

**General Session-IV
Trauma-II**

Monday, 10 May, 14:30–15:45 hours

Chair: Kwo-Syin Wang, Tetsuo Yukioka

G-15

Serial AKBR Measurements after Hemorrhagic Shock and the Degree of Hepatic Mitochondrial Damage

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Introduction: During a profound and prolonged shock, hepatic mitochondria yield to severe, functional, and structural damage that may not recover quickly after fluid resuscitation. It is difficult to assess the mitochondrial damage through conventional hepatic functional tests. Arterial ketone body ratio (AKBR) is a parameter that reflects hepatic mitochondrial redox status, and closely correlates with hepatic energy production, which is a fundamental function of liver mitochondria. Effects of massive hemorrhage on hepatic mitochondrial function with or without cirrhosis were studied by serial measurement of AKBR.

Methods: AKBRs were measured repeatedly in three groups, A, B, and C. Group A consisted of 30 trauma victims admitted due to hemorrhagic shock (systolic blood pressure (BP) <80 mmHg), without any liver disease. Group B were cirrhotic patients admitted due to ruptured esophageal varices, without shock between 1993 and 1998 (n = 24). Group C consisted of cirrhotic patients admitted due to ruptured esophageal varices with shock between 1993 and 1998 (n = 14). The AKBR recovery rate was calculated from the gradient of initial recovery and expressed as AKBR/24 hours.

Results: On admission, average systolic BPs were 65 ± 3, 122 ± 3, and 66 ± 3 mmHg; AKBRs were 0.29 ± 0.04, 0.49 ± 0.04a, and 0.27 ± 0.04; and, AKBR recovery rates were 2.28 ± 0.52, 0.21 ± 0.04^a, and 0.06 ± 0.05^{a,b}, in groups A, B, and C, respectively (Mean ± SEM^{a,b} significant vs. Groups A, B, respectively; p < 0.05). The AKBRs of Groups A and C on admission to the hospital were decreased highly, which reflected reduced hepatic mitochondrial redox status during the shock. After resuscitation, the AKBR levels recovered quickly in Group A, which indicated temporary mitochondrial dysfunction that was due to extrinsic reasons, indicated by markedly decreased AKBR. Although resuscitation was similarly successful, the AKBR recovery rate was low in cirrhotic patients, particularly in those with shock (Group B), which indicated hepatic mitochondria yielded intrinsic damage.

Conclusion: Hepatic mitochondria in cirrhotic patients, are vulnerable to massive hemorrhage, particularly after

profound shock. Serial measurement of AKBR enables assessment of the degree of hepatic mitochondrial damage and the extent of the deterioration in hepatic energy metabolism during and shortly after hemorrhagic shock. **Keywords:** Arterial ketone body ratio (AKBR); assessment; measurements; blood pressure; cirrhosis; hepatic damage; hypovolemia; liver; mitochondrial damage; shock, hemorrhagic; trauma

G-16

Socio-Economic Impact of Stab and Gunshot Wounds: A Descriptive Study on Patients Admitted to Manila Central University Hospital

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One hundred fifty-eight (158) consecutive stab and gunshot victims were admitted to the Department of Surgery, Manila Central University Hospital (MCUH) from 01 October, 1997 through 31 October, 1998. Ninety-four percent (94.3%) of the victims were male with ages ranging from 16 to 60 years (mean age = 26 years). These incidents usually were caused by fights (63.0%), and frequently were related to alcohol intake. The average hospital stay was 8.2 days that cost an average of 1,109.92 pesos (US\$ 27.74*) per day if a minor operation was required, and 4,552.67 pesos (US\$ 113.82*) per day for a major procedure. Total expenses for a patient admitted to the clinical division (clinical service) averaged 23,215.73 pesos (US\$ 580.39), and 70,317.95 pesos (US\$ 1,757.95*) if admitted as a private patient. Specific components of hospital expenses were analyzed and suggestions made for lowering costs. Employed patients lost 1,197.00 pesos income** (US\$ 29.92*) and 6.2 work-days on the average while hospitalized with an average total loss of 3,440.00 pesos (US\$86.00) and 24 work-days during convalescence.

Recommended steps for reducing cost include prevention and education based on knowledge of causes, government subsidies, and upgrading of health insurance programs.

* Based on foreign exchange rate of 1 US dollar = 40 Philippine pesos.

** Average minimum daily wage of 150 pesos (US \$3.75).

Keywords: costs; demography; education; gunshot wounds; insurance, health; Manila; prevention; socio-economic impact; stabbing; subsidies; trauma;

G-17: Splenic Preservation Using a Harmonic Scalpel and Linear Stapler

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