Comparison of the Fetomaternal Hemorrhage Severity between Dermatoses of Pregnancy Cases and Healthy Pregnancies

Merve Purde [1]
Mehmet Serdar Kütük[2],
[1]Bezmialem Vakif University, Faculty of Medicine, Istanbul, Turkey.
[2]Bezmialem Vakif University, Faculty of Medicine, Department of Gynecology and Obstetrics, Istanbul, Turkey.

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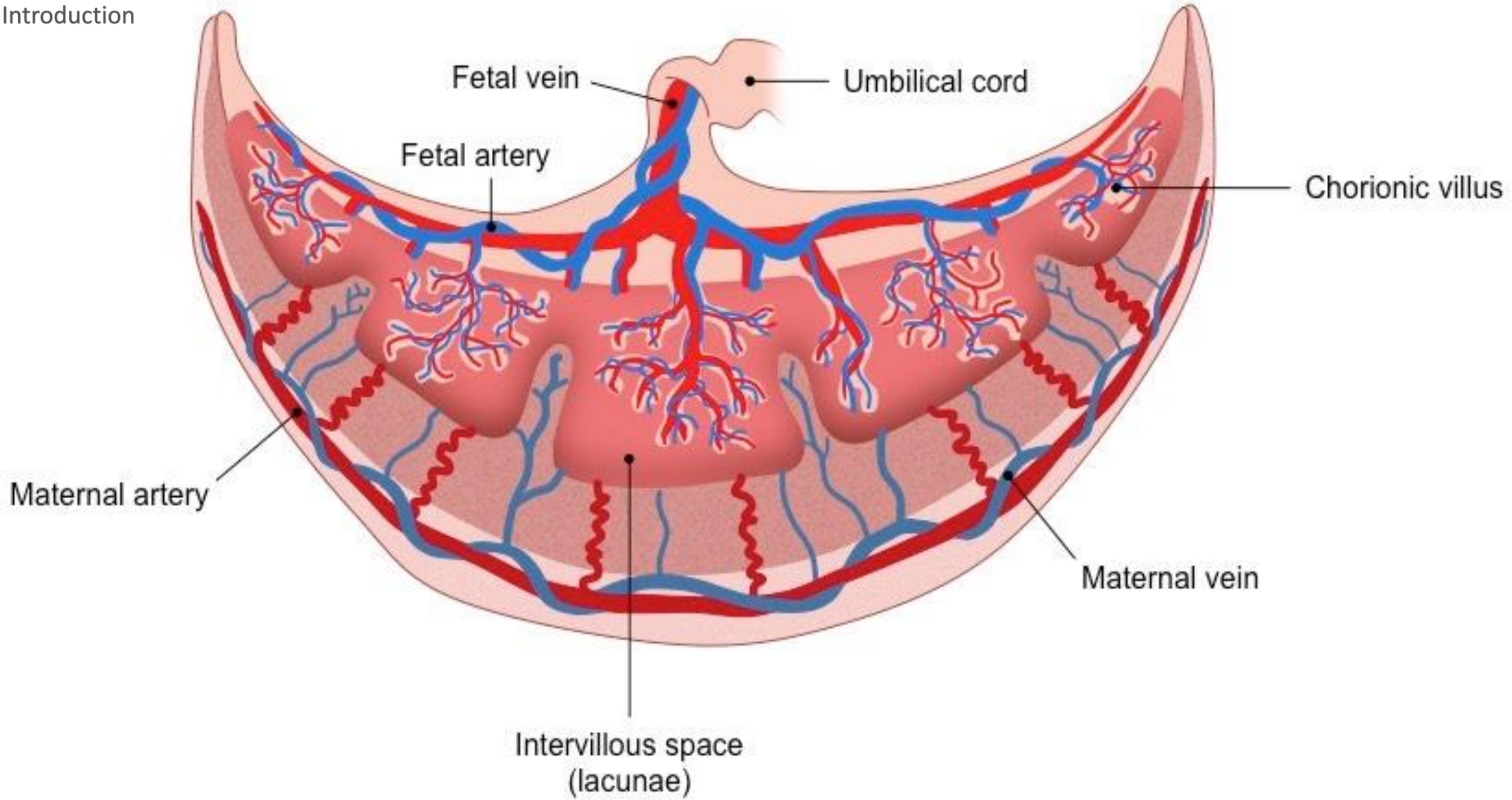
Introduction


Fetal vein
Umbilical cord
Fetal artery
Chorionic villus
Maternal artery
Maternal vein
Intervillous space
(lacunae)

Fetomaternal Hemorrhage (FMH)

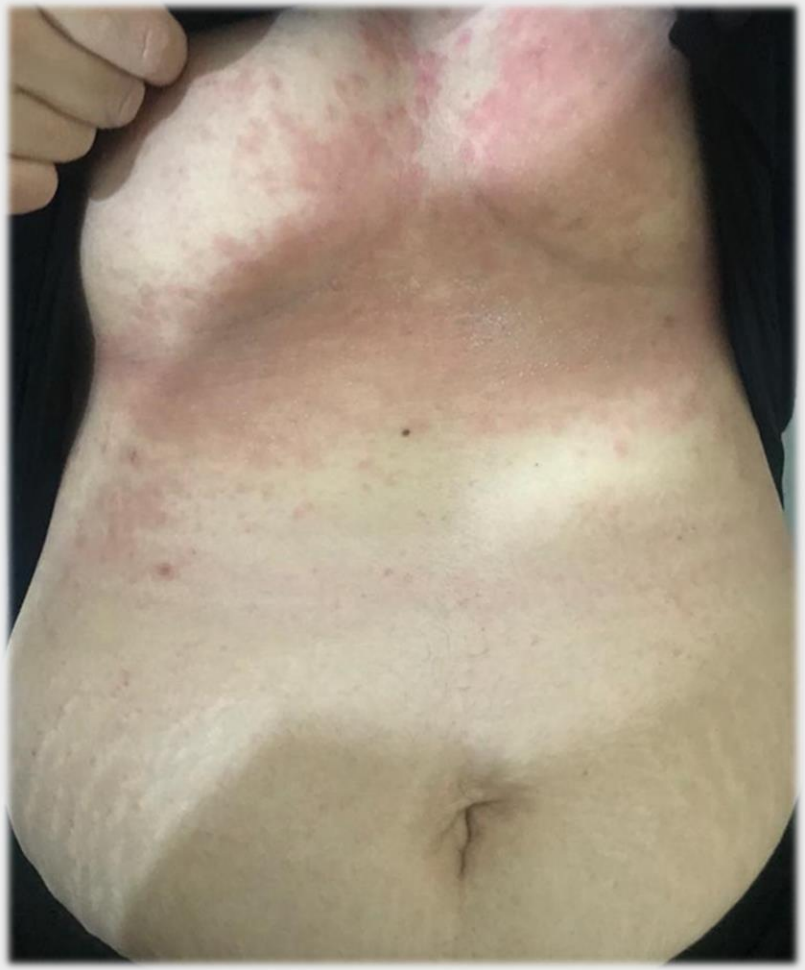
- Neotanal anemia
- Stillbirth
- Hydrops fetalis
- Decreased or absent fetal movements
- Autoimmune disease

