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Functional capacity among survivors of Gram-negative bloodstream infection and risk factors for functional decline

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Background: Few data are available on the long-term trajectory of sepsis among adults. We monitored functional capacity (FC) among adult survivors of Gram-negative bloodstream infections (GNBSI) and assessed risk factors for functional decline (FD).

Material/methods: We included adults with community, healthcare or hospital-acquired GNBSI of any source, clinically stable on day 7 from start of covering antibiotics. We excluded patients with

persistent bacteremia, uncontrolled focus or other unresolved infection; polymicrobial bacteremia involving Gram-positive, anaerobes or *Candida* species in addition to Gram-negatives; CVC-associated bloodstream infections when the catheter was retained, endemic infections, and patients with neutropenia. We recorded FC on a 4-point scale at baseline, at onset of infection, at discharge from hospital, at 30 and 90 days via telephone interviews. FD was assessed at 90 days among survivors and defined a decline of 1-point or more from baseline to day 90. Patients who were bedridden at baseline were excluded. Risk factors assessed included patient demographics; background conditions; indwelling catheters and devices; source of infection; place of acquisition; appropriateness of empiric antibiotic treatment in the first 48 hours, sepsis presentation including the SOFA score at onset. Univariate and backward logistic regression analyses were conducted.

Results: The cohort included 276 patients, of whom 36 died and 17 were bedridden at baseline; thus 223 were included in the analysis. FD occurred in 62/223 (27.8%) and 63/223 (28.3%) patients on days 30 and 90, respectively. On univariate analysis significant factors associated with FD at 90 days included higher Charlson score, chronic pulmonary disease, congestive heart failure, diabetes with complications, inappropriate empirical antibiotics, dependent status on admission, age, glucose, creatinine and platelets at onset of infection. Male sex, the McCabe and SOFA scores were non-significantly associated with FD. Blood pressure and WBC at onset were non-significant. On multivariable analysis, inappropriate empirical antibiotics, dependent status on admission and higher platelets and glucose remained significant (Table).

Conclusions: Inappropriate empirical antibiotic treatment is a strong determinant of FD, more important than age.

Risk factors	**Univariate OR (95%CI)**	**P Value**	**Multivariate OR (95%CI)**	**P Value**
Age	1.024 (1.002-1.046)	0.033	Non-significant	
Male sex	1.567 (0.871-2.817)	0.134		
Independent status at admission	0.369 (0.202-0.673)	0.001	0.328 (0.171-0.629)	0.001
Chronic pulmonary disease	3.187 (1.325-7.667)	0.007	Non-significant	
Severe congestive heart failure	3.900 (1.611-9.444)	0.003	Non-significant	
Diabetes None Without complications With complications	 Reference 1.494 (0.773-2.887) 2.920 (1.139-7.485)	0.02	Non-significant	
Charlson score, per unit	1.270 (1.102-1.463)	0.001	Not entered	

McCabe score None Ultimately fatal Fatal	 1.489 (0.622-3.563) 2.109 (0.696-6.391)	0.316		
Creatinine (mg/dL) at onset	1.317 (1.021-1.699)	0.034	Non-significant	
Platelets (K/μL) count at onset	1.004 (1.001-1.007)	0.013	1.003 (1.000-1.006)	0.029
Glucose (mg/dL) at onset	1.005 (1.001-1.009)	0.014	1.004 (1.000-1.009)	0.041
SOFA score, per unit	1.194 (0.987-1.144)	0.068		
Appropriate empirical antibiotics	0.312 (0.152-0.641)	0.002	0.283 (0.127-0.630)	0.002