Date of Search: 22/11/2016
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The use of immunoplatelet counting for establishing an accurate platelet count during pregnancy

Source: British Journal of Haematology; May 2014; vol. 165 ; p. 23

Publication Date: May 2014

Publication Type(s): Journal: Conference Abstract

Publisher: Blackwell Publishing Ltd

Author(s): Velosa Ferreira B.; Moita F.; Robinson S.E.

Available in full text at British Journal of Haematology - from John Wiley and Sons

Abstract: The aim of this study was to examine whether the use of immunoplatelet versus automated platelet count impacts upon treatment requirements in ITP in pregnancy and decision making regarding epidural anaesthesia in ITP and Gestational thrombocytopenia (GT). A retrospective analysis of women referred to the Obstetric Haematology Clinic over 5 years with thrombocytopenia or known ITP was conducted. Automated platelet counts were performed on Beckman Coulter analyzers LH750. Immunoplatelet count was performed by flow cytometry. Thresholds for treatment of ITP and epidural anaesthesia were based on International Consensus Recommendations and local guidelines. 80 women (84 pregnancies) were referred. Immunoplatelet counts were performed in 62 pregnancies (170 samples) and compared to automated platelet counts. A diagnosis of ITP was established in 32 women and GT in 52 women. Using Wilcoxon matched pairs, signed rank test the difference between automated and immunoplatelet counts was significant for both ITP and gestational thrombocytopenia (p 34/40 would have required treatment. Using the immunoplatelet count only 1 woman would have required treatment. The immunoplatelet count was determined in 27 women at delivery. According to the automated platelet count 15 women were not suitable for epidural anaesthesia, 3 were not suitable for epidural anaesthesia if the immunoplatelet count was considered. During pregnancy platelet count determination using automated instruments appears to underestimate the true platelet count and may lead to unnecessary treatment and treatment-related toxicity as well as preventing epidural anaesthesia. Further studies to establish the use of immunoplatelet count as the method of reference for treatment decisions as well as for determining suitability for interventional procedures in ITP in pregnancy are required.

Database: EMBASE

The use of immunoplatelet counting for establishing an accurate platelet count during pregnancy

Source: Haematologica; Jun 2011; vol. 96 ; p. 328

Publication Date: Jun 2011

Publication Type(s): Journal: Conference Abstract

Publisher: Ferrata Storti Foundation

Author(s): Moita F.; Robinson S.

Available in full text at Haematologica - from National Library of Medicine

Available in full text at Haematologica - from Highwire Press

Available in full text at Haematologica - from National Library of Medicine

Abstract: Background. The determination of platelet count in pregnancy using automated counters can lead to erroneous results as it excludes the large platelets that are commonly present in both immune and gestational thrombocytopenia. The immunoplatelet count has been validated as an international reference method for determining an accurate platelet count. Aim. The aim of this study was to determine if there is a significant difference between automated platelet count and immunoplatelet count in thrombocytopenia in pregnancy and whether this difference would impact upon treatment decisions. Methods. A retrospective analysis of patients referred to an Obstetric Haematology Clinic in the past two years with platelet counts less than 100 x 109/L during pregnancy or with a history of immune thrombocytopenia (ITP) was conducted. The diagnosis of ITP was established if platelet counts were less than 60 x 109/L or if there was a previous diagnosis of primary or secondary ITP. Gestational thrombocytopenia was considered if platelet counts were above 60 x 109/L and resolved postpartum. Automated platelet counts were performed on Beckman Coulter analyzers LH750. Immunoplatelet count was performed by flow cytometry using the platelet specific antibodies CD41 and CD61. The thresholds considered for treatment and for epidural anesthesia delivery were based on International consensus report and local guidelines. Results. A total of 42 women were referred to our clinic for thrombocytopenia during pregnancy. Immunoplatelet counts were performed in 27 women (total of 68 samples analyzed) at different stages of pregnancy and compared to automated platelet counts. A diagnosis of ITP was established in 14 women and of gestational thrombocytopenia in 13 women. When comparing the platelet count using automated analyzers and immunological methods the immunoplatelet count was greater than the automated platelet count in 97% of samples (n=66/68). Using Wilcoxon matched pairs, signed rank test the difference between automated and immunoplatelet counts was significant for both ITP and gestational thrombocytopenia ($p<0.001$). According to the Mann-Whitney U-test this difference was greater in the ITP subgroup ($p=0.007$). The median increase in platelet count in this subgroup was 68% compared to 38% in the gestational thrombocytopenia subgroup. If we apply the International Consensus Recommendations, using the automated platelet count, 1 woman in the first 33 weeks of pregnancy and 5 women in the late stages of pregnancy would have required treatment. Using the immunoplatelet count all patients had platelet counts above the treatment thresholds. The immunoplatelet count was determined in 8 women at delivery. According to the automated platelet count 5 had a platelet count less than 70 x 109/L and may not have been considered suitable for epidural anesthesia. Of these 5 women 4 had an immunoplatelet count greater than 70 x 109/L. Conclusion. During pregnancy platelet count determination using automated instruments underestimates the platelet count. This may lead to unnecessary treatment as well as preventing the delivery of epidural anesthesia. We suggest further studies to establish the use of immunoplatelet count to guide treatment decisions and interventional procedures in women with thrombocytopenia in pregnancy.

