CANCER DURING PREGNANCY: A CASE-CONTROL ANALYSIS OF MENTAL DEVELOPMENT AND CARDIAC FUNCTIONING OF 38 CHILDREN PRENATALLY EXPOSED TO CHEMOTHERAPY

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Aim: Until recently, oncologists were hesitant to administer chemotherapy to pregnant cancer patients, due to unknown long term consequences for the child. Therefore, we aimed to compare mental development and cardiac functioning of children in a case-control study, never described before.

Methods: Children prenatally exposed to chemotherapy were recruited from the International Network for Cancer, Infertility and Pregnancy registry and assessed using the Bayley Scales of Infant Development (BSID-II) and electro- and echocardiography. Mental Developmental Index (MDI) was compared to non-exposed children matched for gestational age (GA), age and if possible for gender, using paired samples t-test. Pearson correlation coefficients were used to calculate the relationship between GA and MDI, and between number of chemotherapy cycles during pregnancy and MDI. Electro- and echocardiography were compared to non-exposed children, matched for age and gender.

Results: In total, 38 children from Belgium, The Netherlands and Italy and 38 control children were assessed using the BSID-II at a median age of 20.5 and 22 months respectively (range 18-42) and 24 of them by cardiac examinations. Breast (61%) and hematological cancers (22%) were observed most frequently and chemotherapy during pregnancy (in 61% anthracyclines) consisted on average of 4 cycles (range 1-7). Mean MDI for both the exposed (M = 99.13) and non-exposed group (M = 101.47) were within normal range and both groups were not significantly different. No correlation was found between number of chemotherapy cycles during pregnancy and MDI. However, a positive correlation was found between GA and MDI for all children. MDI tends to increase 2.65 points for each week of GA. Cardiac dimensions and functions were within normal ranges with a mean fractional shortening of 36% (range 32-42).

Conclusions: This first case control study on the developmental outcome of children in utero exposed to chemotherapy shows that chemotherapy during pregnancy can be considered safe for mental development and cardiac functioning of the child. Larger sample sizes and longer follow-up are needed to strengthen these findings.

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