# Evaluation of treatment modalities of acute idiopathic thrombocytopenic purpura in Al-zahraa teaching hospital in Al-Najaf

**Aymen A . AL-Bakaa,**
Department of pediatrics, College of medicine, University of kufa
Email:Aymen_albakaa@yahoo.com
(Received 11 / 6/2013 , Accepted 4 /12/ 2013)

**الخلاصة:**
**نبذة تعريفية :** مرض نقص الصفيحات الدموية هو خلل نزفي ، حيث يقوم فيه جهاز المناعة ولأسباب غير معروفة بإنتاج أجسام مضادة ضد الصفيحات الدموية المسئولة عن تخثر الدم مما يؤدي إلى نقص عددها وبالتالي يؤدي إلى ظهور اعراض نزفية متمثلة بسهولة نضح الدم من الاوعية الدموية الشعرية تحت الجلد و الاغشية المخاطية.
**الاهداف :** لاختيار العلاج المناسب لمرض نقص الصفيحات الدموية الحاد والغير معروفة اسبابه .
**الطريقة :** ما يقارب من 65 مريضا وضع ضمن هذه الدراسة الراجعة من الذين أدخلوا الى مستشفى الزهراء التعليمي من الفترة كانون الثاني2000الى كانون الثاني2010 ، المعلومات المتعلقة جمعت حسب ورقة استبيان مسبقة شملت : العمر، الجنس ، النسبة الاولية للهيموكلوبين وعدد الصفيحات الدموية ، العلاج المعطى ، الاستجابة للعلاج .....
هؤلاء المرضى صنفوا الى ثلاث مجاميع بناءا على نوع الدواء المستخدم في العلاج كالبريدنيزولون أو الايميونوكلوبيولين-ج أو علاج الانتي-د .
الاستجابة صنفت على اساس مدى سرعة الزيادة في عدد الصفيحات الدموية مقارنة بالحالة قبل العلاج.
الحالات المزمنة لمرض نقص الصفيحات الدموية استثنيت من هذه الدراسة .
**النتائج** :جميع المرضى يتراوح اعمارهم بين2-12 سنة مع زيادة نسبتهم قي الفئة العمرية2-5 سنة . وكانت نسبة الاناث للذكور 1.7/1 . دراستنا اظهرت ان 37 مريض من بين 65 صنفوا كمجموعة اولى والتي اعطيت حبوب البريدنيزولون كعلاج اولي حيث كانت الاستجابة عند31 (86.5%) مريضا بعد بضعة ايام من العلاج . وبالنسبة للمجموعة الثانية (18)التي اعطيت الايميونوكلوبيولين-ج...كانت الاستجابة في زيادة عدد الصفائح(89%.)أما المجموعة الثالثة(10 )التي اعطيت الانتي-د فكانت الاستجابة (60%).

**الاستنتاج :**اظهرت النتائج بالنسبة لمختلف الادوية المستخدمة في علاج نقص الصفيحات الدموية الحاد ان حبوب البريدنيزولون تعطي نفس النتائج تقريبا كما انها الافضل لانها متوفرة ورخيصة ويمكن استخدامها عن طريق الفم وفي البيت .

**التوصيات :** ان توفير خيارات اخرى من العلاج كلايميونوكلوبيولين-ج الوريدي يجب ان تتبناه مستشفياتنا في حلات الامراض المهددة للحياة وذلك لانها تحدث استجابة سريعة في زيادة الصفيحات الدموية بالمقارنة مع بقية العلاجات .

## Abstract:

**Background:** Acute idiopathic thrombocytopenic purpura(I.T.P) is a bleeding disorder in which the immune system for unknown reason produce antibodies against platelets, which are necessary for normal blood clotting resulting in decrease number of circulating platelets, manifested itself by bleeding tendency, easy brusing or extravasation of blood from capillaries in the skin and mucous membrane .
**Objective:** to choose the most appropriate therapy for acute idiopathic thrombocytopenic purpura management .
**Methods :** 65 patients were enrolled in this retrospective study, who were admitted to AL-Zahraa teaching hospital from January 2000 to January 2010 . Relevant information were collected according to preceding data collection sheet that include age, sex, initial hemoglobin and platelets count, treatment given, response to therapy…These patients subdivided into 3 groups according to initial drug used for

their management either prednisolone, I.V.immunoglobulin-G, or anti-D. The response was analyzed according to rapid rise of platelets number in the pre-treatment state. chronic cases of I.T.P were excluded from this study .

**Results:** All patients were aged from 2-12 years with peaks of 2-5 years. Sex ratio (female\male) of 1:1.7 .Our study showed that out of 65 patients, 37(57%) of them were assigned as group 1 who received prednisolone as a conventional therapy ,the response was noted in 31( 86.5%) after few days of treatment. Regarding group 2 patients received I.V immunoglobulin-G, the response of platelets rise was noted in 16( 89%) of cases out of 18 patients . While(10) patients in group 3 who received anti-D as main line of treatment to Rh-positive individuals, the response is observed in only 6( 60%) of cases .

