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ADMISSION GLUCOSE AND ICU MORTALITY IN ABDOMINAL AORTIC ANEURYSM PATIENTS: A RETROSPECTIVE ANALYSIS OF THE MIMIC-III CLINICAL DATABASE

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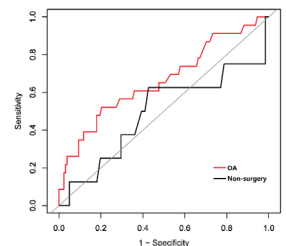
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Statement of the Problem: Abdominal aortic aneurysm (AAA) affects about 10% of men aged 70 and the mortality can up to 85 to 90% once it ruptures. The association between admission glucose and ICU mortality in AAA patients remained controversy in previous studies. Though hyperglycemia has been reported as the important determinant of mortality for AAA in several retrospective studies, the significant association was not observed between the trend in AAA mortality and trend in blood glucose from the population in 19 western countries. We aimed to replicate these studies and assessed the effect of hyperglycemia on ICU mortality in patients with AAA.

Methodology & Theoretical Orientation: A retrospective study was conducted in Multiparameter Intelligent Monitoring in Intensive Care III (MIMIC III) database. The potential risk factors were selected from the univariate analysis and applied into the multivariate analysis. Then, the receiver operating characteristic (ROC) curve and the area under the curve (AUC) were used to confirm the power of predictive effect.

Findings: A total of 225 patients with 32 ICU deaths and 192 patients alive were included. After the correction of potential confounding factors, such as age, AAA condition, diabetes and so on, admission glucose was significantly associated with the mortality in patients undergoing surgery (OR 1.009; 95% CI 1.002-1.015), not observed in non-surgery patients. Further ROC curve indicated that glycemic status had the better predictive value for the mortality in the surgery group (AUC=0.6624) than the non-surgery group (AUC=0.4908). The glucose level at 200 mg/dl was demonstrated as the best threshold.

Conclusion & Significance: The association between high glucose concentration and poor survival was confirmed in the AAA patients undergoing surgery; but not observed in the non-surgery group, which provided the potential answer to the controversy and highlighted the positive screening and aggressive glucose control before AAA surgery.



Recent Publications

1. Kai H, Xixia L, Miaoyun L, et al. (2017) Intraoperative nerve monitoring reduces recurrent laryngeal nerve injury in geriatric patients undergoing thyroid surgery. *Acta Oto-Laryngologica* 137(12):1275-1280.
2. Huang K, Luo D, Huang M, et al. (2013) Protection of parathyroid function using carbon nanoparticles during thyroid surgery. *Otolaryngology-Head and Neck Surgery* 149(6):845-850.
3. Tang Y, Chen J, Huang K, et al. (2017) The incidence, risk factors and in-hospital mortality of acute kidney injury in patients after abdominal aortic aneurysm repair surgery. *BMC Nephrology* 18(1):184.
4. Luo D, Chen H, Lu P, et al. (2017) CHI3L1 overexpression is associated with metastasis and is an indicator of poor prognosis in papillary thyroid carcinoma. *Cancer Biomarkers* 18(3):273-284.

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5. Jiang Y, Wang M, Huang K, et al. (2012) Oxidized low-density lipoprotein induces secretion of interleukin-1 β by macrophages via reactive oxygen species-dependent NLRP3 inflammasome activation. *Biochemical and Biophysical Research Communications* 425(2):121-126.

Biography

Huang Kai is the expert in the surgery of peripheral vascular surgery and thyroid surgery. He spares no effort to improve the survival in surgery and

find out the potential factor to predict the outcome after surgery, especially the surgery in abdominal aortic aneurysm, which is with high mortality.

Chen Qinchang, Male, born in January 1995, student of Dr Huang Kai, has been studying in Clinical Medicine Major of Zhongshan School of Medicine in Sun Yat-sen University from August 2013. Without any unexpected accident, he will be awarded the Bachelor Degree in Medicine. Though he is the undergraduate at Grade 5, he has been the expert at data mining, gene chip analysis and clinical research.

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