

## 44562 - DELIRIUM AND ORGANIC BRAIN INJURY AFTER CARDIAC SURGERY

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**INTRODUCTION:** Cumulative neuroimaging and clinical correlation evidence indicates that ischemic brain injury is responsible for the development of global neurological deficit after cardiac surgery. The objective of this study was to determine a relationship between the organic brain injury and postoperative delirium in patients undergoing cardiac surgery.

**METHODS:** Following REB approval we enrolled 49 patients over 60 years of age undergoing cardiac surgery with cardiopulmonary bypass (CPB). Patients were assessed for delirium preoperatively and postoperatively daily for 7 days using the Confusion Assessment Method in Intensive Care Unit (CAM-ICU). Patients who were CAM-ICU 'positive' were examined by a psychiatrist to confirm the diagnosis of delirium and were scheduled to undergo either brain diffusion weighted magnetic resonance imaging (DW-MRI) or computed tomography (CT) scanning. Data expressed either as mean  $\pm$  SD or median (range).

**RESULTS:** 7 out of 49 patients (14%) experienced delirium following cardiac surgery. Patients with and without delirium were similar with respect to demographic data and surgical characteristics. Independent predictors of delirium included preoperative hemoglobin  $<$  130 mg/dL ( $p=0.01$ ), intraoperative blood glucose  $>$  8.5 mmol/L ( $p=0.003$ ), and the aortic cross clamp time  $>$  67 min ( $p=0.006$ ). Neuroimaging was acquired in 5 patients with delirium. Four patients showed the signs of acute ischemic changes in different areas of the brain. <Table> Hospital length of stay (LOS) was 7(7; 23) vs 6 (4; 14) days,  $p=0.005$  in patients with and without delirium respectively.

**CONCLUSIONS:** Delirium after cardiac surgery with CPB is relatively common and serious complication after cardiac surgery. It is associated with organic brain injury and longer hospital LOS.

Table 2. Neuroimaging findings

Patients	Age (years)	Gender	Procedure	Neuroimaging findings
1	73	M	ACB x 4	MRI: signs of an ischemic infarct
2	65	M	ACBx1, Bentall procedure	CT: areas of recent ischemia in both cerebral hemispheres
3	75	M	MVR	MRI: areas of recent ischemia in both cerebral hemispheres and right thalamic stroke
4	81	F	MVR	CT: microangiopathic changes and encephalomalacia involving left temporal and frontal lobes
5	72	M	Redo AVR, ACBx2	MRI: Acute infarction in the left parieto-occipital lobe