

使用電腦斷層診斷新生兒先天性肺動脈異常 Congenital pulmonary artery abnormalities diagnosed in newborn by computed tomography

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Introduction

There is a broad spectrum of congenital anomalies of the central pulmonary arteries including abnormalities of development, origin, course, and caliber. These anomalies incorporate simple lesions such as isolated pulmonary valve stenosis to very complex anomalies with many associated abnormalities.

Case presentation

A 58-days-old infant presented to the hospital with breath louder refer from local medical doctor. After sonography examination and chest x-ray suspected atrial septal defect (ASD) with pulmonary sling by a pediatrician (Fig.1). Suggested arrangements computed tomography angiography (CTA). The disease of aberrant left pulmonary artery also known as pulmonary sling in CTA was shown in (Fig.2A). The results of CTA examination shown aberrant origin of left pulmonary artery passing anterior to the trachea without producing the pulmonary artery sling (Fig.2B).

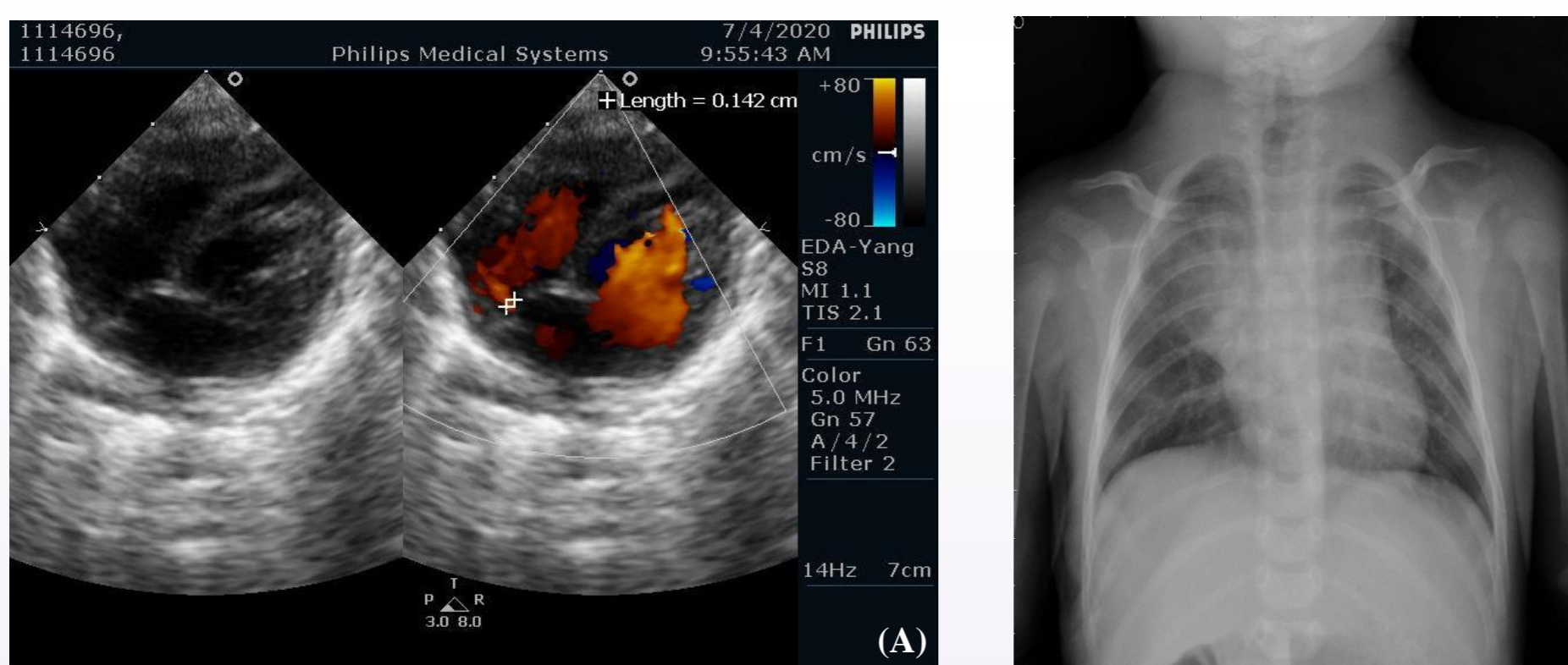


Figure.1 · The diagnosis of doppler color flow mapping in sonography (A).The chest x-ray (B). Suspect secundum type atrial septal defect.

