Standard Operating Procedure: Bronchoscopy and Bronchoalveolar Lavage

1. Pre-procedure Evaluation
    a. Evaluate for risk factors (bronchoscopy to be avoided or conducted with caution in patients with risk factors)
        i. Difficulty with oxygenation and ventilation during and after procedure
            1. Peep > 14
            2. Inability to tolerate decreased minute ventilation
            3. High FIO2 requirements prior to initiating procedure
        ii. Elevated ICP. Acute change in minute ventilation and airway pressures will acutely elevate ICP
        iii. Presence of coagulopathy
            1. INR >1.5
            2. Plt < 20,000
    b. ET tube size greater than 7.5 mm diameter tube
    c. Monitoring:
        i. Continuous pulse-oximetry
        ii. Continuous ECG monitoring
        iii. Arterial line or q3 minute blood pressure monitoring
        iv. Completion of documentation for Sedation/paralysis surrounding procedure

2. Procedure Preparation
    a. Bronchoscopy cart should be brought to bedside and all equipment examined and verified to be in working order.
    b. Equipment:
        i. Bronchoscope and light source
        ii. Wall suction
        iii. Saline for irrigating suction port and clearing/cleaning suction port on scope
        iv. Saline flushes
        v. Non-leurlock 20 cc syringes
        vi. Sputum trap
        vii. Drape and sterile towels
    c. Ventilator adjustments (Respiratory therapist or appropriate faculty/fellow to make changes)
        i. 100% FIO2
        ii. Mode with mandatory minute ventilation – usually volume control /AC
        iii. Settings should be adjusted to maintain at least the pre-procedure minute ventilation that was being delivered to patient before changing the ventilator or medicating patient
        iv. Patients may require frequent interruption of procedure to maintain ventilation

3. Procedure
    a. Refer to Bedside Surgery Protocol
    b. Medication for procedure:
        i. Sedation with combination of narcotic/benzodiazapam/ propofol
        ii. Supplemental sedation for increased BP and heart rate
        iii. Paralytic agent (vecuronium or cisatracurium if hepatic or renal insufficiency suspected)

c. Procedure
    i. Insert bronchoscope, inspect trachea and clear tracheal secretions
    ii. Systematically inspect main and segmental bronchi, clearing secretions and blood
d. Performance of Bronchoscopic alveolar lavage:
    i. Clear large airways of secretions as needed
    ii. Advance bronchoscope to the terminal bronchi of the area of concern on CXR and wedge
    iii. Irrigate with 20 cc aliquot and discard to reduce upper airway flora and contamination in specimen
    iv. Irrigate with second 20 cc aliquot while remaining in wedge position in the identified bronchus. Return of volumes may require a slight "in and out" motion of the bronchoscope.
    v. Collect the 20 cc aliquot in a single sterile sputum trap
    vi. Repeat on opposite side
e. Send for quantitative bacterial cultures by typing in BRP, selecting bronchoscopic lavage and typing in " quantitative culture from X lobe"

4. Post-bronchoscopy procedures:
    a. Post-bronch Chest Xray
    b. Clean the suction port by suctioning First Step solution
    c. Wipe the outside with Wex-cide solution
    d. Place in bronchoscope in container and return to front desk- ICU side in plastic

Authors:
Brad Dennis, MD
Elizabeth Krebs, MD
Christian Carpenter, RN

Revised: April 2024, Feb 2021, March 2018