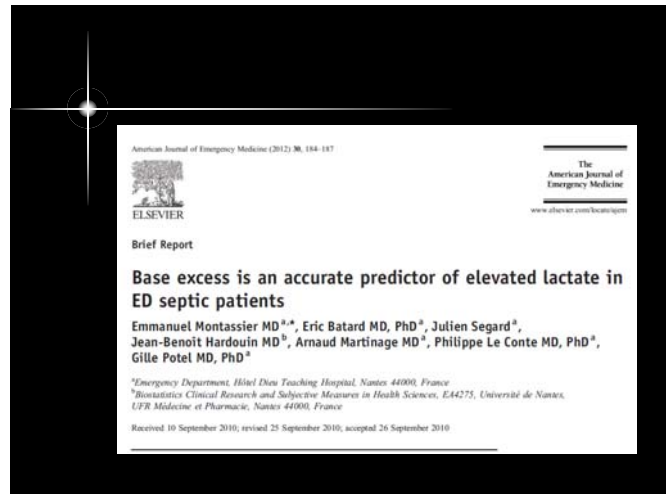


Journal Meeting

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introduction

- Early and accurate identification sepsis is difficult at ED
- Lactate may be available within minutes in the management of severe sepsis and septic shock
- Elevated ED lactate is an indicator of increased likelihood of death in septic patients

introduction

- Lactate measurement through point-of-care testing is not currently developed in all the Eds
- Base excess (BE) is obtained within few minutes, simply and fast
- Using BE, as a surrogate marker for elevated lactate

Methods

- Prospective observational cohort study took
- Teaching hospital ED of the city of Nantes(annual ED census is approximately 70 000 patients)
- From March 2009 to March 2010.

Inclusion criteria

- suspected infection with
- BT > 38.5°C, < 36°C
- 2 or more of the following
- SBP < 100 mmHg
- HR > 120/min
- RR > 30/min
- signs of tissue hypoperfusion

Exclusion criteria

- >18 y/o
- Already received fluid resuscitation
- Already received a vasopressor agent
- Serious arrhythmia

Data collection and analysis

- Clinically significant lactate to be greater than 3 mmol/L and BE less than -4 mmol/L
- A confirmatory review by an independent researcher, blinded to the initial BE and lactate results, to affirm the presence of an infection \rightarrow if that the patient did not have sepsis, the case was then excluded,
- The analysis was performed with the Pearson χ^2 test.

Result

- 224 patients were enrolled
- 120 (53.6%) were men and the mean age was 56.3 years
- average lactate of 3.5 mmol/L (SD, 2.9 mmol/L) and an average BE mean of -4.5 mmol/L (SD, 4.9 mmol/L).

Table 1 Operating characteristics for a BE less than -4 mmol/L for predicting a lactate greater than 3 mmol/L

	Lactate <3	Lactate >3
BE greater than -4	109	9
	NPV = 92.4% (95% CI, 87.6-97.2)	
	Sp = 88.6% (95% CI, 83.0-94.2)	
BE less than -4	14	92
		PPV = 86.8% (95% CI, 80.3-93.2)
		Se = 91.1% (95% CI, 85.5-96.6)

Pearson $\chi^2 = 141.3, P < 1.10^{-4}$

Se indicates sensitivity; Sp, specificity; NPV, negative predictive value; PPV, positive predictive value.

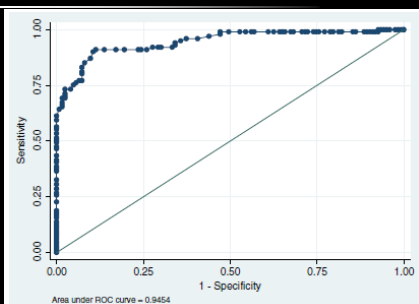


Fig. 1 The ROC curve for BE less than -4 mmol/L as a predictor of lactate greater than 3 mmol/L.