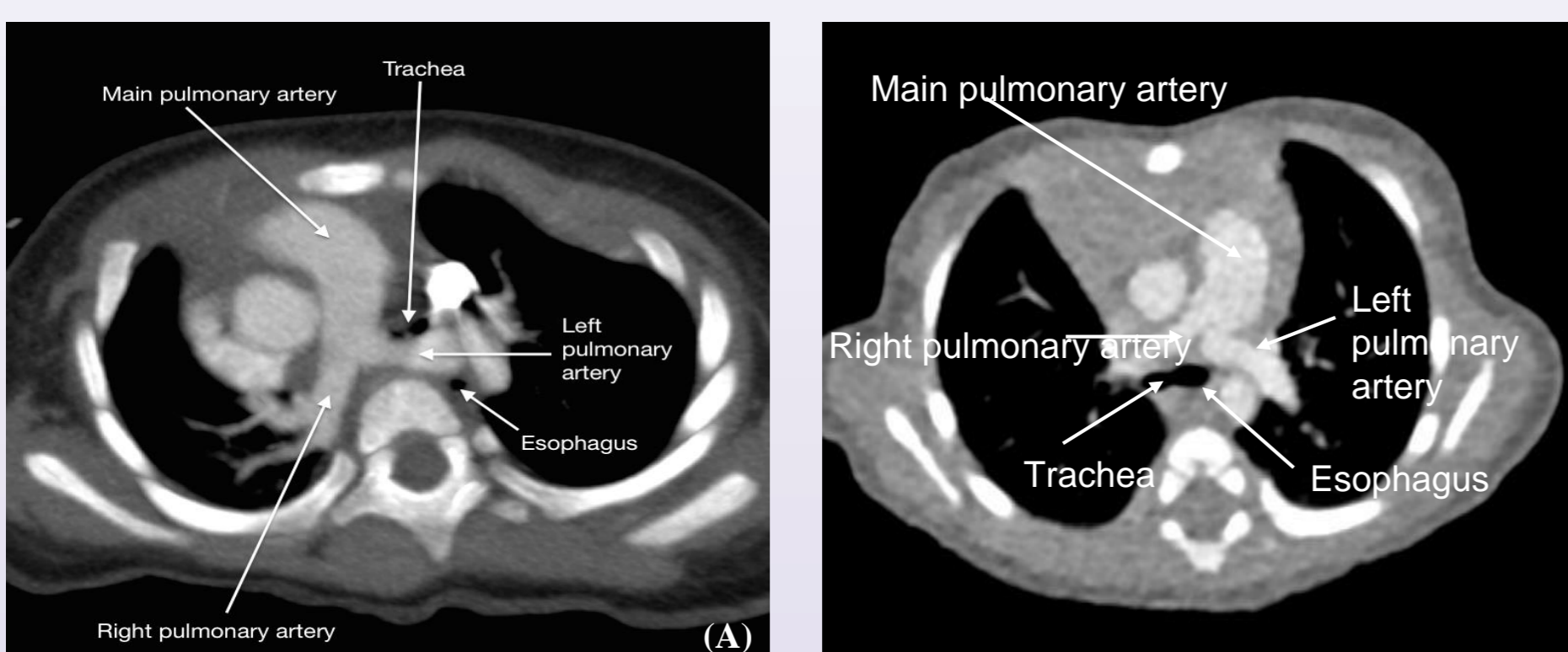


Figure.2 · (A) Aberrant left pulmonary artery, also known as pulmonary sling. Ref: Case courtesy of Dr Vincent Tatco, Radiopaedia.org, rID: 42323. (B) Suspicious of aberrant origin of left pulmonary artery passing anterior to the trachea without producing the pulmonary artery sling.

Keywords : infant , pulmonary artery, computed tomography, radiation dose

Discussion

The CTA examination was performed using Siemens SOMATOM Definition AS 192 system (Forchheim, Germany) and OptiVantage® dual-head contrast delivery injector. The infant's weight was 3280 grams, 10c.c contrast medium was used for this inspection totally and the injection rate was 0.3c.c./sec by 24G venous catheter from lower extremity so this study recommend could be extend the interval between contrast delivery and monitoring phase to reduce the radiation dose. The Hounsfield unit (H.U.) larger than 300 H.U. in descending aorta started scanning. The dynamic relative enhancement curve was shown in Fig.3(A) and the radiation dose report in Fig.3(B). According to the ICRP 60 shown in Fig.3(C) to calculate the effective dose. Radiologist can use the images of CTA to make an appropriate diagnosis.