Some resources claim that fetomaternal transition may lead to autoimmune diseases

Sebring ES, Polesky HF. Fetomaternal hemorrhage: incidence, risk factors, time of occurrence, and clinical effects. Transfusion. 1990 May;30(4):344-57. doi: 10.1046/j.1537-2995.1990.30490273444.x. PMID: 2190367.

Dermatoses of Pregnancy (DP)

- Atopic Eruption of Pregnancy
- Polymorphic Eruption of Pregnancy
- Intrahepatic Cholestasis of Pregnancy
- Pemphigoid Gestationis



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Aim of the Study

Aim of the Study

This study aims to determine the role of **autoimmunity** in the etiology of dermatoses of pregnancy by measuring the fetomaternal hemorrhage

Fetomaternal transfusion via placenta

Immunization of the mother by fetal erythrocytes in maternal blood

Stimulation of autoimmunity

Formation of dermatoses of pregnancy

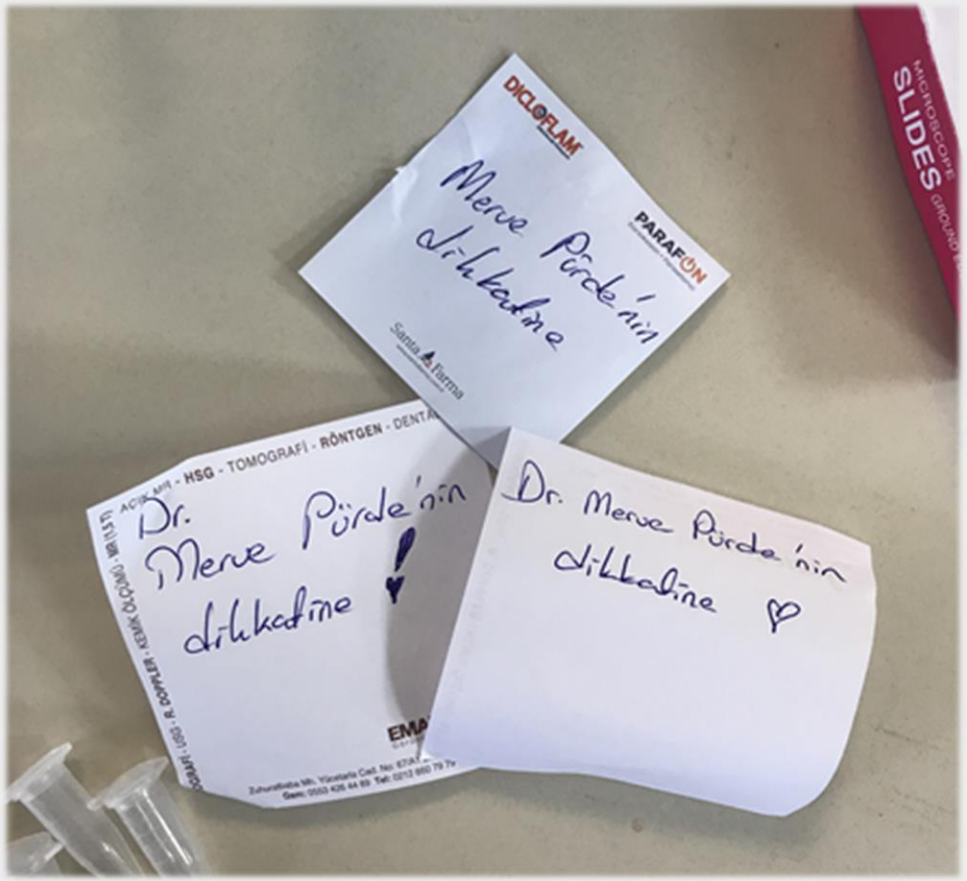
03

Methods

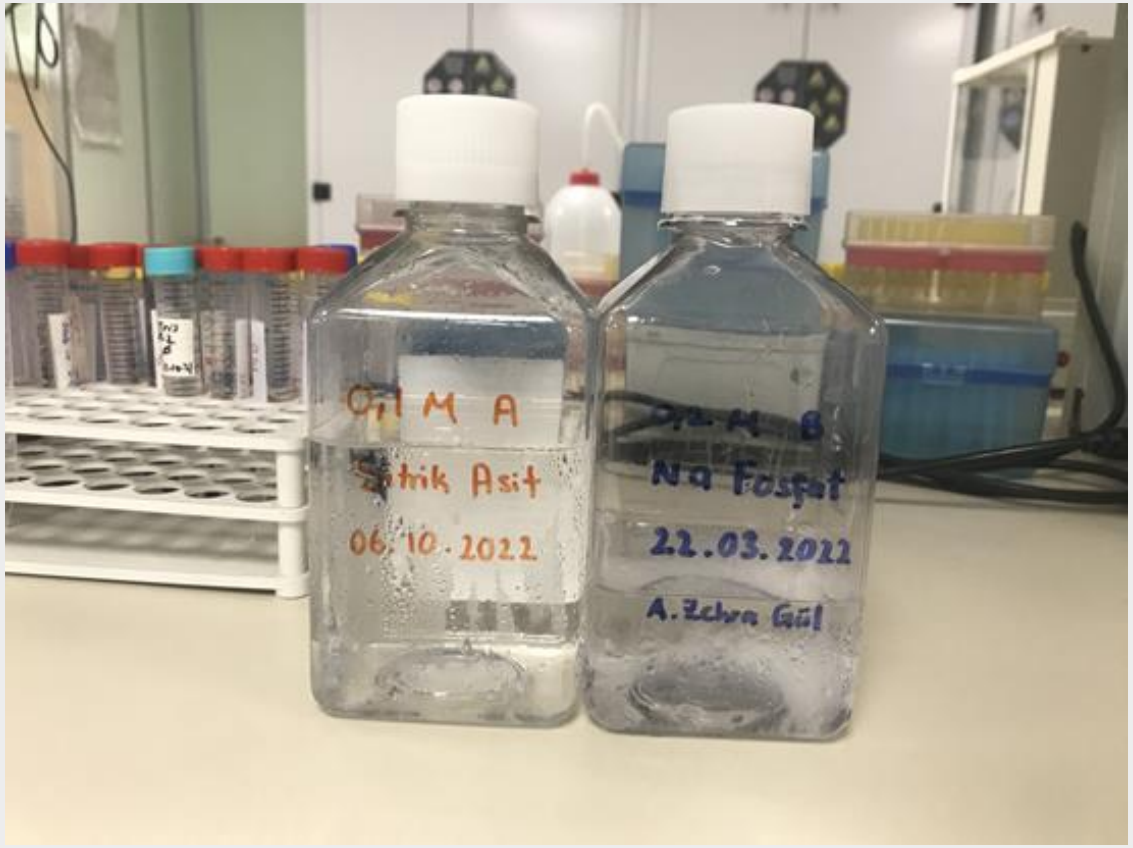
03

Methods

- 1. Case group consisted of patients diagnosed with dermatoses of pregnancy and the control group consisted of individuals with healthy pregnancies.
- 2. Patients were evaluated by the dermatology department and diagnosed according to subtypes.
- 3. Blood samples were taken and then the *Kleihauer-Betke* test was applied.



Kleihauer-Betke Test



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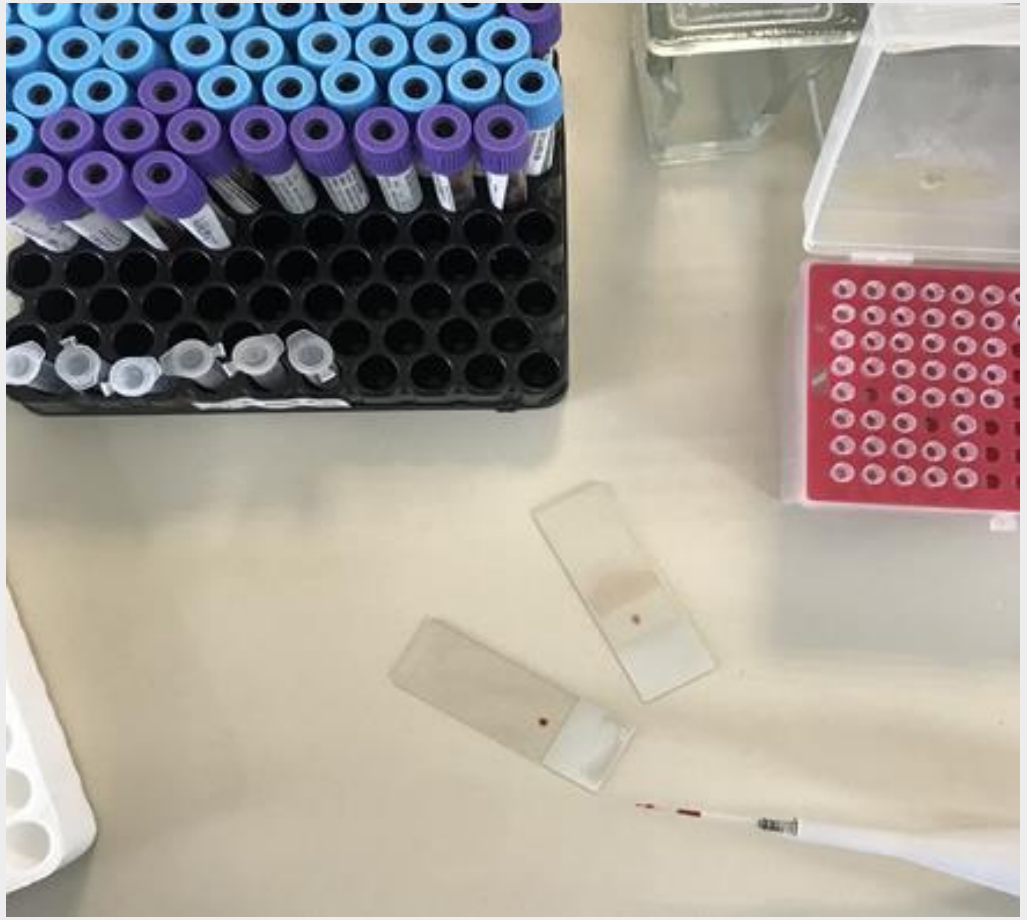
Methods

- 1. Peripheral blood smears collected from the case and control group, are prepared and fixated with ethyl alcohol.
- 2. Blood smears incubated in citric acid solution.
- 3. Blood smears are then stained with hematoxylin and erythrosine B.
- 4. Slides are examined under the microscope to count fetal and maternal cells.