Discussion

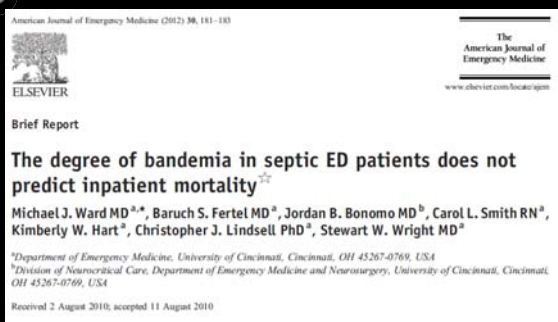
- BE less than -4 mmol/L is efficient to predict elevated lactate in the ED septic population
- BE can be used to start aggressive resuscitation and to question ICU admission.
- BE could be performed at ED triage for early identification of septic patients

study limitations

- the limited sample size
- Did BE actually leads to a significant decrease in the time to EGDT initiation?
- the level of acidemia and lactate elevations were overall pretty mild (correlations may vary slightly)
- other thresholds may have been chosen for lactate and BE.

Conclusion

- sensitivity of 91.1% and a specificity of 88.7%, BE proves to be an efficient tool in the prediction of elevated lactate.
- BE provides an accurate method to determine the patients with sepsis who are in need of early aggressive resuscitation and may help to improve sepsis management in the ED.



Background

- several clinical scoring algorithms but → the requisite data are not routinely available at ED
- The Mortality in Emergency Department Sepsis (MEDS) score → underestimates inpatient mortality, and it lacks prognostic accuracy
- To test the hypothesis that increasing bandemia is a predictor of inpatient mortality in septic patients eligible for EGDT at presentation to the ED.

Methods

- retrospective study
- period March to September for both 2008 and 2009.
- admitting diagnosis or hospital discharge diagnosis of sepsis --- via ICD
- Patients were included in this study if they presented to the ED and were eligible for EGDT.
- lactate level greater than or equal to 4 mmol/dL
- only patients 18 years or older with a differential of the complete blood count performed in the ED

Method

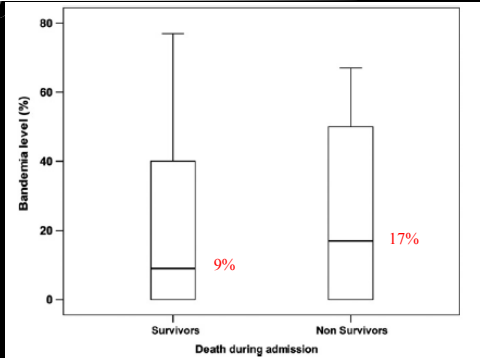
- χ^2 tests or Fisher exact tests were used to compare categorical variables.
- Bandemia levels were compared between survivors and nonsurvivors using the Mann-Whitney U test.
- Univariable logistic regression was used to assess the relationship between bandemia level and inpatient mortality

Results

	Survivor (n = 62)	Nonsurvivor (n = 32)	P value*
Age	57.2 (15.4)	61.6 (16.4)	.200
Race			
White	32 52.5%	17 53.1%	.951
Nonwhite	29 47.5%	15 46.9%	
Sex			
Male	32 51.6%	16 50.0%	1.000
Female	30 48.4%	16 50.0%	
Admit location			
ICU	34 70.8%	25 92.6%	.011
Step down	12 25.0%	1 3.7%	
Floor	2 4.2%	0 0.0%	
OR	0 0.0%	1 3.7%	
Payor			
Medicaid or other federal	44 75.9%	18 58.1%	.072
Self pay	8 13.8%	4 12.9%	
Private insurance	6 10.3%	9 29.0%	
Acuity			
1	4 7.3%	2 8.0%	.920
2	41 74.5%	18 72.0%	
3	10 18.2%	5 20.0%	
EGDT met			
No	51 82.3%	27 87.1%	.766
Yes	11 17.7%	4 12.9%	

Data are presented in mean and standard deviation or counts and percentages (n = 94). ICU indicates intensive care unit; OR, operating room.
* χ^2 or Fisher exact test.

Results



Discussion

- There was no evidence to support the hypothesis that bandemia level is associated with survival in patients with sepsis
- lack of evidence → retrospective study design, limited sample size, potential inclusion biases
- eligibility for EGDT may affect the result

Conclusion

- This study does not support an association between bandemia and inpatient mortality among patients eligible for EGDT