

BIRTH CHEST CIRCUMFERENCE RELATIONS TO CIRCULATING INSULIN-LIKE GROWTH FACTOR-I IN THE NOT-LIFE-THREATENED NEWBORN: RELEVANCE OF BIRTHWEIGHT TO BIRTH CROWN-HEEL LENGTH RATIO BEYOND THE PRESENCE OF A SMALL BIRTHWEIGHT FOR GESTATIONAL AGE AND OF RESPIRATORY SUPPORT MEASURES.

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Background: Birth chest circumference(BC) may be related to Insulin-like-Growth-Factor-I blood serum levels(IG1) in the human newborn(NWB).

Objective and hypotheses: We evaluated the relevance of birth body weight(BW) to birth crown-heel length(BL) ratio(BW through BL, BW/BL) in BC relations to IG1 after control for BW for birth gestational age(GA)≤10.th centile(SGA), respiratory oxygen supplementation(O2S) and assisted ventilation of any kind(AV) in not-life-threatened NWBs.

Method: NWBs with any among total parenteral nutrition, life-threatening disease, diabetes mellitus(DM), endocrine diagnosis out of DM, malformation, clinically relevant trunk trauma, and mother with DM were excluded. Each of 78 included NWBs had available data for: a)gender(SEX), GA(unit:complete week; range=28-42), BW(unit:kg; range=1.200-4.150), BL(unit:m; range=0.360-0.550), BC(unit:cm; range=22.0-39.0), BW/BL(unit:kg/m; range=3.158-8.137), SGA, postnatal age(PNA;unit:day) and b)same-day records at one of the first 5 postnatal days(x), 5 days after x(y) and 10 days after x(z) for O2S, AV, as well as IG1 RIA measurements(unit:uM/dL)(male SEX,n,43; birth at GA≤36,n,46; SGA,n,20; O2S,n,x=22, y=11,z=1;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, SGA, O2S, AV, condition present=1, condition absent=0).

Results: MLR showed a significant partial correlation(PC) coefficient(r) of BC PCs with outcomes IG1-LNx-y-z when including as predictors 1)PNA, O2S and AV chronologically corresponding to IG1-LN, SEX, SGA and BC, all together(MLR1;BC vs. IG1-LN;x,r:.38,p:.0011;y,r:.47,p<.0000;z,r:.42,p:.0002) while no significant r of BC PCs with outcomes IG1-LNx-y-z was found after adding as predictor to MLR1 either 2)BW/BL(MLR2) or 3)BW/BL and GA(MLR3)(R2 of considered MLR models:.27-.52, always significant).

Conclusion: BW/BL could be involved in BC relations to IG1-LN not explained by SEX, SGA, PNA, O2S and AV in the not-life-threatened NW.