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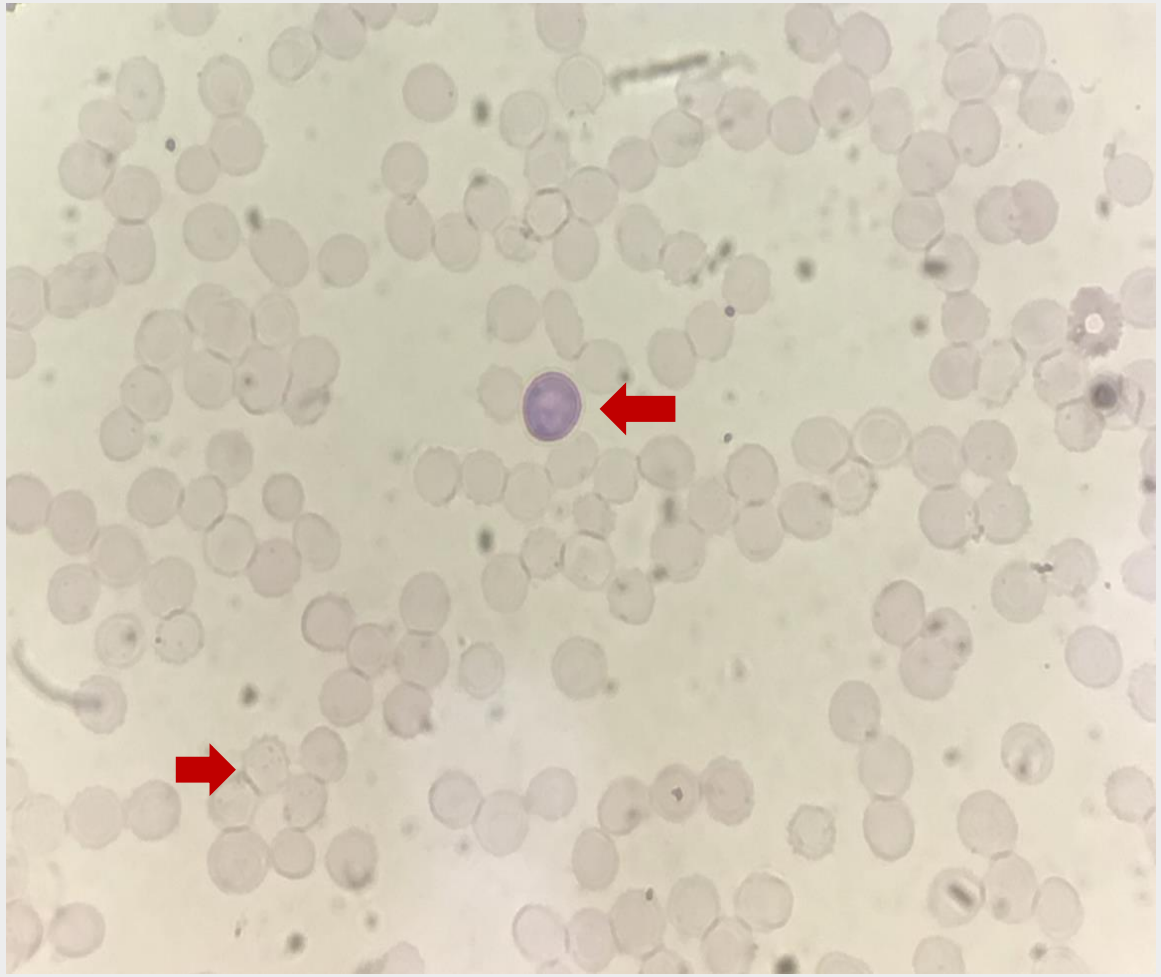

