

Usefulness of telemedicated echocardiograms for neonates admitted to NICU

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Introduction: Recent advances in telecommunication technology have made it possible to transmit echocardiographic images over long distances. This technology may be beneficial to newborns with heart defects who are born in primary care centers located far from pediatric subspecialty centers. The purpose of this study was to investigate the usefulness of telemedical cardiography in the diagnosis of congenital heart disease of neonates.

Methods: We reviewed all telemedical diagnosis/consultation obtained from neonates in NICU between January 2007 and December 2011 at Juntendo Shizuoka Hospital retrospectively. A telemedical link was created using internet line (iChat from Mac), between Shizuoka Children's Hospital (pediatric cardiology site), and Juntendo University Shizuoka Hospital (primary care site). Neonates with possible cardiac disorders were identified either by genecologists or pediatricians at primary care settings, then later requested telemedical cardiogram.

Results: Telemedical echocardiograms were performed for 23 neonates. 21 neonates (91%) were transferred to the pediatric cardiology site. Eventually all of them were diagnosed properly: 1 diagnosed before birth; 14 done by primary pediatricians' cardiograms; 5 remotely done; 2 done at subspecialty centers. Immediate changes in management were required in 15 (65%) neonates including emergency transportations: 6 transferred by newborn ambulance; 4 transferred by helicopter. 10 neonates (48%) were transferred in shock. Out of those 10 neonates, 9 neonates were in the need for prostaglandin E1, to obviate or for treatment of ductal shock. One neonate had to be treated with catecholamine to maintain adequate blood pressure. All neonates were safely sent to the pediatric cardiology site, and were able to receive further special treatments and follow up.

Conclusions: Telemedical echocardiogram provided accurate diagnostic information in neonates. It is suggested that an adequate initial management can be performed for sick neonates with congenital heart failure in primary care setting without cardiology specialists by using this technology.