Database: EMBASE

Role and contribution of the laboratory in the differential diagnosis of thrombocytopenia in pregnancy

Source: Haematologica; Oct 2015; vol. 100 ; p. 210-211

Publication Date: Oct 2015

Publication Type(s): Journal: Conference Abstract

Publisher: Ferrata Storti Foundation

Author(s): Papa F.

Available in full text at Haematologica - from National Library of Medicine

Abstract: Thrombocytopenia (platelet count 70x109/L does not exclude ITP. In asymptomatic, non pregnant patient with ITP, a platelet count 50x109/L in preparation for delivery and level of >70 to 100x109/L are recommended if regional analgesia/anesthesia is desired or required. Fragmented red blood cells (FRBCs) and schistocyte: Nowadays only two analyzers manufacturers offer the possibility of direct count of FRBCs. In both analyzers, FRBCs are identified only on the basis of size and hemoglobin content, independent of their shape; therefore, other particles such as small red blood cells or even membrane themselves fragments can be included in the count. In consideration of their high negative predictive value, the automated methods can be is extremely useful in all cases in which there is a suspicion of Microangiopathic hemolytic anemia (TTP, HUS or HELLP) even if the platelet count is within normal limits. Anyway, these data don't exclude a microscopic review to confirm the schistocyte presence supporting a positive results. Finally we have to stress the idea that the schistocyte description is a closely morphological concept. Reticulated platelet and immature platelet fraction (IPF): Newly released platelets are more reactive than mature platelets and contain an higher amount of RNA, they were called reticulated platelets. The number of reticulated platelets is related to thrombopoiesis, increasing with increased production and decreasing when production declines. This parameter not available on all automated blood cell counter has several potential clinical applications particularly in diagnosis and monitoring thrombocytopenias. The increase in reticulated platelets is an early indicator of platelet destruction in pregnant women with immune thrombocytopenic or thrombotic thrombocytopenic purpura. An IPF value of 7.7% was reported as the best threshold in the diagnosis of immune thrombocytopenic purpura. Some papers report that IPF analysis and evaluation demonstrates a difference in thrombopoiesis between normotensive and preeclamptic pregnancies. All the above reported considerations suggest that laboratories performing hematologic diagnostics require to have dedicated, skilled and updated personnel, with a deep knowledge of both technical and clinical aspects. Despite the essential role of automation in the modern hematology laboratory, microscopic control of pathologic samples remains essential and sometimes diagnostic itself. Moreover, knowledge of the limits of the instrumentation and/or the pre-analytic, analytic and post-analytic process is the main aspect for the correct interpretation of results.

Database: EMBASE

Comparison of platelet count by peripheral smear method and automated method in pregnant women

Source: National Journal of Physiology, Pharmacy and Pharmacology; 2014; vol. 4 (no. 1); p. 39-42

Publication Date: 2014

Publication Type(s): Journal: Article

Publisher: Association of Physiologists, Pharmacists and Pharmacologist (Govt. Medical College and New Civil Hospital, Majura Gate, Surat, Gujarat 395001, India)

Author(s): Anitha K.; Itagi V.; Itagi I.

Available in full text at National Journal of Physiology, Pharmacy and Pharmacology - from ProQuest

Abstract: Background: Platelet count is an important investigation done in pregnant women. Platelet count is routinely done by automated method. The automated cell counters are not available at all hospital setups especially in rural side. Platelets can also be estimated from the peripheral smears, which can be easily done at any set up. Aims & Objective: This study was conducted to compare the platelet estimation by peripheral smear method and automated method. Materials and Methods: Platelet estimation was done in 50 normal pregnant women by stained peripheral smear and automated method. Platelet counts were expressed in Mean +/- SD. Statistical analysis was done by student's t test. Results: Platelet counts were 2.76 +/- 0.71 and 2.64 +/- 0.73 lacs/mm3 by peripheral

smear and automated method respectively with p value 0.4. Conclusion: There was no significant difference between two methods, hence it proves that the two methods are same.

Database: EMBASE

Establishing Thromboelastography with Platelet-Function Analyzer Reference Ranges and Other Measures in Healthy Term Pregnant Women

Source: American Journal of Perinatology; May 2015; vol. 32 (no. 6); p. 545-553

Publication Date: May 2015

Publication Type(s): Journal: Article

Publisher: Thieme Medical Publishers, Inc. (E-mail: custserv@thieme.com)

Author(s): Antony K.M.; Arndt M.; Aagaard K.; Mansouri R.; Rocky Hui S.-K.; Jariwala P.; McMullen V.M.; Teruya J.