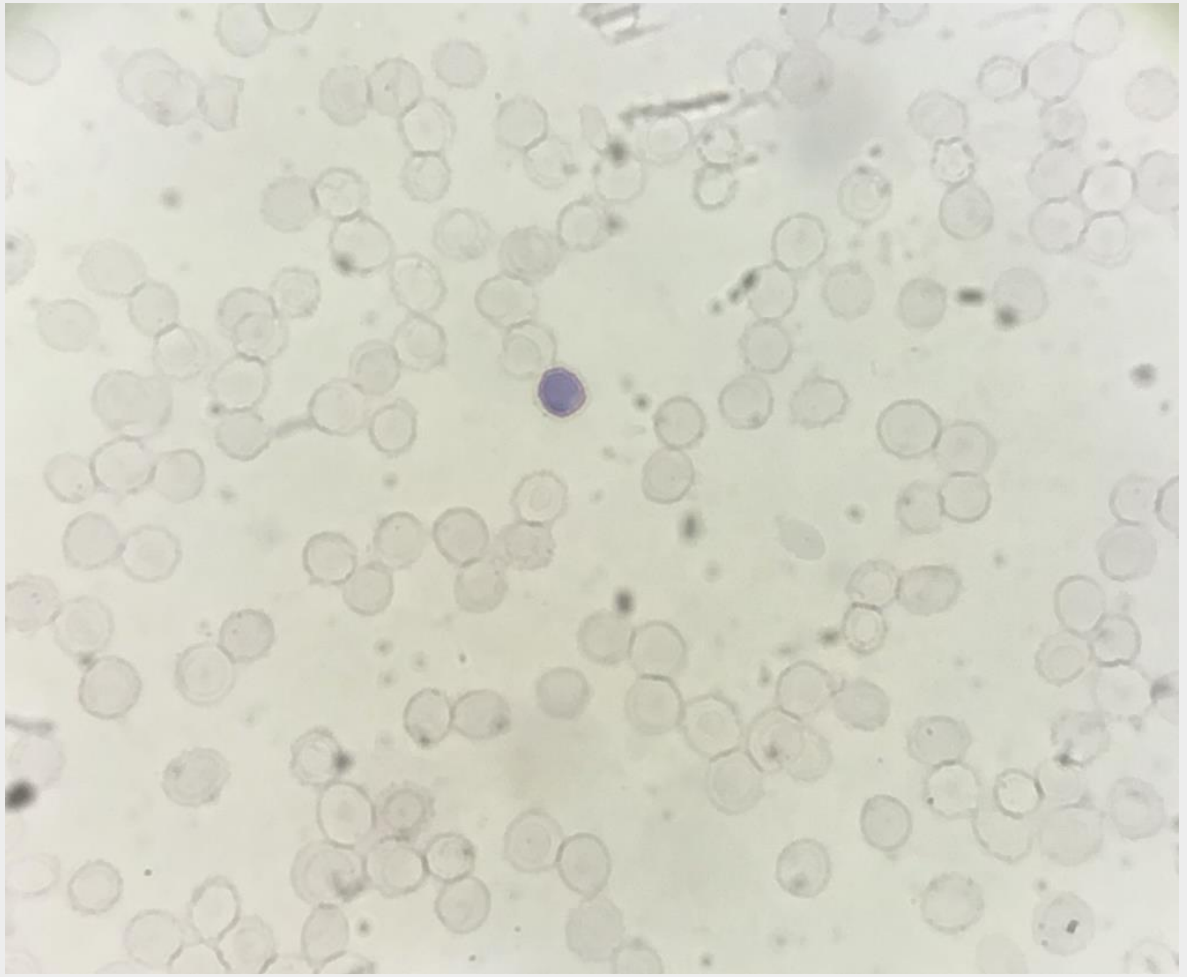

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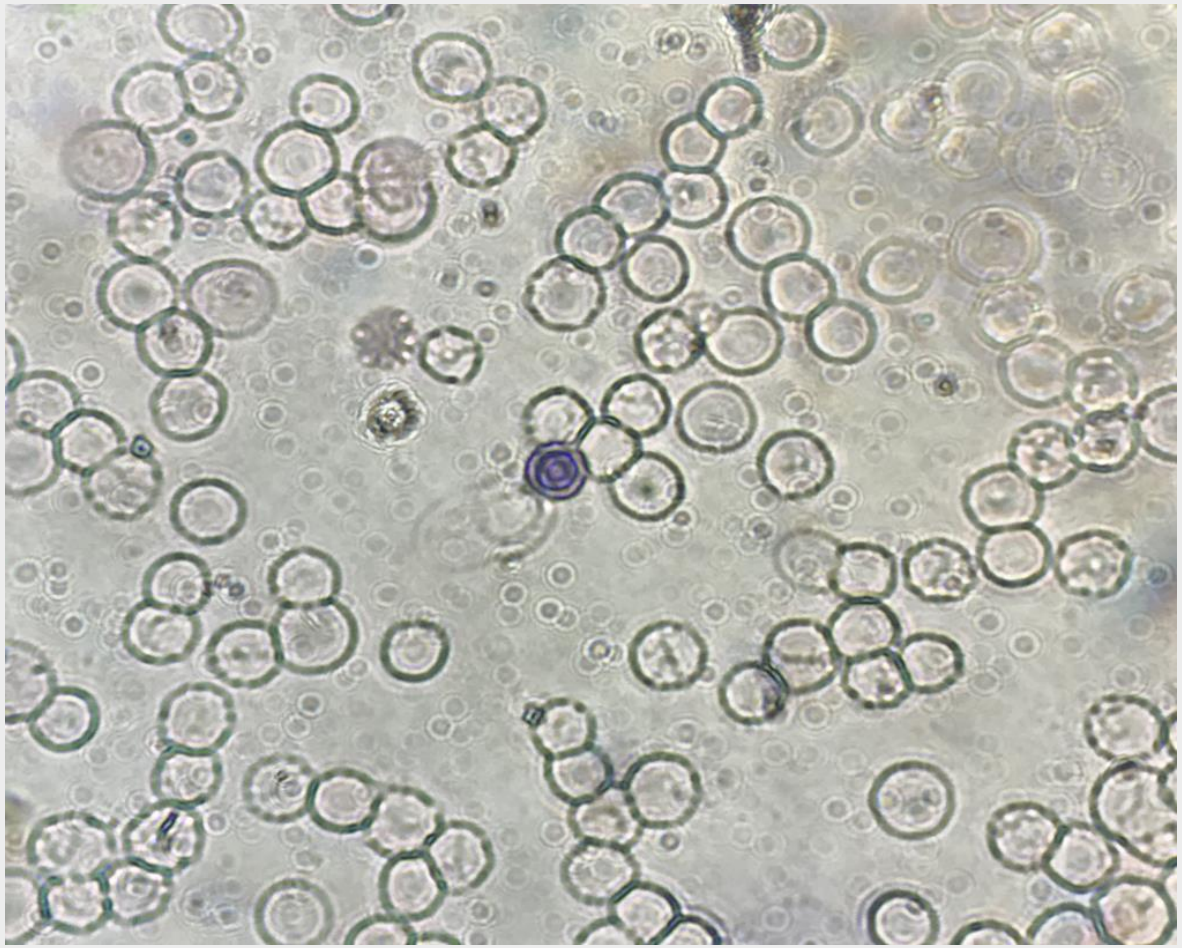

