

Poster presentation

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Epidemiologic evidence linking ABO and Rh blood groups in the mother with neural tube defect lesion level in the child

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Background

Few epidemiological studies of neural tube defects (NTD) have reported on the blood type of family members. This study examined the relationship between mother's ABO and Rh blood groups with characteristics of the child affected with spina bifida (proband).

Materials and methods

The reproductive history of 152 mothers with spina bifida offspring was investigated. Mothers were selected retrospectively from a publicly maintained registry of spinal cord disabled individuals. Only mothers who knew their blood type with singleton pregnancies were included. Primiparas (19 mothers) were included. All responses were by self-report. Lesion level was determined by muscle action against gravity and was divided into upper (thoracic) and lower (lumbar and sacral). Statistical tests included χ -square, Fisher's exact and student's t with rejection of the null hypothesis at the 0.05 level.

Results

Maternal ABO blood group was associated with proband's lesion level ($p = 0.018$); 61.8% of blood type A were upper lesions and 58.5% of blood type O were lower lesions. Rh blood group was not associated with lesion level; however, ABO was related to lesion level for Rh+ ($p = 0.002$) but not for Rh- mothers. ABO was related to lesion level for female ($p = 0.040$) but not for male probands. ABO/Rh+ and lesion level was related for mothers without a history of spontaneous abortion ($p = 0.041$), for male (p

$= 0.024$) and female ($p = 0.037$) probands and for white mothers ($p = 0.006$); cell frequencies were too small to conduct a similar analysis for ABO/Rh- mothers. Proband birth weight did not differ by gender; however, females of type O mothers weighed less than females of type A mothers ($p = 0.046$). 77.0% of probands had a shunt installed and higher lesion level was related to shunt presence ($p = 0.009$); however, shunt presence, indicating hydrocephalus, was not a significant factor in the blood group analysis.

Conclusion

For these mothers of spina bifida offspring, maternal ABO and Rh blood groups play an important but unknown role in the development of neural tube defects. Clinical confirmation of these findings in a larger subject population is warranted.