Abstract: Objective The diagnosis of coagulopathy cannot always be performed at point of care. Thromboelastography (TEG) and the platelet-function analyzer (PFA-100), have emerged as reliable means for coagulation analysis. However, their reliable utility in pregnancy remains to be determined. We sought to establish reference values with concomitant determination of other known coagulation measures in nonlaboring gravidae in an effort to report the mean and variance of multiple testing modalities. Study Design Fifty-nine term, nonlaboring, pregnant women without comorbidities were enrolled, either at presentation for scheduled delivery or at presentation to triage for a non-labor-related indication. TEG, PFA-100, and complete coagulation measures of the overall hemostatic function (including prothrombin time, activated partial thromboplastin time, fibrinogen, protein C, protein S, von Willebrand factor antigen, ristocetin cofactor activity, and ADAMTS-13) were performed. Prior investigations of TEG and PFA-100 parameters in normal gravidae were reviewed, and pooled means and standard deviations (as a measure of variance) were calculated. Results TEG and PFA-100 parameters were significantly different among pregnant gravidae compared with nonpregnant reference ranges, and varied in association with other measures of the coagulation system. Our results and the pooled results reflect a hypercoagulable state. Conclusion Our data suggest that TEG values are significantly different in term, nonlaboring, healthy gravidae compared with nonpregnant reference values. Pooled means and standard deviations shown here may be considered for reference.

Database: EMBASE

Comparison of manual and automated platelet counts in thrombocytopenia

Source: Haematologica; Jun 2013; vol. 98 ; p. 740

Publication Date: Jun 2013

Publication Type(s): Journal: Conference Abstract

Publisher: Ferrata Storti Foundation

Author(s): Gunawardena D.; Gunaratne D.; Vidyaratne G.

Abstract: Background: Reliable platelet count is of prime importance in clinical management of thrombocytopenia where platelet transfusion, splenectomy, therapeutic or any appropriate intervention is concerned. Still most of the methods which accurately estimate the number of

platelets remain at research or highly specialized laboratory set up. Automated analyzer count is based on impedance and optical technology whereas the manual chamber count method is based on phase contrast and naked eye observation. Results of the automated counts especially in severe thrombocytopenia seem to be uncertain and less reliable. Aims: Determine how reliable the platelet count is in automated analyzer reports in thrombocytopenia, and how it compares with manual assessment of the platelet count. Methods: In this research, a descriptive cross sectional study was carried out at the study setting of haematology clinic at Colombo South Teaching Hospital on 83 samples from patients with thrombocytopenia to determine the differences between the automated analyzer method and manual chamber count method especially in severe thrombocytopenia. Data record sheets were analyzed and stratified into two strata as moderate thrombocytopenia (<=150,000-50,000/mm3) and severe thrombocytopenia (<=50,000/mm3). Pearson Correlation and Levels of Agreement were carried out at each stratum according to the Bland and Altman comparison method. Results: Pearson Correlations(R) was 0.897 as a whole and 0.78 at moderate thrombocytopenia where as it was low as 0.60 at severe thrombocytopenia. There was a tendency of around 20,000/mm3 deviation of automated counts from the true count at moderate thrombocytopenia and that was 13,000/mm3 at severe thrombocytopenia. Summary / Conclusion: Pearson correlation was satisfactory and the levels of agreement were clinically acceptable at moderate thrombocytopenia. Both correlation and levels of agreement at severe thrombocytopenia were significantly beyond the clinically acceptable levels.

Database: EMBASE

How I treat thrombocytopenia in pregnancy.

Source: Blood; Jan 2013; vol. 121 (no. 1); p. 38-47

Publication Date: Jan 2013

Publication Type(s): Case Reports Journal Article Review

Author(s): Gernsheimer, Terry; James, Andra H; Stasi, Roberto

Available in full text at Blood - from Highwire Press

Available in full text at Blood - from Free Access Content

Abstract:A mild thrombocytopenia is relatively frequent during pregnancy and has generally no consequences for either the mother or the fetus. Although representing no threat in the majority of patients, thrombocytopenia may result from a range of pathologic conditions requiring closer monitoring and possible therapy. Two clinical scenarios are particularly relevant for their prevalence and the issues relating to their management. The first is the presence of isolated thrombocytopenia and the differential diagnosis between primary immune thrombocytopenia and gestational thrombocytopenia. The second is thrombocytopenia associated with preeclampsia and its look-alikes and their distinction from thrombotic thrombocytopenic purpura and the hemolytic uremic syndrome. In this review, we describe a systematic approach to the diagnosis and treatment of these disease entities using a case presentation format. Our discussion includes the antenatal and perinatal management of both the mother and fetus.

Database: Medline

Expanding perfusion across disciplines: The use of thrombelastography technology to reduce risk in an obstetrics patient with Gray Platelet Syndrome - A case study

Source: Perfusion; May 2011; vol. 26 (no. 3); p. 181-184

Publication Date: May 2011

Publication Type(s): Journal: Article

Publisher: SAGE Publications Ltd (55 City Road, London EC1Y 1SP, United Kingdom)

Author(s): Clements A.; Morris C.; Mulholland J.; Jindal S.; Srivastava G.; Ikomi A.