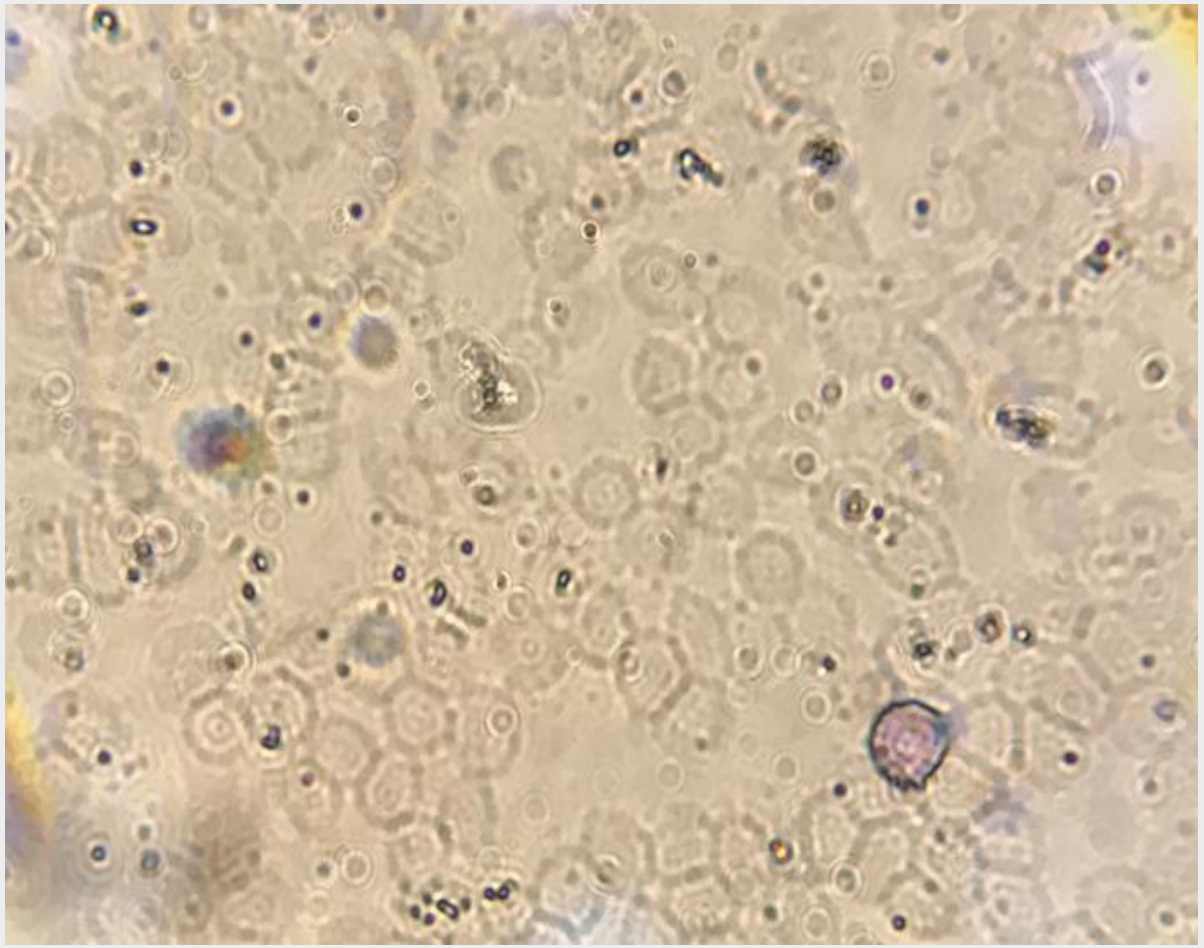

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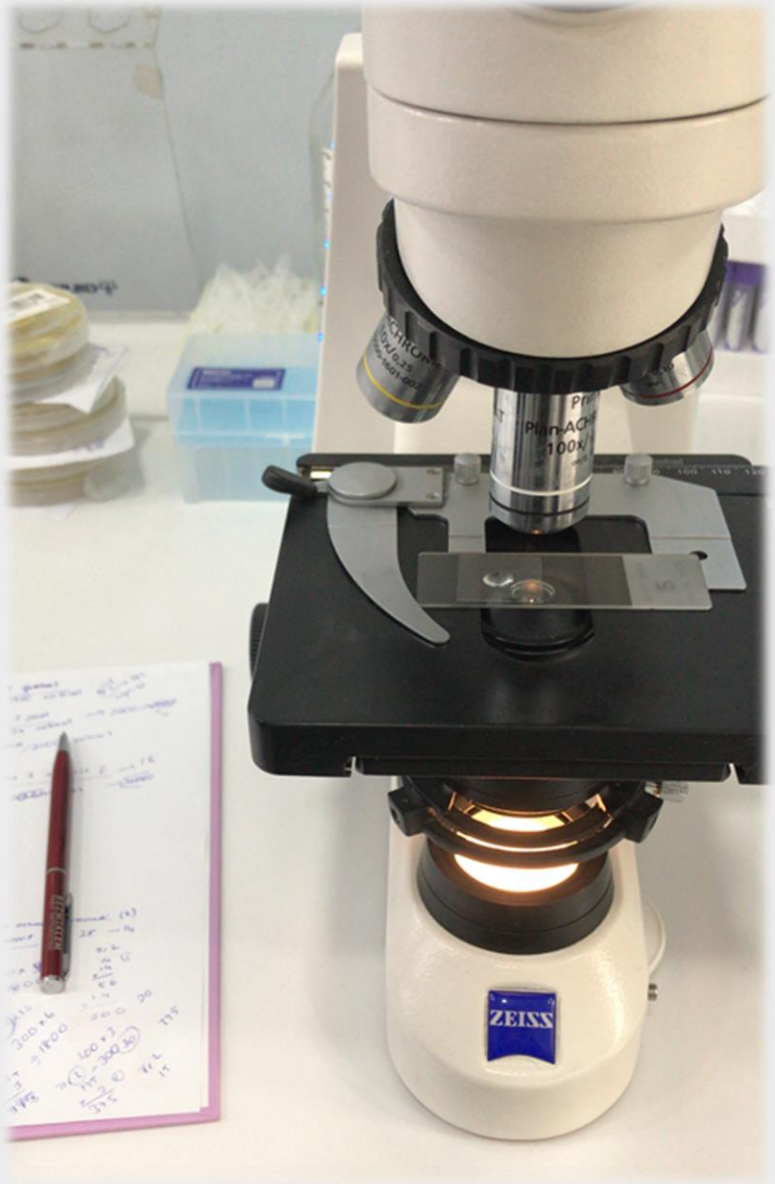
Methods



- Mollison's Formula is used to calculate estimated fetomaternal hemorrhage in ml:

Formula (Mollison, 1972):[4]

$$\text{Volume of packed fetal red cells (mL)} = \frac{\text{Number of fetal cells per high power field} \times 1800 \times 122 \times 100}{\text{Number of maternal cells per high power field} \times 100 \times 92}$$

