THE CHALLENGE OF FLYING CHEST DRAIN ACROSS THE MOUNTAINS

NUR FARADILLA MOHD FISHOL, KUCK JEE YEN

JABATAN KECEMASAN DAN TRAUMA, HOSPITAL WANITA DAN KANAK-KANAK SABAH, MALAYSIA

**INTRODUCTION**: Medical Evacuation (Medevac) services in Sabah, coordinated by three tertiary hospitals in Kota Kinabalu, frequently transfer critically ill patients from district hospitals to tertiary centers for urgent intervention.

**CASE DESCRIPTION**: A four year-old girl involved in motor vehicle accident sustained grade 2 liver injury, grade 3 pancreatic injury, right adrenal hematoma and bilateral pneumothorax with lung contusion. A chest tube was inserted on the right side. Subsequently, her condition deteriorated requiring intubation, blood transfusion and hemodynamic support with inotropes. She was referred to Paediatric Surgical Team for urgent intervention. Medevac was activated to transfer her from Tawau Hospital to Paediatric Surgical Intensive Care Unit at Sabah Women and Children Hospital (SWACH) in Kota Kinabalu.

**DISCUSSION**: Transferring patient with pneumothorax by helicopter is challenging, especially across Sabah’s mountainous terrain with varying peaks. According to Boyle’s Law, the volume of gas is inversely proportional to its pressure. At high altitude, reduced atmospheric pressure can significantly expand the pneumothorax. Meticulous strategies were implemented, including multidisciplinary coordination, flying at the lowest safe altitude, careful positioning and packaging of the patient, keeping the chest tube unclamped with the underwater-sealed bottle below chest level, and continuous vital signs monitoring throughout the journey.

**CONCLUSION**: Optimizing the patient’s condition before flying is crucial. Modifications were made to ensure safe transfer of pneumothorax patient, particularly in a non-pressurized cabin. Thorough preparation of the team and equipment, considering available resources, geographical factors, and understanding the physics and physiological management, are paramount.

**KEYWORDS**: Pneumothorax, Air travel, Altitude