Abstract: It is important that our speciality continues to push its boundaries. Our perfusion team has invested time lecturing to non-cardiac specialties about perfusion-led technology. This resulted in working closely with the obstetrics team to treat a pregnant patient with the bleeding disorder Gray Platelet Syndrome. In the first instance, we used our Thromboelastograph (TEG) platelet mapping programme to assess the patient. These results agreed with the platelet aggregation tests, showing a degree of platelet inhibition, but it was the overall clotting profile (basic thrombelastograph), showing a borderline hyper-coagulable state, that was of most interest and commonly seen in pregnancy. We believe aTEG result within acceptable limits could help re-adjust the risk of spinal haematomas following regional anaesthesia, thereby, reducing the risks of difficult intubation and general anaesthetic exposure to the baby.The case study describes both basic and platelet mapping thrombelastographs and their potential role in not only this patient with Gray Platelet Syndrome, but any obstetric patient where there are bleeding concerns. © The Author(s) 2011.

Database: EMBASE

The American Society of Hematology 2011 evidence-based practice guideline for immune thrombocytopenia

Source: Blood; Apr 2011; vol. 117 (no. 16); p. 4190-4207

Publication Date: Apr 2011

Publication Type(s): Journal: Review

Publisher: American Society of Hematology (1900 M Street, Suite 2000, Washington DC 20036, United States)

Author(s): Neunert C.; Lim W.; Crowther M.A.; Crowther M.; Cohen A.; Solberg Jr. L.

Abstract: Immune thrombocytopenia (ITP) is commonly encountered in clinical practice. In 1996 the American Society of Hematology published a landmark guidance paper designed to assist clinicians in the management of this disorder. Since 1996 there have been numerous advances in the management of both adult and pediatric ITP. These changes mandated an update in the guidelines. This guideline uses a rigorous, evidence-based approach to the location, interpretation, and presentation of the available evidence. We have endeavored to identify, abstract, and present all available methodologically rigorous data informing the treatment of ITP. We provide evidence-based treatment recommendations using the GRADE system in those areas in which such evidence exists. We do not provide evidence in those areas in which evidence is lacking, or is of lower quality - interested readers are referred to a number of recent, consensus-based recommendations for expert opinion in these clinical areas. Our review identified the need for additional studies in many key areas of the therapy of ITP such as comparative studies of "front-line" therapy for ITP, the management of serious bleeding in patients with ITP, and studies that will provide guidance about

which therapy should be used as salvage therapy for patients after failure of a first-line intervention.

Database: EMBASE

International consensus report on the investigation and management of primary immune thrombocytopenia.

Source: Blood; Jan 2010; vol. 115 (no. 2); p. 168-186

Publication Date: Jan 2010

Publication Type(s): Consensus Development Conference; Journal Article; Practice Guideline; Research Support, Non-U.S. Gov't; Review

PubMedID: 19846889

Author(s): Provan D; Stasi R; Newland AC; Blanchette VS; Bolton-Maggs P; Bussel JB; Chong BH; Cines DB; Gernsheimer TB; Godeau B; Grainger J; Greer I; Hunt BJ; Imbach PA; Lyons G; McMillan R; Rodeghiero F; Sanz MA; Tarantino M; Watson S; Young J; Kuter DJ

Abstract: Previously published guidelines for the diagnosis and management of primary immune thrombocytopenia (ITP) require updating largely due to the introduction of new classes of therapeutic agents, and a greater understanding of the disease pathophysiology. However, treatment-related decisions still remain principally dependent on clinical expertise or patient preference rather than high-quality clinical trial evidence. This consensus document aims to report on new data and provide consensus-based recommendations relating to diagnosis and treatment of ITP in adults, in children, and during pregnancy. The inclusion of summary tables within this document, supported by information tables in the online appendices, is intended to aid in clinical decision making.

Database: PubMed

Accuracy of the Coulter impedance platelet count method in samples containing large/giant platelets or schistocytes/microcytes

Source: International Journal of Laboratory Hematology; Jun 2009; vol. 31 ; p. 55

Publication Date: Jun 2009

Publication Type(s): Journal: Conference Abstract

Publisher: Blackwell Publishing Ltd

Author(s): Marionneaux S.; Sarduy B.; Plante N.; Vega A.M.; Quinn D.; Fagan D.; Keohane E.

Abstract: Objectives: The Coulter impedance method is associated with excellent accuracy and precision. However, because the method is based on particle size, the platelet count may be falsely elevated in samples containing very small red blood cells of similar size to platelets. Conversely, the count can be falsely decreased in samples with platelets that are larger than the upper threshold limit of what the analyzer classifies as platelets. In this study, we examined the effect of these interferences on the accuracy of the Coulter impedance platelet count and evaluated if the Platelet R code successfully identified samples that needed further review. Methods: Over a period of nine weeks, fifty consecutive samples with potential platelet interferences were selected by careful examination of platelet and red blood cell (RBC) histograms on the Coulter LH750 analyzer (Beckman