First time vs. last time with microscope

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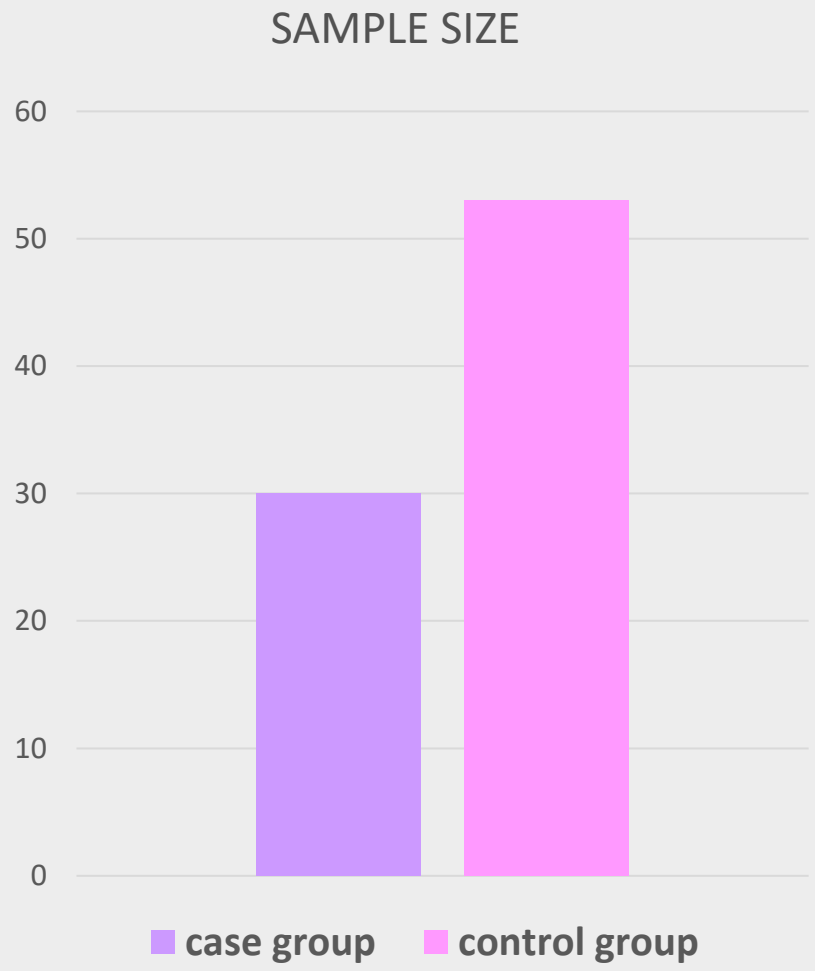
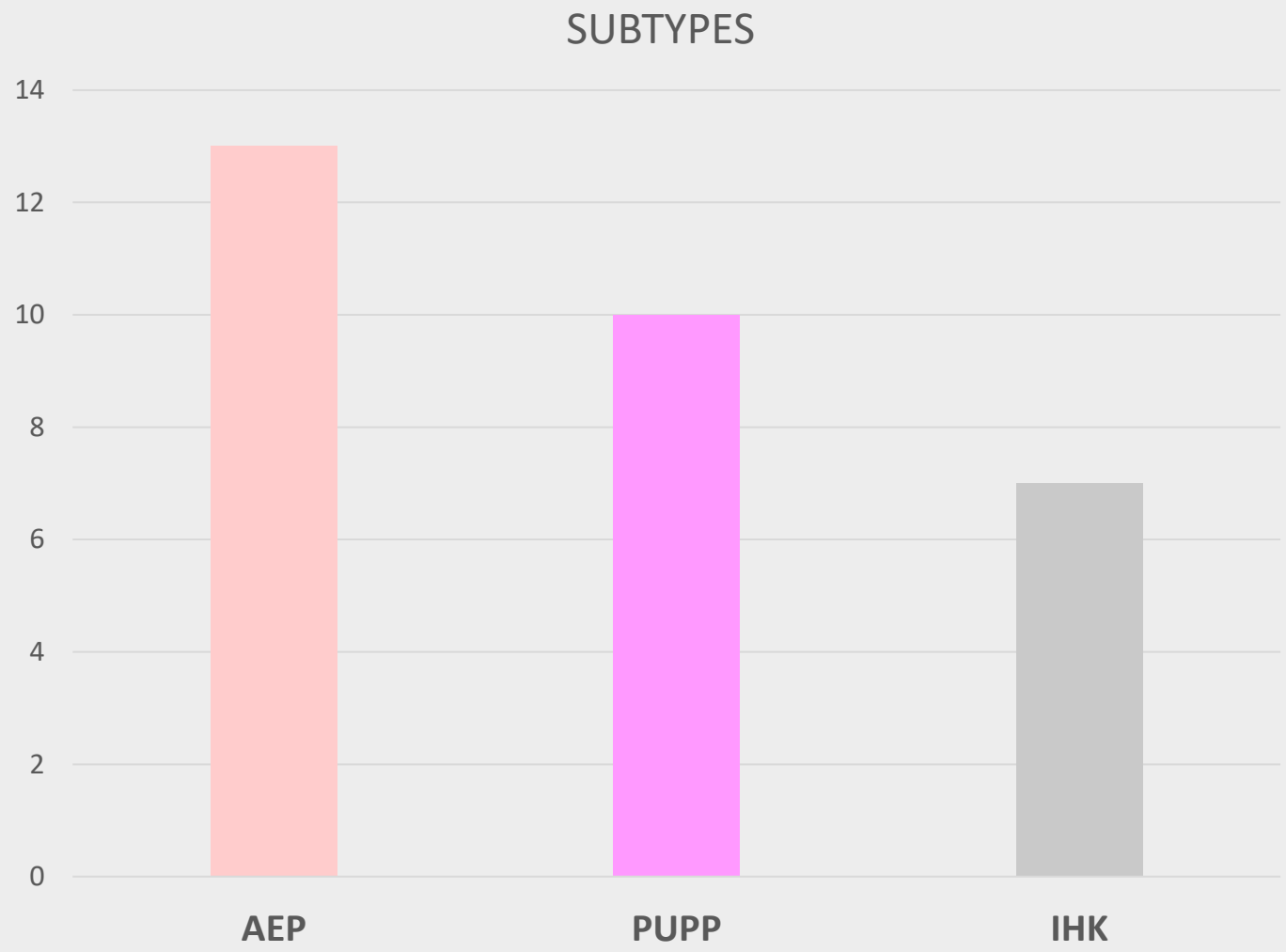
Results

