

Pilot Study of Pulse Oximetry Screening Test in Azerbaijan

*Petropoulos A.C (1,2), Behbudov V. (1), Khudiyeva A. (1), Mustafayeva G.(1), Seyidov N. (3,4)
Merkezi Klinika, Baku Azerbaijan (1); Dep. Of Pediatrics Azerbaijan Medical State University (2);
Public Health and Reforms Center of MoH of Azerbaijan (3); Medclub hospital Baku Azerbaijan (4)*

INTRODUCTION: Preliminary studies show that Azerbaijan has a higher incidence of Congenital Heart Disease(CHD), then the average world prevalence of~1%. Pulse oximetry screening (pox.scr.) test has proven its efficiency as cheap, easy applicable, non-invasive screening test in early detection of critical CHD(c-CHD).

AIM: Prospective, double blind study, proves combination of pox.scr, medical history + physical examination, by neonatologists and hyperoxygenation test (when indicated) offers high early detected c-CHD.

POPULATION-METHOD: Ministry of Health, designated two public maternity hospitals in which 1670 term neonates (1.05% healthy deliveries/year), 959 boys and 801 girls, born by SVD from June 2016 to May 2017, were studied with Pox.scr., medical history + physical examination by a neonatologist at 37 and 85 hours post-delivery. Simultaneous measurement of pox.scr. using high-quality devices, both pre/post DA, were performed. A SatO₂ \geq 95% and difference of less of 3% between the measurements was accepted as normal. All failing pox.scr. had echo-2D study, establishing diagnosis. Hyperoxygenation test under indications was done. Blind part involved neonatologists/cardiologists, as they did not know about findings of the other team. All cohort had echo-2D scan on day 12 from birth. **RESULTS:** 37 hours post birth, pox.scr, detected 17 c-CHD. Additionally, 38 failures, were proved suffering from variety of respiratory disease (16) and early onset sepsis (22). Sensitivity of 68.2% and specificity of 50.2%, was found. When adjusted to clinical assessment and indicated hyperoxygenation test, these, rose to 86.3% and 82.6% respectively. Pox.scr. applied at 85 hours of age detected additional 4 c-CHD. Estimated sensitivity was 83.9% and specificity 90.2%. Adjusted to clinical assessment, indexes rose to 94.5% and 99.1% respectively. At the 12th day of life, echo-2D scan was applied to cohort. One more c-CHD as well as 30/1670 detected simple CHD's were found, estimating incidence of CHD of 3.11% / 40.38% c-CHD.

CONCLUSIONS: This pilot study, proved combination of pox.scr. and neonatologist examination after the 84h from birth, increasing significant early detection of c-CHD including a large proportion of critical left heart obstructive CHD's. Additional sever pathology was also detected. In a country with limited surgical capacity, mandatory use of this combination is beneficial.