Coulter, Hialeah, FL). The interferences were confirmed and characterized by blood smear review. Only samples that had either large/giant platelets or schistocytes/microcytes were included in the study. A phase microscopy platelet count (reference method) was performed on each sample by two technologists and samples were included in the study only if the counts agreed within 15% for platelet counts >100,000/mL or within 15,000/mL for counts <100,000/mL. Coulter platelet counts were compared with the mean phase counts by the paired sample t-test and the differences were analyzed by Bland Altman plots. Results: Forty of fifty samples met the eligibility criteria: 24 with large/giant platelets and 16 with schistocytes/microcytes. Ten samples were excluded because they either had no interference (1) or both interferences (7) on smear review, or disagreement in the duplicate phase counts (2). There were 23 males and 17 females; aged from 32 to 82y; 31 of 40 had a diagnosis of myelodysplastic syndrome. In the large/giant platelet group, the impedance platelet count was lower than the phase count in all 24 samples tested. The mean impedance platelet count (51,200/uL) was lower than the mean phase count (78,200/uL), with a difference of 27,000/uL that was statistically significant (p = 0.001). The difference in the samples with an R code (n = 12) and without an R code (n = 12) were 34,900/mL and 19,000/mL, respectively, and both were statistically significant (p = 0.001). In the schistocyte/microcyte group, the mean impedance platelet count was 5,400/mL higher than the mean phase count, but the difference was not statistically significant. Conclusions: Consistent with other studies, the Coulter impedance method produced lower platelet counts in samples containing large/giant platelets. However, an R code to trigger further review was generated in only 50% of these samples. In the samples with no R code, the platelet count may not be further investigated, resulting in the reporting of a falsely low platelet count. This study suggests that laboratories using the Coulter LH750 on patients with diagnoses associated with large/giant platelets should use alternate methods in addition to the R code to detect large/giant platelet interference. One such method, used in this study, is a careful examination of the platelet histogram. No significant differences were found in the samples with microcytes/schistocytes.

Database: EMBASE

Practice patterns in the diagnosis of inherited platelet disorders within a single institution

Source: Blood Coagulation and Fibrinolysis; Sep 2016

Publication Date: Sep 2016

Publication Type(s): Journal: Article In Press

Publisher: Lippincott Williams and Wilkins (E-mail: agents@lww.com)

Author(s): Perez Botero J.; Pruthi R.K.; Majerus J.A.; Coon L.M.; Uhl C.B.; Chen D.; Patnaik M.M.

Abstract: The diagnosis of inherited platelet disorders (IPDs) is challenging with variable diagnostic practices existing between institutions. To determine patterns and utility of diagnostic testing practices for IPDs within a single institution, a retrospective cohort study was performed. Records of 50 patients (50% women), median age 32 years (1 day to 81 years) were analyzed. In total, 28 (53%) had a positive International Society of Thrombosis and Hemostasis Bleeding Assessment Tool score. Test-ordering patterns were highly variable. All patients had platelet morphology analysis by light microscopy. In total, 42 (84%) underwent light transmission aggregometry, 43 (86%) platelet function analyzer, 37 (74%) platelet electron microscopy, 25 (50%) flow cytometry, and 15 (30%) genetic testing. Platelet function analyzer and light transmission aggregometry were always used as first-order tests, followed by platelet transmission electron microscopy and flow cytometry (81 and 84%, respectively). Genetic testing was obtained up front in five cases (33% of orders), mostly in patients with syndromic thrombocytopenia or in the setting of a known genetic disorder. Test-ordering practices did not adhere to published algorithms. Even within a single institution, great heterogeneity exists in the testing approach to IPDs. Although, a large proportion of cases were

studied with platelet transmission electron microscopy and flow cytometry, standard platelet assays established the diagnosis in a great majority. Standardization of testing practices, first beginning at the institutional level is a much needed step forward.

Database: EMBASE

Laboratory approach to platelet disorders

Source: International Journal of Laboratory Hematology; May 2016; vol. 38 ; p. 45

Publication Date: May 2016

Publication Type(s): Journal: Conference Abstract

Publisher: Blackwell Publishing Ltd

Author(s): Hayward C.

Available in full text at International Journal of Laboratory Hematology - from John Wiley and Sons

Abstract: Introduction: Platelet disorders represent important causes of bleeding, with an estimated prevalence of approximately 1-6/1000. Some forms of platelet disorders, such as dense granule deficiency, have a similar prevalence to von Willebrand disease. Laboratory testing for these conditions is very important for their diagnosis. The presentation will review laboratory testing for platelet disorders including the causes of these disorders and typical laboratory findings, guideline recommendations and pitfalls to consider when testing for these disorders. The pathogenesis of inherited platelet disorders is only partially characterized and is complex, as platelets contain >1000 proteins. The inherited defects often reflect a defect or deficiency of a protein that affects platelet formation, function and/or numbers. In the past decade, numerous guidelines have been published that are relevant to laboratory testing for platelet disorders and the presentation will cover key recommendations. The most important laboratory test for assessment of platelet disorders is light transmittance platelet aggregometry and the principle of the method, expected findings for a range of disorders, best procedures and test interpretation will be covered. The use of other tests for diagnosing platelet disorders will also be discussed, with an emphasis on what is recommended in recent guidelines. The methods that are more common used in diagnostic laboratories will be discussed in greater detail.