DESCRIPTIVE ANALYSIS





Variables	Case Group	Control Group	P value
FMH ml	7±5	3±3	<0,001
Maternal age	31±4	31±5	0,045
Gestastional age	190±70	211±50	0,350
Gravidity	2(1-6)	2(1-7)	0,500
Parity	0(0-3)	1(0-6)	0,084
BMI	28±4	28±5	0,973
Ant placental localization	26(86,7%)	48(92,3%)	0,455
Smoking	3(10%)	8(%15.4)	0,491
Multiparity	3(10%)	1(1.9%)	0,136
History of DP	5(%16,7)	1(%1,9)	0,023

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Conclusion & Discussion

05
Conclusion
&
Discussion

1. There is a significant, positive and strong relationship between DP and FMH.

2. FMH may have a role in the etiology of DP.

3. New treatment modalities can be considered in DP therapy.

4. Long-term follow-up of these patients may bring to light the novel connections with autoimmune diseases.

5. The presence of DP history ties in well with previous studies.

6. Further research is needed.

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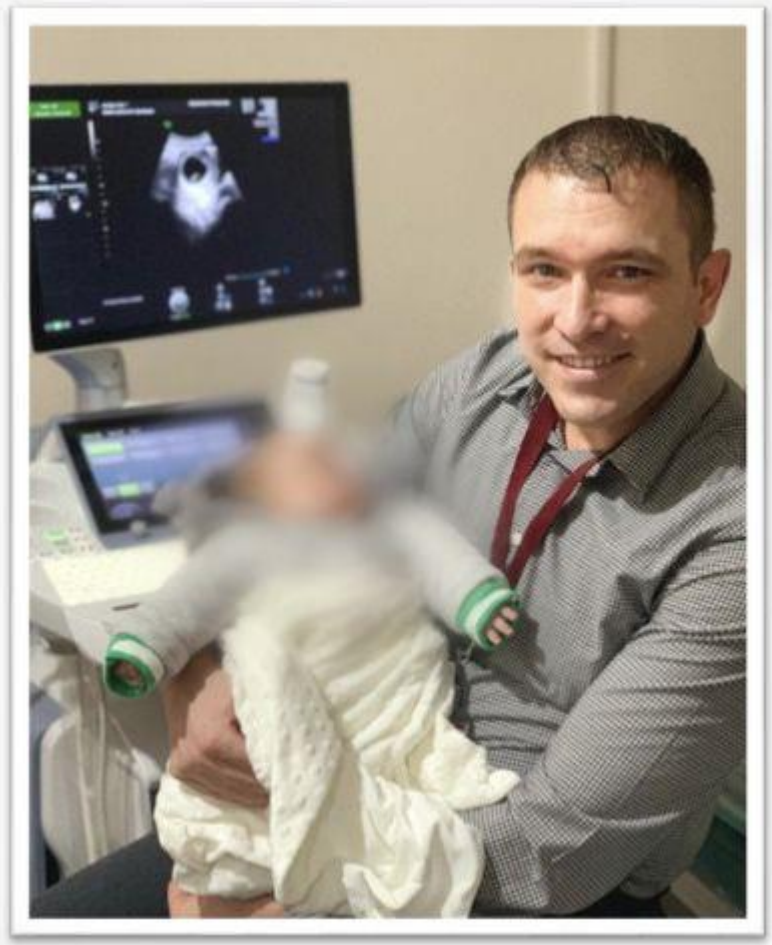

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mervepurde1@gmail.com

References

- 1. Wylie, B. J., D'Alton, M. E. (2010). Fetomaternal hemorrhage. Obstet Gynecol. 115(5):1039-1051. doi: 10.1097/AOG.0b013e3181da7929. PMID: 20410781.
- 2. Maier, J. T., Schalinski, E., Schneider, W., Gottschalk, U., Hellmeyer, L. (2015). Fetomaternal hemorrhage (FMH), an update: review of literature and an illustrative case. Arch Gynecol Obstet. 292(3):595-602. doi: 10.1007/s00404-015-3686-1. Epub 2015 Mar 17. PMID: 25778871.
- 3. Klonisch, T., Drouin, R. (2009). Fetal-maternal exchange of multipotent stem/progenitor cells: microchimerism in diagnosis and disease. Trends Mol Med. 15(11):510-8. doi: 10.1016/j.molmed.2009.09.002. Epub 2009 Oct 12. PMID: 19828378.
- 4. Bianchi, D. W., Farina, A., Weber, W., Delli-Bovi, L. C., Deriso, M., Williams, J. M., Klinger, K. W. (2001). Significant fetal-maternal hemorrhage after termination of pregnancy: implications for development of fetal cell microchimerism. Am J Obstet Gynecol. 184(4):703-6. doi: 10.1067/mob.2001.111072. PMID: 11262475.
- 5. Furhoff, A. K. (1974). Itching in pregnancy. A 15-year follow-up study. Acta Med Scand. 196(5):403-10. PMID: 4440518.
- 6. Geraghty, L. N., Pomeranz, M. K. (2011). Physiologic changes and dermatoses of pregnancy. Int J Dermatol. 50(7):771-82. doi: 10.1111/j.1365-4632.2010.04869.x. PMID: 21699510.
- 7. Gabbe, S. , Niebly, J. , Simpson, J. , Landon, M. , Galan, H. , Jauiniaux, E. ,Driscoll, D., Berghella, V. & Grobman W. (2016). Obstetrics: Normal and Problem Pregnancies. Elsevier. 7, 1082-1087.
- 8. Krywko, D. M , Yarrarapu, S. N. S., Shunkwiler, S. M. (2020). Kleihauer Betke Test. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan–. PMID: 28613626.
- 9. Kleihauer, E., Braun, H., Betke, K. (1957). [Demonstration of fetal hemoglobin in erythrocytes of a blood smear]. Klin Wochenschr. 15;35(12):637-8.
- 10. Jaber, M. A. (2010). HEMOGLOBIN F STAIN, ACID ELUTION (KLEIHAUER BETKE TEST).[PowerPoint slides]. http://site.iugaza.edu.ps/mhjaber/files/2010/03/Acid-Elution-test.ppt.