

Relations of birth chest circumference to blood serum Insulin-like Growth Factor Binding Protein-3 in the newborn free of life-threatening disease: possible role of birth body weight beyond blood serum Insulin-like Growth Factor-I and respiratory supportive treatment.

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Background/Objective and hypotheses. Chest circumference(CC) is related to intrauterine growth rate as well as to development-function of respiratory system. We evaluated the relevance of birth body weight(BW) and blood serum Insulin-like Growth Factor (IGF)-I(IG1) in birth CC(BCC) relations to blood serum IGF-Binding-Protein-3(IB3) after control for preterm birth(PTB), O₂ supplementation as %O₂ in respiratory gases(O₂R) and assisted ventilation of any kind(AV) in the newborn(NWB) without life-threatening disease. **Method.** Data available in each NWB: 1)gender(SEX), gestational age(GA,unit:complete week), BW(unit:gr), BCC(unit:cm), BW<10th centile for GA(SGA), PTB defined as GA≤36 and, 2)same-day records of postnatal age(PNA;unit:day), AV, O₂R and IG1-IB3 RIA measurements(unit:uM/dL) at one of the first 5 postnatal days(x), 5 days after x(y) and 10 days after x(z). NWBs with any among total parenteral nutrition, life-threatening disease, diabetes mellitus(DM), endocrine disease diagnosis out DM, or DM in mother were excluded. 78 NWBs were included(male SEX,n=43;SGA,n,20;GA range=28-42;BW range=1200-4150;BCC range=22.0-39.0;PTB,n=46;presence of O₂R,n, x=22,y=11,z=1;presence of AV,n,x=8,y=4,z=1). Natural log-transformed IB3(IB3-LN) resulted near-normally distributed. Multiple Linear Regression(MLR) was used(computations; male SEX, PTB, AV, condition present=1,condition absent=0). **Results.** MLRs with IB3-LNx-y-z as outcome showed a significant partial correlation(PC) coefficient(r) of BCC PCs with IB3-LN when including as predictors 1)PNA, O₂R, and AV chronologically corresponding to outcome and SEX,PTB and CC(BCC vs. IB3-LNx,r=.35,p=.0022;BCC vs. IB3-LNy,r=.47;p=.0000;BCC vs. IB3-LNz,r=.53,p=.0000), or 2)PNA, O₂R,AV and IG1 chronologically corresponding to outcome, as well as SEX, PTB and BCC(BCC vs. IB3-LNx,r=.30;p=.0101;BCC vs. IB3-LNy,r=.30;p=.0104;BCC vs. IB3-LNz,r=.51;p=.0000), while they showed no significant r of BCC PCs with IB3-LNx-y-z when including as predictors PNA,O₂R and AV chronologically corresponding to outcome, as well as SEX,PTB,BCC and BW(R² of MLR models,.38-.66, significant in all cases). **Conclusion.** BW appeared more able than IG1 corresponding to IB3 in explaining BCC-IB3 relationships after control for SEX, PTB, PNA, AV and O₂R in not-life-threatened NWBs.