Evaluation of the platelet function analyzer (PFA-100) vs. the thromboelastogram (TEG) in the parturient.

Source: International journal of obstetric anesthesia; Jan 2006; vol. 15 (no. 1); p. 7-12

Publication Date: Jan 2006

Publication Type(s): Research Support, Non-u.s. Gov't Comparative Study Journal Article Evaluation Studies

Author(s): Beilin, Y; Arnold, I; Hossain, S

Abstract: The platelet function analyzer (PFA-100) is a bedside test of coagulation designed to evaluate platelet function. It measures the time required for whole blood to occlude a membrane impregnated with either epinephrine (EPI) or adenosine 5'diphosphate (ADP). The results are reported as closure time (CT-EPI or CT-ADP) in seconds. The thromboelastogram (TEG) measures whole blood clotting and the maximum amplitude (MA) correlates with platelet count and function. We wished to establish whether there is a correlation between the CT and platelet count, between the CT and MA, and between the MA and platelet count. Platelet count, CT, and MA were measured in blood drawn from 172 healthy term parturients using the PFA-100. We were unable to detect a significant correlation between the CT-EPI and platelet count (r=-0.1, P=0.21), or the CT-ADP and

platelet count (r=-0.02, P=0.83). We also did not find a correlation between the CT-EPI and MA (r=-0.13, P=0.12) or between the CT-ADP and MA (r=-0.11, P=0.19). However, we found a significant correlation between platelet count and MA (r=0.33, P<0.001). We conclude that the CT does not correlate with the platelet count or MA in the parturient, but the TEG does. Therefore the TEG may be a better tool to evaluate coagulation in the parturient with thrombocytopenia.

Database: Medline

Platelet function during pregnancy: An evaluation using the PFA-100 analyser

Source: British Journal of Anaesthesia; 2001; vol. 87 (no. 6); p. 890-893

Publication Date: 2001

Publication Type(s): Journal: Article

Publisher: Oxford University Press (Great Clarendon Street, Oxford OX2 6DP, United Kingdom)

Author(s): Vincelot A.; Nathan N.; Collet D.; Mehaddi Y.; Grandchamp P.; Julia A.

Abstract: In clinical practice, the only tests of platelet function are bleeding time and platelet number. Bleeding time lacks sensitivity and specificity but the PFA-100, an in vitro analyser of platelet function may be of value. This study aimed to evaluate any correlation between platelet number and function using the PFA-100 in pregnant women. During a 21-month period, platelet function was evaluated in whole blood as part of the pre-anaesthetic coagulation testing screen with the PFA-100 using collagen and epinephrine (PFA-EPI) or ADP (PFA-ADP) as platelet agonists. Thrombocytopenia was defined as a platelet number less than 150 G litre-1. The patients were divided into four groups: Group 1 (n=110) normal pregnancy; Group II (n=38) thrombocytopenia of pregnancy; Group III (n=13) women with pre-eclampsia without thrombocytopenia; Group IV (n=19) women with pre-eclampsia and thrombocytopenia. Results are expressed as mean (SD). Platelet count was not statistically different between Groups II and IV (111.1 (23.1) vs 99.5 (28.0) G litre-1). PFA-EPI was statistically increased in Group II (124.0 (26.3) s), Group III (128.3 (17.9) s), and Group IV (143.6 (47.7) s) compared with normal pregnant patients (114.6 (27.3) s, P-1.

Database: EMBASE

Strategy 83475

#	Database	Search term	Results
1	EMBASE	exp "THROMBOCYTE COUNTING"/	64221
2	EMBASE	((platelet OR thrombocyte) ADJ2 count*).ti,ab	44377
3	EMBASE	exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab	74734
4	EMBASE	(automat* AND optical).ti,ab	5352
5	EMBASE	(exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND (automat* AND optical).ti,ab	93
6	EMBASE	(thrombocytopenia).ti,ab	62953
7	EMBASE	exp THROMBOCYTOPENIA/	144759
8	EMBASE	(thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/	152713
9	EMBASE	exp "PREDICTIVE VALUE OF TESTS"/	109130
10	EMBASE	((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/)) AND exp "PREDICTIVE VALUE OF TESTS"/	243
11	EMBASE	(pregn*).ti,ab	531979
12	EMBASE	exp PREGNANCY/	712386

13	EMBASE	(pregn*).ti,ab OR exp PREGNANCY/	851126
14	EMBASE	(((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/)) AND exp "PREDICTIVE VALUE OF TESTS"/) AND ((pregn*).ti,ab OR exp PREGNANCY/)	15
15	EMBASE	*"IDIOPATHIC THROMBOCYTOPENIC PURPURA"/	6435
16	EMBASE	((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND exp "PREDICTIVE VALUE OF TESTS"/) AND *"IDIOPATHIC THROMBOCYTOPENIC PURPURA"/	18
17	EMBASE	*"THROMBOCYTE COUNT"/	4289
18	EMBASE	(((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND *"THROMBOCYTE COUNT"/	144
19	EMBASE	(exp "PREDICTIVE VALUE OF TESTS"/ AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND *"THROMBOCYTE COUNT"/	14
20	EMBASE	((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND (automat* AND optical).ti,ab) AND ((pregn*).ti,ab OR exp	2

