

Implication of Pulse Oxymetry Screening for Detection of Congenital Heart Defects.

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Background

In newborns congenital heart defects can take an asymptomatic course, causing a diagnostic gap in the routine examination. Therefore pulse oximetric screening is under discussion, as it could close this diagnostic gap.

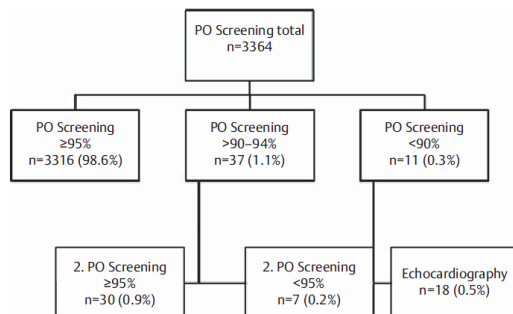
Methods

Non-invasive postductal peripheral oxygen saturation assessment was carried out in 3 364 term neonates, 6-36 h of age, in 2008. The pulse oximeter used was a VitaGuard VG310 with Masimo SET Technology, and functional oxygen saturation was measured. In asymptomatic neonates with values $\geq 95\%$, no further steps were applied. In those with values between 90% and 94% and no clinical abnormalities, a check-up was carried out 4-6 h later. Echocardiography was performed when the initial value was below 90% or persisted $< 95\%$.

Results

A total of 18 (0.5%) abnormal pulse oxymetry values requiring echocardiographic investigation were found in the 3,364 neonates examined. Nine congenital heart defects that had not been recognized prenatally were diagnosed. Four of these children were also found to have anomalies at the clinical examination. Persistent fetal circulation was noted in 2 of the neonates. In addition neonatal infections has been detected in 7 newborns. One neonate with stenosis of the aortic isthmus and 1 with pulmonary stenosis were missed in the screening program, with pulse oxymetry saturation levels $>95\%$. These data represent a sensitivity of 82% and a specificity of 99.9%, with a positive predictive value of 50% and a negative predictive value of 99.9%.

Results of Pulse Oxymetry Screening in 3364 Newborns



Sensitivity	82.0%	
Specificity	99.9%	
Positive Predictive Value	50.0%	
Negative Predictive Value	99.9%	
	CHD yes	CHD no
PO <95%	9	9
PO $\geq 95\%$	2	3,344

Conclusions

Together with the clinical examination, pulse oxymetry in neonates is a screening method that has high levels of sensitivity and specificity for early diagnosis of congenital heart defects. The risk-benefit profile may favor pulse oxymetry to be standardized and universally used.