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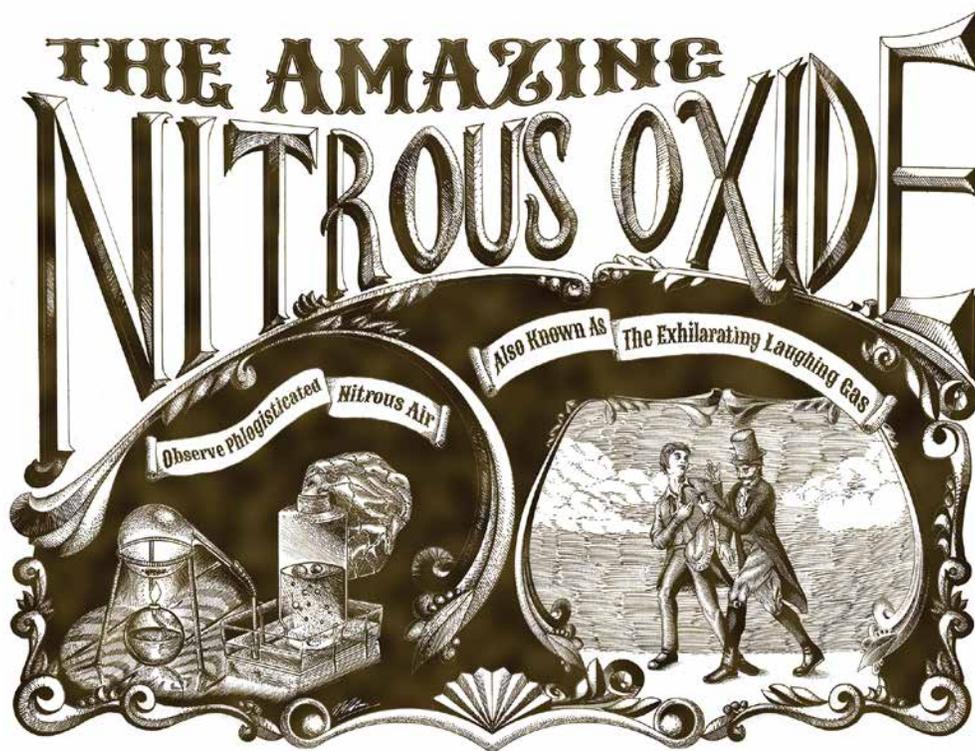
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INTRAOPERATIVE HYPOTENSIVE EXPOSURE PORTENDS ADVERSE 30-DAY SURVIVAL IN PATIENTS WITH LOW CO-MORBIDITY

AUTHORS: W. H. Stapelfeldt¹, J. Dalton², P. Bromley¹, J. Cywinski¹, M. Reynolds¹, B. Ghosh¹

AFFILIATION: ¹General Anesthesiology, Cleveland Clinic, Cleveland, OH; ²Quantitative Health Sciences, Cleveland Clinic, Cleveland, OH

INTRODUCTION: Recent studies identified intraoperative hypotensive exposure (blood pressure dropping below certain MAP thresholds for cumulative periods of time extending beyond certain exposure limits) to portend increased risk of 30-day postoperative mortality¹. Such increased risk is conventionally thought to primarily affect “sick” rather than “healthy” patients. The present study was designed to examine the association of hypotensive exposure with 30-day survival in patients of varying baseline comorbidity as reflected in their Charlson Co-Morbidity score.

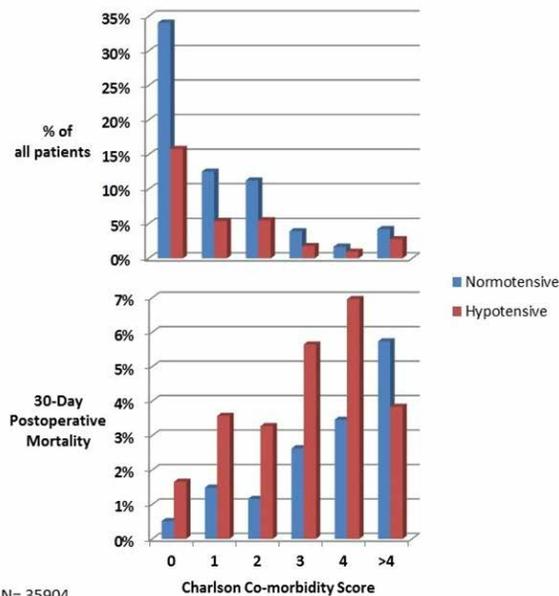
METHODS: With IRB approval our registry was examined retrospectively for adult patients undergoing non-cardiac surgery between January 1, 2009 and September 30, 2010. The Charlson Co-Morbidity score (CCS) was determined as previously described². Minute-to-minute mean arterial blood pressure (MAP) readings were analyzed for periods of time spent below hypotensive thresholds ranging from 75 to 45 mm Hg. A patient was considered to have experienced hypotensive exposure if at least one of the previously established exposure limits (20% risk set) were exceeded for cumulative time spent below their respective MAP threshold¹. The roles of CCS, hypotensive exposure and their possible interaction in affecting 30-day mortality were examined using logistic regression, with a Bonferroni-adjusted p-value of < 0.05 being considered significant.

RESULTS: Hypotensive exposure was common (in approx. one third of patients), regardless of the CCS (Figure 1, top panel), and was associated with increased 30-day mortality (Figure 1, bottom panel). CCS and hypotensive exposure exhibited a highly significant interaction (P<0.001, Wald test), supporting the hypothesis that the association between hypotensive exposure and adverse outcome was dependent upon the CCS, portending the greatest increase in mortality in patients with a CCS of 0, a gradually lesser increase in progressively sicker patients, and a potentially protective effect in patients with a CCS of >4 (Figure 2).

DISCUSSION: Hypotensive exposure is commonly encountered and adversely affecting 30-day survival. Contrary to conventional belief this association is not linked to greater co-morbidity (higher CCS scores) but is most prominent in the largest and healthiest fraction of patients with a CCS of 0.

References:

1. Stapelfeldt WH, Dalton J, Bromley P, Takla G, Cywinski J, Reynolds M, Ghosh B. Risk-based decision support thresholds for hypotension in adult patients undergoing non-cardiac surgery. American Society of Anesthesiologists Meeting, 2012.
2. Deyo RA, Cherkin DC, Ciol MA. Adapting a clinical comorbidity index for use with ICD-9-CM administrative databases. J Clin Epidemiol 1992; 45(6): 613-9.



N= 35904

CCS	Odds Ratio [95% CI]†	P-Value‡
0	3.25 [2.11, 5.01]	<0.001*
1	2.45 [1.55, 3.88]	<0.001*
2	2.88 [1.73, 4.80]	<0.001*
3	2.22 [1.18, 4.17]	<0.001*
4	2.09 [0.93, 4.69]	0.017
>4	0.66 [0.39, 1.11]	0.033

† Ci=Confidence interval; Confidence intervals adjusted for multiple comparisons using the Bonferroni method. P-values assessed against a Bonferroni-adjusted critical value of 0.0083 (statistical significance indicated by asterisks (*)).