		PREGNANCY/)	
21	EMBASE	*"PREDICTIVE VALUE OF TESTS"/	2429
22	EMBASE	*"THROMBOCYTE COUNT"/ AND *"PREDICTIVE VALUE OF TESTS"/	4
23	EMBASE	(PREGN*).ti	229285
24	EMBASE	*"THROMBOCYTE COUNT"/ AND (PREGN*).ti	116
25	EMBASE	((platelet OR thrombocyte) ADJ2 count*).ti	2680
26	EMBASE	((pregn*).ti,ab OR exp PREGNANCY/) AND ((platelet OR thrombocyte) ADJ2 count*).ti	213
27	EMBASE	((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti,ab	587
28	EMBASE	((pregn*).ti,ab OR exp PREGNANCY/) AND ((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti,ab	24
29	EMBASE	*"PREDICTIVE VALUE OF TESTS"/ AND ((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti,ab	0
30	EMBASE	(exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti,ab	227
31	EMBASE	((pregn*).ti,ab OR exp PREGNANCY/) AND ((exp	12

		"THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti,ab)	
32	EMBASE	((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti	92
33	EMBASE	(exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti	31
34	Medline	exp "PLATELET COUNT"/	18542
35	Medline	((platelet OR thrombocyte) ADJ2 count*).ti	2038
36	Medline	exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*)	37643
37	Medline	(pregn*).ti,ab	385859
38	Medline	exp PREGNANCY/	787268
39	Medline	pregn* OR exp PREGNANCY/	878168
40	Medline	(exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND ((pregn*).ti,ab OR exp PREGNANCY/)	1292
41	Medline	exp "PREDICTIVE VALUE OF TESTS"/	160194
42	Medline	((exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND	32

		((pregn*).ti,ab OR exp PREGNANCY/)) AND exp "PREDICTIVE VALUE OF TESTS"/	
43	Medline	(automat* AND optical).ti,ab	3955
44	Medline	((exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND (automat* AND optical).ti,ab	1
45	Medline	(exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND exp "PREDICTIVE VALUE OF TESTS"/	756
47	Medline	((exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND exp "PREDICTIVE VALUE OF TESTS"/) AND (immunoplatelet).ti,ab	0
48	Medline	exp "REPRODUCIBILITY OF RESULTS"/	312703
49	Medline	((exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND exp "REPRODUCIBILITY OF RESULTS"/	2
50	Medline	(exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND exp "REPRODUCIBILITY OF RESULTS"/	273
51	Medline	(thrombocytopenia).ti,ab	40356

52	Medline	exp THROMBOCYTOPENIA/	41832
53	Medline	thrombocytopenia OR exp THROMBOCYTOPENIA/	64067
54	Medline	((exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND exp "REPRODUCIBILITY OF RESULTS"/) AND ((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/)	51
55	EMBASE	(Immunoplatelet*).ti,ab	34
56	EMBASE	exp "OBSTETRIC PATIENT"/	1866
57	EMBASE	(exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND exp "OBSTETRIC PATIENT"/	41
58	Medline	((platelet OR thrombocyte) ADJ2 count*).ti AND ((pregn*).ti,ab OR exp PREGNANCY/)	211
59	Medline	exp "PLATELET COUNT"/mt	18542
60	Medline	((pregn*).ti,ab OR exp PREGNANCY/) AND exp "PLATELET COUNT"/mt	1218
61	Medline	exp "PLATELET FUNCTION TESTS"/	25055
62	Medline	(((pregn*).ti,ab OR exp PREGNANCY/) AND exp "PREDICTIVE VALUE OF TESTS"/) AND exp "PLATELET FUNCTION TESTS"/	37
63	Medline	exp "MEAN PLATELET VOLUME"/	530

64	Medline	((pregn*).ti,ab OR exp PREGNANCY/) AND exp "MEAN PLATELET VOLUME"/	20
65	Medline	exp "REPRODUCIBILITY OF RESULTS"/ AND exp "MEAN PLATELET VOLUME"/	8
66	EMBASE	exp "THROMBOCYTE VOLUME"/	4200
67	EMBASE	("mean platelet volume").ti,ab	3449
68	EMBASE	exp "THROMBOCYTE VOLUME"/ OR "mean platelet volume"	4622
69	EMBASE	((pregn*).ti,ab OR exp PREGNANCY/) AND (exp "THROMBOCYTE VOLUME"/ OR ("mean platelet volume").ti,ab)	217
70	EMBASE	((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/) AND (((pregn*).ti,ab OR exp PREGNANCY/) AND (exp "THROMBOCYTE VOLUME"/ OR ("mean platelet volume").ti,ab))	37
71	EMBASE	exp "THROMBOCYTE FUNCTION ANALYZER"/	1206
72	EMBASE	((pregn*).ti,ab OR exp PREGNANCY/) AND exp "THROMBOCYTE FUNCTION ANALYZER"/	27
73	EMBASE	exp "HEMATOLOGY ANALYZER"/	1145
74	EMBASE	((pregn*).ti,ab OR exp PREGNANCY/) AND exp "HEMATOLOGY ANALYZER"/	37