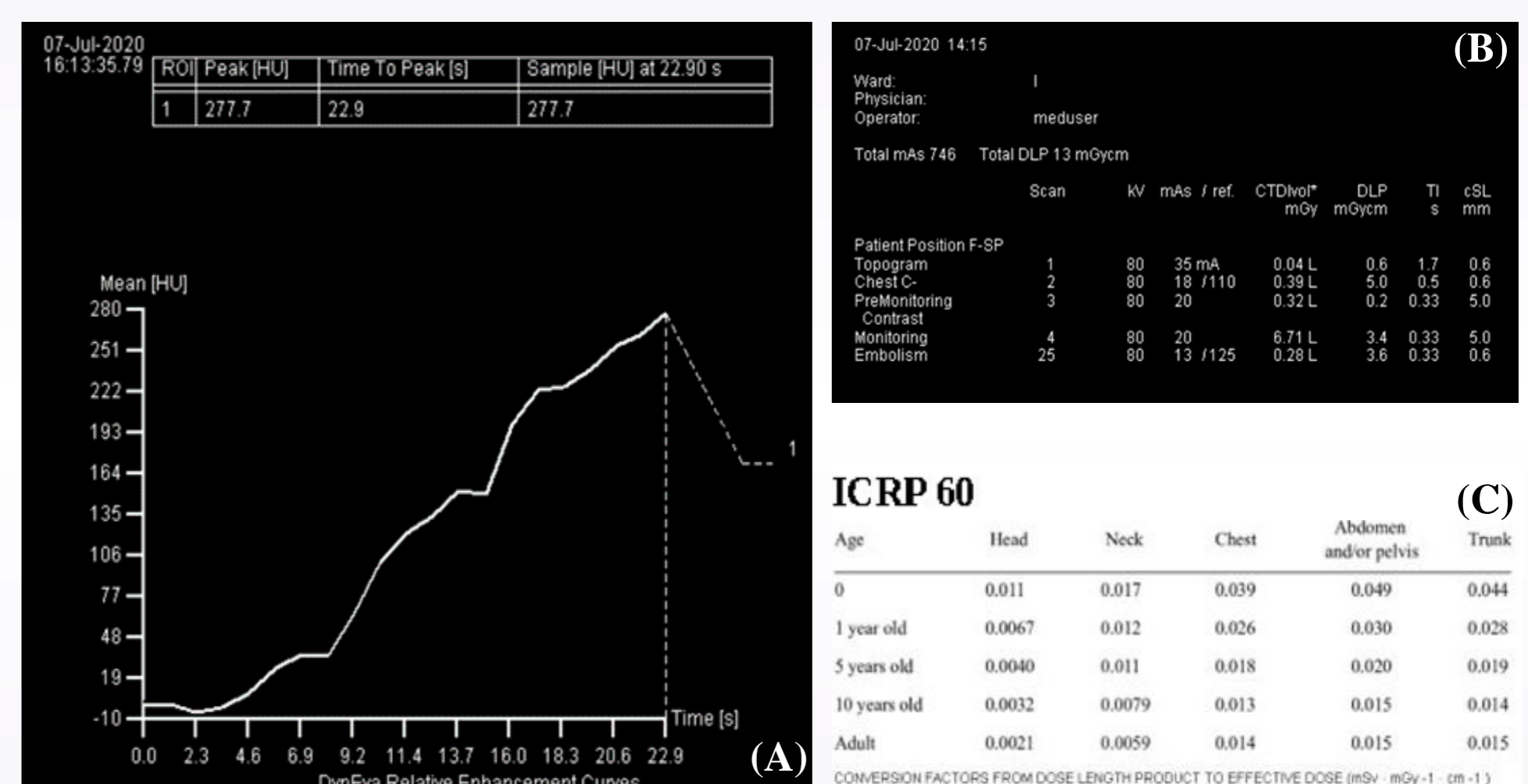


Figure.3 · (A) Region of interest(ROI) relative enhancement curves.(B) Radiation dose report in this examination.(C) Radiation dose convert from ICRP 60(International Commission on Radiological Protection).

Conclusion

Radiation dose has a profound impact on infant. The totally radiation dose in this produce summarized in table 1 that effective dose was 0.507mSv lower than previous inspections . Hope to share this case report for a reference.

Table.1 · The radiation dose in this examination by the convert factor 0.039

Dose report	DLP×0.039
Topogram	0.0234mSv
Chest C-	0.195mSv
Premonitoring	0.0078mSv
Monitoring	0.1326mSv
Embolism	0.1404mSv
Total	0.507mSv