بسم الله الرحمن الرحيم

قال تعالى:

وَلَوْ أَنَّمَا فِي الْأَرْضِ مِنْ شَجَرَةٍ أَقْلَامٌ وَالْبَحْرُ يَمُدُّهُ مِنْ بَعْدِهِ سَبْعَةُ
أَبْحُرٍ مَا نَفِدَتْ كَلِمَاتُ اللَّهِ ۗ إِنَّ اللَّهَ عَزِيزٌ حَكِيمٌ

صدق الله العظيم

سورة لقمان الآية 27

Dedication

To my parents

To my brothers and my sisters

To my friends

Acknowledgments

Firstly grateful thanks to ALMIGHTY ALLAH, for helping me in completing this research. I would like to acknowledge Dr. Abdelbagi Elnagi Mohamed, for his unfailing patience, expert advices, supervision, guidance and his valuable time. Extended thanks to the staff of the College of Medical Laboratory Science. My thanks and appreciations are extended to my colleges and friends who strongly supported me throughout this study.

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Abstract

The main aim of this study was to serodetect of rubella IgM antibodies of newborn babies using Enzyme-Linked Immunosorbent Assay (ELISA). Umbilical cord blood samples were collected from a total of 92 normal vaginal deliveries inside the labor room by experienced midwives of Omdurman Maternity Hospital. Out of the 92 newborn babies 35 were males (38%) and 57 were females (62%) and their mother's age range from 17-37 years. However, 17 newborn babies (18.5%) had < 2.5 kg weight, 74 (80.4%) had 2.5 – 4 kg weight and 1(1.1%) had >4 kg weight. Out of 92 cord blood samples examined by the 4^{th} generation ELISA 7(7.6%) were positive to anti-rubella IgM and 85(92.4%) were negative. It was found that 2 males (5.7%) and 5 females newborn babies (8.8%) were anti- rubella IgM positive and there was no significant association between gender and IgM result ($p > 0.05$). Out of 7 IgM positive newborns, 2 babies had low birth weight (< 2.5 kg) (11.8%), 5 babies have normal birth weight (2.5–4 kg) (6.8%) and no significant association between them ($p > 0.05$). The result also showed that out of 7 anti-rubella IgM positive babies, 6 mothers (7.1%) with less than 5 pregnancies and one mother (12.5%) with more than 5 pregnancies showing that no significant association of number of pregnancies and anti rubella IgM result ($p > 0.05$). In addition, while 6 mothers (7.5 %) were found with no history of abortion, only one mother (8.3%) with history of abortion revealing no significant association of abortion and anti-rubella IgM ($p > 0.05$). This study showed high frequency of CRI among newborns, although incidence of rubella infection was reduced worldwide. No evidence of rubella defects has been observed in newborn babies; therefore, birth weight of newborns was not affected. History of abortion and number of pregnancies of the mothers were not major risk factors of CRI.

ملخص الدراسه

الهدف الرئيسى من هذه الدراسة هو الكشف المصلى الأجسام المضاده للحصبه الألمانيه عند الأطفال حديثى الولادة باستخدام جهاز يعتمد على نظرية التقارب اللونى لتحديد الأجسام المضاده من النمط (IgM). تم أخذ 92 عينه من الحبل السرى لأطفال حديثى الولاده داخل غرف الولاده الطبيعية لمستشفى الولادة أمدرمان. من بين 92 أطفال حديثى الولادة, 35 منهم كانوا ذكورا (38%) و57 كانوا اناثا (62%) وتتراوح اعمار الأمهات مابين 17 الى 37 سنة. من بين 92 حديثى الولادة, 17 كان وزنهم أقل من 2.5 كجم (18.5%), 74 كان وزنهم بين 2.5 الى 4 كجم (80.4%) وواحد وزنه أكثر من 4 كجم (1.1%). من بين 92 أطفال حديثى الولادة وجد ان 7 (7.6%) يعانون من الاصابة بفيروس الحصبة الالمانيه الخلقية و85 (92.4%) لا يعانون من الاصابة. من بين 7 أطفال ايجابى الأجسام المضادة 2 منهم كانوا ذكورا (5.7%) و5 منهم كانوا اناثا (8.8%) كما انه لا توجد فروقات ذات دلالة احصائيه بينهم (القيمة الاحتماليه أكبر من 0.05). وجد أن من بين ال7 ايجابى الأجسام المضاده 2 منهم (11.8%) كانوا وزنهم أقل من الوزن الطبيعى (2.5> كجم) وحوالى 5 منهم كانت اوزانهم طبيعية (2.5-4 كجم) (6.8%) كما أنه لا توجد فروقات ذات دلالة احصائيه بين اوزانهم ووجود الأجسام المضادة من النمط (IgM (القيمة الاحتمالية أكبر من 0.05). للمقارنة وجد أن من بين ال7 أطفال ايجابى الأجسام المضاده كان منهم 6 أمهات (7.1%) عدد مرات الحمل عندهم أقل من 5 مرات وواحدة (12.5%) كان لها أكثر من 5 مرات حمل كما أنه لا توجد فروقات ذات دلالة احصائية بين عدد مرات الحمل ووجود الأجسام المضادة لفيروس الحصبه الألمانية الخلقية لهؤلاء الاطفال (القيمة الاحتمالية أكبر من 0.05). وجد أيضا ان من بين ال 7 ايجابى الاجسام المضاده 6 أمهات منهم لم يعانوا من اجهاض سابق (7.5%) وواحده (8.3%) كان لها اجهاض سابق وكذلك وجد أنه لا توجد فروقات ذات دلاله احصائية بين تاريخ الاجهاض لهؤلاء الأمهات وانتقال الفيروس والاصابة بالحصبة الألمانية الخلقية (القيمة الاحتمالية أكبر من 0.05). من هذه الدراسة وجد أن هناك نسبة عاليه للاصابة بفيروس الحصبة الالمانيه فى الأطفال حديثى الولادة على الرغم من ان معدل الاصابة بهذا الفيروس فى تنازل فى مختلف انحاء العالم. لم يتم ملاحظة وجود عيب خلقى ظاهر لهؤلاء الأطفال لذا نجد ان اوزانهم عموما كانت طبيعيه. تاريخ الاجهاض وعدد مرات حمل الأمهات لا يؤثر على نسبة الاصابة.

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Abbreviations

AGMK	African green monkey kidney
CDC	Center for disease control and prevention
CPE	Cytopathic effect
CRI	Congenital rubella infection
CRS	Congenital rubella syndrome
EIA	Enzyme immunoassay
ELISA	Enzyme -Linked Immunosorbent Assay
HI	Heamoagglutination inhibition test
HIV	Human immunodeficiency virus
MMR	Mumps, Measles and Rubella vaccine
MRC-5	Human diploid cell-5
NT	Neutralization test
OD	Optical density
RT-nPCR	Reverse transcriptase-nested polymerase chain reaction
RT-PCR	Reverse transcriptase- polymerase chain reaction
RV	Rubella virus
WHO	World Health Organization