75	EMBASE	(automat*).ti	64511
76	EMBASE	((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND (automat*).ti	2
77	EMBASE	exp "COMPARATIVE STUDY"/	1195362
78	EMBASE	((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND exp "COMPARATIVE STUDY"/	135
79	EMBASE	((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/) AND (((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND exp "COMPARATIVE STUDY"/)	56
80	EMBASE	exp ANALYZER/	35621
81	EMBASE	(((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/)) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND exp ANALYZER/	17
82	Medline	(analyzer* OR analyser*).ti,ab	34305

83	Medline	((exp "PLATELET COUNT"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND (analyzer* OR analyser*).ti,ab	9
84	Medline	((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti	86
85	Medline	((pregn*).ti,ab OR exp PREGNANCY/) AND ((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti	2
86	Medline	(analyzer* OR analyser*).ti,ab AND ((enlarged OR giant OR mega) ADJ2 (platelet* OR thrombocyte*)).ti	1
87	Medline	(size*1 ADJ2 (platelet* OR thrombocyte*)).ti	226
88	Medline	((pregn*).ti,ab OR exp PREGNANCY/) AND (size*1 ADJ2 (platelet* OR thrombocyte*)).ti	9
89	EMBASE	(size*1 ADJ2 (platelet* OR thrombocyte*)).ti	218
90	EMBASE	((pregn*).ti,ab OR exp PREGNANCY/) AND (size*1 ADJ2 (platelet* OR thrombocyte*)).ti	5
91	EMBASE	(size*1 ADJ2 (platelet* OR thrombocyte*)).ti,ab	1259
92	EMBASE	(((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND (size*1 ADJ2 (platelet* OR thrombocyte*)).ti,ab	9

93	EMBASE	("immuno count*").ti,ab	2
94	EMBASE	*ASSAY/	39926
95	EMBASE	((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/)) AND *ASSAY/	48
96	EMBASE	((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND *ASSAY/	3
97	EMBASE	(((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND *ASSAY/	13
98	EMBASE	exp "DIAGNOSTIC TEST"/	836133
99	EMBASE	(((exp "THROMBOCYTE COUNTING"/ OR ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND ((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/)) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND exp "DIAGNOSTIC TEST"/	301
100	EMBASE	exp "BLOOD CLOTTING TEST"/	13970
101	EMBASE	(((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/) AND ((pregn*).ti,ab OR exp PREGNANCY/)) AND exp "BLOOD CLOTTING TEST"/	74

102	Medline	exp "BLOOD COAGULATION"/	53426
103	PubMed	(pregn*).ti,ab	895837
104	PubMed	((platelet OR thrombocyte) ADJ2 count*).ti	3004
106	PubMed	(pregn*).ti,ab AND ((platelet OR thrombocyte) ADJ2 count*).ti	249
107	PubMed	(assay* OR optical OR automat*).ti,ab	1451537
108	PubMed	((pregn*).ti,ab AND ((platelet OR thrombocyte) ADJ2 count*).ti) AND (assay* OR optical OR automat*).ti,ab	0
109	PubMed	((platelet OR thrombocyte) ADJ2 count*).ti,ab	43910
110	PubMed	(pregn*).ti,ab AND ((platelet OR thrombocyte) ADJ2 count*).ti,ab	2733
111	PubMed	(thrombocytopenia).ti,ab	64952
112	PubMed	((pregn*).ti,ab AND ((platelet OR thrombocyte) ADJ2 count*).ti,ab) AND thrombocytopenia	1070
113	EMBASE	*"THROMBOCYTE VOLUME"/	2100
114	EMBASE	(((pregn*).ti,ab OR exp PREGNANCY/) AND exp ANALYZER/) AND *"THROMBOCYTE VOLUME"/	5
115	EMBASE	*PREGNANCY/	164390
116	EMBASE	*"THROMBOCYTE VOLUME"/ AND *PREGNANCY/	25
117	EMBASE	exp "THROMBOCYTE FUNCTION ANALYZER"/ AND *PREGNANCY/	12

118	Medline	((pregn*).ti,ab OR exp PREGNANCY/) AND exp "MEAN PLATELET VOLUME"/	20
119	Medline	((pregn*).ti,ab OR exp PREGNANCY/) AND exp "PLATELET FUNCTION TESTS"/	1340
120	Medline	((thrombocytopenia).ti,ab OR exp THROMBOCYTOPENIA/) AND (((pregn*).ti,ab OR exp PREGNANCY/) AND exp "PLATELET FUNCTION TESTS"/)	614