ABSTRACT

Failure of ventilation of an anesthetised patient due to problems in mechanical ventilator is not uncommon. The proper functioning of machine should be ensured before anesthetising a patient by the automated checking system or manually by the attending anaesthesiologist. However, sudden malfunction of some system of the machine during operation may cause the ventilator to stop risking the patient’s life. About one third of the equipment problems are due to anesthesia machine and one quarter of the problems are due to human error. We present a case of malfunction of anesthesia ventilator due to an unusual cause of blockage of anesthesia gas scavenging system.
back of the machine which was obstructing the anesthetic gas scavenging system hence blocking the outflow of the machine causing back pressure.

This was one of the unusual causes of malfunction of the ventilator that we encountered, which was reported to department critical incident recording system.

DISCUSSION

Intraoperative problem is defined as “the event that requires one or more measures, either to prevent further complications or to treat a situation that is currently or potentially serious, and does not routinely occur during the conduct of anaesthesia.” The problem can be graded according to the severity. Severity ‘Grade 1’ is a trivial problem, ‘Grade 2’ is a moderately difficult problem, with some effect on the patient, but of a low severity. ‘Grade 3’ is a serious situation that either proves very difficult to handle or causes a serious deterioration in the patient’s state, which may or may not contribute to postoperative morbidity. ‘Grade 4’ problems are associated with a fatal outcome. The incidence and severity of problems can be affected by the anaesthesiologist’s vigilance, preparation, anticipation and management skill.\(^2\)

Intraoperative problems can be due to machine/equipment/s malfunction, human errors or patient related factors. The anaesthesia machine malfunction has been the commonest cause of equipment related morbidity and mortality. The breathing circuit problem has been identified the most common cause in
many reports. Currently, the malfunction incidence has been decreasing due to availability of high yield ventilator with facilities of self-testing.\textsuperscript{2}

There can be various causes of rise of airway pressure in the intraoperative period.\textsuperscript{4-7} We should always start checking from the patient chest, tube, circuit, valves or the exhaust system. In our case, once there was high pressure alarm during the controlled breath, we first switched to manually bag and mask ventilation to rule out causes related to chest, tube, circuit and valves. Once there was no problem identified, we switched to ventilator mode for controlled breaths. Soon after 6-8 breaths, there was alarm of high airway pressure. Thus, we looked distally to the expiratory valve i.e. soda lime canister and exhaust valve. We found the lead apron covering the opening of exhaust valve. This was the unusual cause of obstructing the exhaust valve which was detected in the initial minutes, thus the severity grade was trivial. This is an unusual example of shortcoming of relying only automatic check test by the ventilator as reported in a letter to editor by Joyal JJ et al.\textsuperscript{4}

Thus there should be a systematic approach for intraoperative high airway pressure. We should always begin right from the patient’s chest to endotracheal tube to breathing circuit or valves then to soda lime canister then to exhaust valve.

Thus anaesthesiologist should ensure the safety of patient by following the instructions proposed by ASA in 2008 and one should always consider, the auto checked ventilator can be malfunctioned any time in the intraoperative period.\textsuperscript{4} Besides, intraoperative vigilance, preparation and skill of tackling the problem of the attending anaesthesiologist would alter the incidence and severity grades of the problems. Finally, once any intra-operative problem is encountered then there should be system of reporting the critical incident recording system and they should be frequently analyzed. Lastly, the lead apron should be placed in a correct place to avoid unidentified mishaps.

REFERENCES: