overall mortality	p value
CRP, mg/L	113.0 [48.6–163.5] vs 44.3 [15.9–118.4]	0.051	63.3 [28.0–141.3] vs 46.4 [13.7–161.5]	0.532	52.6 [28.0–126.1] vs 48.6 [12.8–167.6]	0.815
CAR	37.2 [16.0–51.1] vs 14.0 [4.3–39.5]	0.035	23.7 [8.9–46.0] vs 14.4 [3.8–44.7]	0.321	15.1 [9.8–40.1] vs 15.7 [3.6–50.4]	0.558
NLR	4.8 [2.7–8.0] vs 3.6 [2.0–5.4]	0.099	4.5 [2.5–7.1] vs 3.5 [1.9–5.4]	0.095	3.9 [2.3–6.4] vs 3.4 [1.9–5.9]	0.230

Bold indicates statistically significant differences (p<0.05). CRP: C-reactive protein; CAR: CRP-to-albumin ratio; NLR: neutrophil-to-lymphocyte ratio; IQR: interquartile range.