

Dedication

To my mother.....

To my father.....

To my brothers.....

To my sisters.....

To my uncle.....

To my friends

And my colleagues...

I dedicate this work with my best wishes to all.

Acknowledgements

All my thanks are in the name of Allah, the most Gracious and the most Merciful.

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Abbreviations

| Abbreviation | Full text |
|-----------------|---|
| AIHA | Autoimmune hemolytic anemia |
| CO ₂ | Carbon dioxide |
| CBC | Complete blood count |
| CV | Coefficient variation |
| DNA | Deoxiriboneoclic acid |
| DPG | Di phosphate glyceride |
| EDTA | Ethylene diamine tetra acidic acid |
| EVF | Erythrocyte volume fraction |
| Fe | Ferrous iron |
| FL | femtoliters |
| Hb | hemoglobin |
| HCT | hematocrit |
| HDN | Hemolytic anemia of the newborn |
| HSCs | Hematopoietic stem cells |
| IDA | Iron deficiency anemia |
| L/L | Liter per liter |
| MCH | Mean corpuscular hemoglobin |
| MCV | Mean corpuscular volume |
| MCHC | Mean corpuscular hemoglobin concentration |
| O ₂ | oxygen |
| PCV | packed cell volume |
| Pg | picogram |
| p. value | Probability value |
| r | Pearson correlation |
| RBCs | Red blood cells |
| RDW | Red distribution width |
| RNA | Ribonucleic acid |
| RPI | Reticulocyte production index |
| SD | Stander. deviation |
| SPSS | Statistical package for social sciences |

Abstract

This is a descriptive cross-sectional study, conducted in Alfasher teaching hospital, North Darfur, Sudan. It was carried out during January to March 2015 to study the correlation between the maternal and cord blood red cell parameters.

Two hundred blood Samples were collected in ethylene diamine tetra acetic acid (EDTA) containers, 100 sample from pregnant Sudanese ladies immediately before delivery and 100 samples from cord blood during delivery. Red cell parameters were determined using automated hematological analyzer.

The results showed that, all the red blood cell parameters were found to be higher in the cord blood samples than the maternal blood samples except for MCHC (Mean \pm SD:14.6 \pm 1.6 and 11.4 \pm 1.4 g/dl for Hb, 42 \pm 7.3 and 36.2 \pm 5.6 % for HCT, 4.2 \pm 0.7 and 4 \pm 0.7 $\times 10^{12}/l$ for RBC count, 106 \pm 8.1 and 84.7 \pm 8.2 fl for MCV, 34.8 \pm 3.7 and 28.1 \pm 2.7 pg for MCH, 31 \pm 1.8 and 32.3 \pm 2.2 g/dl for MCHC, 63.3 \pm 7.5 and 56.9 \pm 13.7 fl for RDW-SD, 17.1 \pm 1.9 and 16.2 \pm 2.9% for RDW-CV, respectively).

No statistically significant correlation was found between maternal and cord blood for each of Hb, HCT, RBCs, MCV, MCH, MCHC, RDW-SD and RDW-CV (*P. value*: \geq 0.05).

In conclusion, there was no statistically significant correlation between maternal and cord blood red cell parameters.

ملخص الأطروحة

هذه دراسة وصفية مقطعية أجريت في مستشفى الفاشر التعليمي ولاية شمال دارفور، السودان تم اجراءها في الفترة ما بين يناير حتى مارس 2015 لدراسة العلاقة بين معدلات خلايا الدم الحمراء للأم و دم الحبل السري.

جُمعت 200 عينة دم في حاويات توجد بها مادة حافظه مانعة التجلط (EDTA)، 100 عينة من السودانيات الحوامل قبل الولادة مباشرة و 100 عينة من دم الحبل السري أثناء الولادة. تم تحديد معدلات خليه الدم الحمراء باستخدام المحلل الدم الالي (Sysmex).

أظهرت النتائج أن جميع معدلات الخلية الدم الحمراء ما عدا تركيز خضاب الخلية الحمراء كانت أعلى في عينات دم الحبل السري من عينات دم الأمهات. الوسط الحسابي \pm الانحراف المعياري: 1.6 ± 14.6 و 1.4 ± 11.4 جم/لتر لخضاب الدم الكلى ، 7.3 ± 42 و 5.6 ± 36.2 لتر/لتر لحجم الدم المضغوط، 0.7 ± 4.2 و $0.7 \pm 4.2 \times 10^{12}$ /لتر لعدد كريات الدم الحمراء ، 8.1 ± 106 و 8.5 ± 84.7 فيمتولتر لحجم الخلية الواحدة، 3.7 ± 34.8 و 2.7 ± 28.1 بيكوجرام لخضاب الخلية الحمراء، 2.2 ± 32.3 و 1.8 ± 31 جرام /ديسلتر لتركيز خضاب الخلية الحمراء ، 7.5 ± 63 و 13.7 ± 56.9 فيمتولتر لمعدل انتشار كريات الدم الحمراء ، 2.9 ± 16.2 و 1.9 ± 17.1 في المية لمعاملات الاختلاف معدل انتشار كريات الدم الحمراء بالترتيب.

لا يوجد ارتباط إحصائي ذو قيمة معنوية بين دم الام ودم الحبل السري لكل من خضاب الدم، حجم الدم المضغوط ، عدد كريات الدم الحمراء ، حجم الخلية الواحدة، خضاب الخلية الحمراء ، تركيز خضاب الخلية الحمراء ، لمعدل انتشار كريات الدم الحمراء ومعاملات الاختلاف لمعدل انتشار كريات الدم الحمراء (القيمة المطلقة ≥ 0.05).

في الختام لم يكن هناك علاقة ذات دلالة احصائية بين معدلات خلية الدم الحمراء للأمهات والحبل السري.