Relations of birth chest circumference to blood serum Insulin-like Growth Factor-I in the newborn free of life-threatening disease: possible role of birth body weight in addition to 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) in birth CC(BCC) relations to blood serum Insulin-like-Growth-Factor-I(IG1) 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-threateng disease. Method. Data available in each NWB: 1)gender(SEX), gestational age(GA,unit:complete week), BW(unit:gr), BCC(unit:cm), presence/absence of BW<10th centile for GA(SGA) or of PTB defined as GA≤36, and 2)same-day records of AV, O2R, and IG1 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), of postnatal age(PNA;unit:day). 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 IG1(IG1-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 IG1-LNx-y-z as outcome showed a significant partial correlation(PC) coefficient(r) of BCC PCs with IG1-LN when including as predictors PNA, O2R and AV chronologically corresponding to outcome, as well as SEX, PTB and BCC (BCC vs. IG1-LNx, r:.372, p:.0012; BCC vs. IG1-LNy, r:.399, p:.0005; BCC vs. IG1-LNz, r:.285, p:.0142), while no significant r of BCC PCs with IG1-LNx-y-z was observed in MLRs including 1)IG1-LNx-y-z as outcome and 2), as predictors, PNA, O2R and AV chronologically corresponding to outcome as well as SEX,PTB,BCC and BW(R2 of MLR models,.27-.54, significant in all cases). Conclusion. BW could be involved in BCC-IG1 relationships not explained by SEX, PTB, PNA, O2R and AV in the not-life-threatened NWB.

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