Title: MIS-C Post Covid in Children with LDLT
Presenter: Associate Professor Dr. Gan Chin Seng
Abstract:
Multisystem Inflammatory Syndrome in Children (MIS-C) is a condition manifests as fever with organ dysfunction involving of two or more organ systems in combination with laboratory evidence of inflammation and epidemiologic or laboratory evidence of COVID-19 infection. This is a potentially life threatening post-infectious condition related to COVID-19, usually happens 2 – 6 weeks following an asymptomatic or mild COVID-19 infection in previously healthy children. However, MIS-C also have been reported up to 3 months post COVID-19 infection in the literature. Clinical presentation of MIS-C can resemble Kawasaki disease, toxic shock syndrome, and secondary haemophagocytic lymphohistiocytosis. COVID-19 in paediatric transplant recipients has been infrequently reported but MIS-C in patients of post solid organ transplant is rarely reported.

We present a 2-and-a-half-year-old Malaysia Chinese girl with end-stage liver failure secondary to biliary atresia and Alagille syndrome. She underwent living donor liver transplant. The operation was complicated by disseminated intravascular coagulopathy which was managed successfully and she was stabilised with mild acute kidney injury (AKI) and supported with single vasoactive agent. At Day-3 post-transplant, she was found to have worsening of systemic inflammatory response with increasing abdominal distension and multiorgan dysfunction. She was treated as intraabdominal sepsis and antibiotics were escalated to IV Meropenem and IV Ampicillin. Her blood investigation showed raised inflammatory markers which C-reactive protein of 88mg/L, procalcitonin 19ng/ml, with thrombocytopenia $41x10^9$/L. Her condition didn't improve, and at Day-7 post-transplant, she progressed to a hyperinflammatory state with high fever with haemodynamic instability, worsened thrombocytopenia, worsened liver function with raised transaminases, worsened lung oxygenation, AKI and raised cardiac enzymes. She fulfilled CDC criteria for MIS-C. Her repeated investigations revealed that she was Covid-19 IgG positive, D-dimer 21291ng/ml, serum ferritin, 19196ug/L, LDH 2680IU/L. She was treated with intravenous immunoglobulin and IV Methylprednisolone. The retrospective history revealed that she had a close contact exposure to a confirmed COVID-19 infection 7 weeks prior to the transplant. The donor was also infected about the same time but this child was tested negative for COVID-19 RTK test when she developed fever 2 days after that. She was also commenced on continuous kidney replacement (CKRT) for hyperammonaemia and worsening AKI. Despite treatment, her condition was complicated by cerebral intraparenchymal bleed with extensive left middle cerebral artery infarct with uncal herniation 3 days after the MIS-C diagnosis and treatment. Emergency craniotomy, evacuation of blood clots and partial parietal lobectomy was performed on the next day after optimization and stabilization. The follow-up investigation for inflammatory markers were reducing trend except D-dimer. All cultures (tracheal secretion, blood, peritoneal fluid, swab from surgical site) were negative for infection. Ultrasound doppler scan of hepatic and main vessels showed thrombus at right IJV, reduced PSV and RI value of hepatic artery. She didn't recover from the neurological complication and remained to have absent brainstem reflexes. Withdrawal of life-sustaining therapy was carried out at Day 20 post-transplant.

Conclusion: This case illustrates that MIS-C could happen in recipients who had recent COVID-19 infection with hyperinflammation state, multiorgan dysfunction and thrombosis. Screening recipient for their past COVID-19 infection and high-index of suspicious of this condition in children are important to avoid the lethal complications. We propose to withhold liver transplant for non-urgent indication for at least 3 months post COVID-19 infection in children.