Trial of tele-medicine to promote the fetal diagnosis of congenital heart disease (CHD)

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Before Era of Telemedicine
Hypoplastic left heart Syndrome (HLHS) before Era of Telemedicine

Fetal Diagnosis of significant CHDs
Detection rate of significant CHDs

Our trial of tele-medicine to promote the fetal screening

- 2006～ Tele-diagnosis of CHD
- 2009～ Tele-seminar of advanced fetal cardiology (SINET)
- 2013～ Tele-conference of fetal heart disease (Internet)
Prenatal diagnosis of congenital heart disease using four-dimensional spatio-temporal image correlation (STIC) telemedicine via an Internet link: a pilot study

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ABSTRACT

Objective To assess whether the spatio-temporal image correlation (STIC) technique can be used to map congenital heart disease by means of microbubble contrast imaging and four-dimensional analysis of the images generated by PC tele-diagnosis.

Methods A retrospective study involving 20 patients with congenital heart disease and congenital anomalies. The images were collected in our hospital and sent by CD-ROM.

Results More than 200 cases after 2006

Tele-diagnosis

More than 200 cases after 2006

Collection of the volume data

Analysis and diagnosis by PC

Conclusions STIC volume can be obtained by microbubble contrast imaging and four-dimensional analysis of images sent by CD-ROM. A new method was developed for tele-diagnosis of congenital heart disease and congenital anomalies. The images were collected in our hospital and sent by CD-ROM.
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The 7th Asia Telemedicine Symposium, 2013
Transposition of Great Arteries (TGA)

Total Anomalous Pulmonary Venous Return (TAPVR)
Tele-diagnosis is useful for:

- Level 2 diagnosis not only in complexed CHD but also borderline abnormalities
- Technical supports for obstetricians and sonographers
- Education and training of fetal heart screening

Problems of tele-diagnosis

1. Accuracy of diagnosis
2. Time consuming for fetal cardiologists
3. Responsibility
4. Cost
Tele-medicine
to promote the fetal screening

2006～ Tele-diagnosis by CD-ROM  
2009 ～ Tele-seminar of advanced fetal cardiology (SINET)  
2013 ～ Tele-conference of fetal heart disease (Internet)

Tele-seminar by SINET

Nation-wide remote seminar trials of fetal echocardiography in Japan  
(Kazuto Noguchi / Ehime Univ./ Japan)
Tele-medicine
to promote the fetal screening

2006~ Tele-diagnosis (CD-ROM)
2009~ Tele-seminar of advanced fetal cardiology (SINET)
2013~ Tele-conference of fetal heart disease (Internet)
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Miyagi Children’s Hospital

Outcome of telemedicine
Significant CHDs diagnosed prenatally

Detection rate of significant CHDs (%)
Detection rate of HLHS

Detection rate of TOF
Detection rate of TGA

Detection rate of TAPVD
Open heart surgery of Neonate

Cooperation of fetal diagnosis to promote fetal screening
Thank you.