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Background: Trisomy 18 is the second most common trisomy in newborns. Patients with trisomy 18 have multiple anomalies, with less than 10% surviving to one year without advanced treatment for heart disease. Although aggressive treatment is still controversial, some reports suggest that intensive treatment, including surgery, should be considered as it may improve life expectancy, facilitate hospital discharge, and improve QOL for both the patient and the family. However, it has been reported that airway management may be difficult. We report the anesthetic management of 65 cases of patients who underwent general anesthesia between April 2008 and October 2013 at our institution.

Results: The 65 cases involved 33 patients. The mean age, height, and weight were 177 ± 27 days, 47.5 ± 1.3 cm, and 2.7 ± 0.2 kg (mean \pm SE), respectively. There were 33 cardiac surgeries, including patent ductus arteriosus clipping and/or pulmonary artery banding (24), corrective heart surgery (6), and pericardial drainage (3). Other surgeries included gastrointestinal surgery (13), tracheotomy (6), cardiac catheterization (4), cleft lip and palate surgery (3), and individual specific surgeries (6). Twenty-five patients needed general anesthesia for cardiac catheterization, palliative, and/or corrective cardiac surgeries. However, 8 patients with underlying heart problems underwent only non-cardiac surgeries. One of the 6 patients who underwent corrective cardiac surgery died because of sepsis from respiratory infection, and the other 5 are still living. In 49 cases, neonatologists had already intubated before surgery, although intubation strategies and details were unclear. The tracheal tube was exchanged in 7 cases in the operating room. Visualization of the vocal cord was difficult by direct laryngoscope in 2 cases and a tube exchanger was used. In 16 cases, patients were intubated by anesthesiologists after induction of general anesthesia. Tracheal intubation by conventional methods was difficult in 4 cases (25%), and the assistance of other devices was required. There were minor difficulties in tracheal intubation in 4 cases (25%), and anesthesiologists used either a stylet or external laryngeal pressure with repositioning of the patient. Mask ventilation was slightly difficult in 2 cases.

Discussion: Patients with trisomy 18 require various kinds of surgery. Among 33 patients having co-existing cardiac problems, some received only non-cardiac surgeries due to parental request. Perioperative management of the non-cardiac surgeries proved challenging due to underlying heart conditions. In addition, since 25% of our cases involved difficult intubation, anesthesiologists need sufficient knowledge and experience in both pediatric cardiac anesthesia and airway management. Although indications of active surgical treatment for patients with trisomy 18 are still unclear, the number of patients requiring general anesthesia is increasing.

Conclusion: The number of patients with trisomy 18 undergoing surgery is increasing. As all our patients had heart conditions, and tracheal intubation was difficult in some cases, it is necessary for anesthesiologists to have sufficient knowledge and experience in pediatric cardiac anesthesia and airway management.
