Surgical Treatment of Patent Ductus Arteriosus in Premature Infants with Extremely Low Birth Weight

Chung-I Chang
Senior Associate Cardiac Surgeon, Section of Cardiovascular Surgery, Department of Surgery, National Taiwan University Hospital

The premature neonate who has a patent ductus arteriosus (PDA) with significant left-to-right shunt presents serious problems in management. Pharmacologic closure of the PDA with indomethacin seems to be the preferred initial treatment, with a high degree of success in many reports. However, indomethacin may increase the risk of brain intraventricular hemorrhage, necrotizing enterocolitis and renal failure. Besides, since indomethacin is not always successful, surgical intervention will be the definite subsequent therapeutic treatment. Many studies have proved that there is no increasing morbidity and mortality of surgical ligation of PDA in premature infants. Moreover, surgical ligation shortens the average duration of intubation period, unstable hemodynamic status, need of digoxin and diuretic and achieved gastrointestinal and renal function sooner after operation, especially in the extremely low birth weight (ELBW) neonates (< 1000 gm).

Dr. Hwang and his colleagues have performed excellent work for the treatment of PDA in premature infants with ELBW. The result is as good as that of many other reports. Although most of those studies have pointed out that surgical intervention will not increase the mortality and morbidity, this study presents four deaths within very short mean duration between postoperative death and surgery (4.3 days) in the group of surgery alone. It’s hard to say there was no correlation with surgery. Whereas, it probably means those premature neonates were quite sick. There was no treatment but surgery. Dr. Trus and his colleagues have suggested that primary surgical ligation may provide the optimal management of PDA in carefully selected patients with extremely low birth weight less than 800 gm and larger LA/AO ratio (≥ 1.5), who have high failure rate and significant complication in treatment with indomethacin.

Since transportation of critically ill, unstable infants from neonatal intensive case unit (NICU) to operation room creates problems, such as body temperature loss, vascular line disconnection, and inadequate ambulatory ventilation, which may increase surgical mortality and morbidity. Many reports have recommended performing the PDA ligation at the bedside of NICU. The studies indicated that it was safer and easier than transport to an operating room. In addition, an experienced team which consisted of a pediatric cardiac anesthesiologist and nurse anesthetist, cardiac operating room nurses, a pediatric cardiac surgeon and a cardiac surgical fellow, could even performed the NICU beside PDA ligation in off-site referring institutes to minimize the risk of the transportation inconvenience. In Dr. Hwang’s study, only one of 22 infants underwent PDA ligation at the NICU bedside, presenting no increased mortality and morbidity compared with the results of the group treated with indomethacin. The impressive outcome means excellent team work. However, what Dr. Hwang didn’t mention is any complication or death caused by the transportation to the operating room. I would like to recommend bedside ligation of PDA to such an outstanding team. The bedside procedure is not only safe and effective but also less costly for hospitalization.

REFERENCES