**Conclusion:** Regarding various treatment modalities of idiopathic thrombocytopenic purpura ,it has been noted that oral prednisolone is the best, single, readily available, inexpensive drug that can be taken orally and as outpatient .

**Recommendation:**The availability of other treatment options such as I.V-immunoglobulin-G should be adopted in our hospitals in cases of life- threatening illness as it induces more rapid rise in platelets in comparison with other drugs.

**Keywords :** thrombocytopenia, acute thrombocytopenic purpura, auto- immune thrombocytopenia .

## Introduction:

Acute I.T.P is a self-limiting illness, usually occurring after an infectious disease, and its due to decrease number of circulating platelets (thrombocytopenia) manifested as a bleeding tendency, easy brusing (purpura), or extravasation of blood from capillaries into skin and mucous membrane[1] .

There are two peaks of I.T.P ,one peaks affect children , other affect adult . In children; the usual age in getting the illness is 2-4 years of age . Most adult with I.T.P are young women, but can occur in any one. Most affected children have a very low platelets counts that causes sudden bleeding and usual symptoms are bruises and tiny red spots on the skin, epistaxis, and bleeding gum are also common [2] . Childhood I.T.P is acute and generally seasonal in nature suggesting that infections or environmental agent may trigger the immune response to produce platelets-reactive auto antibodies 4-8 weeks following an infection[3-4] . Despite very low platelets counts its rarely complicated by serious bleeding, 5% or fewer children experience serious bleeding, most commonly from nose and gut [5]. The presence of abnormal finding such as hepatosplenomegaly, wasting, poor nutrition, indicate that the patient has another illness[6-7-8].Intracranial hemorrhage occurs in less than 1% of all children with acute ITP but can occur years after diagnosis[9-10] .The acute ITP is most commonly a self-limiting condition, and medical therapy does not seem to alter the natural history of the disease ,but may be required to minimize the danger of life-threatening intracranial hemorrhage [11-12] .Over a period of six months ,the thrombocytopenia resolves in approximately 85% of children while the remaining 15% have persistent platelet consumption with platelet count below 150.000/$mm^3$ for more than six months from the onset of acute illness are designed as chronic ITP [13-14].

## Patients and methods:

the review of this retrospective study was made for 65 patients who were admitted to pediatric ward of Al-ZAHRAA Teaching Hospital in AL-NAJAF from 1st, January, 2000 to 1st, January,2010 with acute ITP . Relevant information were collected according to preceding data collection sheet that include age, gender, initial hemoglobin and platelets count, treatment given, and response to therapy . These patients were subdivided into 3 groups according to initial drug used for their management which were ;Group-1 received prednisolone 2mg/kg/day for three weeks ,and those patients constitute around 37(57%) out of total 65. Group-2 given IV immunoglobulin-G as 0.8gm/kg/day for two days, and patients studied were 18(27.7%) out of 65. While group-3 individuals who assigned as Rh-positive, they received anti-D therapy 50 microgram/kg and constitute only 10(15.3%) .

The response was analyzed according to rapid rise of platelets and complete recovery of the illness in the pre-treatment state . Chronic cases are those patients who their platelets count were below normal range persisting for more than 6 months are usually excluded from this study .

The data processing was done using the statistical package for the social sciences SPSS (version 17) . A significance difference of variables was considered when p-value ≤0.05 .

## Results:

All were aged from 2-12 years ,with peak age 2-5 years, with sex ratio of female/male 1:1.7 as noted in table-1 ….While table-2 show the following finding; out of 65 patients; 37(57%) of them received prednisolone as conventional therapy for up to three weeks, the response was noted in 31**(** 86.5%) of cases. Regarding group-2 who constitutes 18(27.7%) patients of the total sample studied; they received I.V immunoglobulin-G as initial therapy, the response of platelets rise was noted in 16 (89%). While 10 (15.3%)patients in group-3 received anti-D as main line of therapy to Rh-positive individuals, the response was observed in only 60% of cases. In addition , it has been noted that duration of platelets response for rising was variable based on initial drug used but ,its more evident with I.V immunoglobulin-G infusion than with oral prednisolone or anti-D therapy as its clear in Table-3 .

Table NO. 1 : Biometric study of ITP patient in relation to age and gender

| Age/Year | Female | | Male | | TOTAL | |
|---|---|---|---|---|---|---|
| | NO. | % | NO. | % | NO. | % |
| 2-5 | 27 | 41.6 | 15 | 23 | 42 | 64.6 |
| 6-10 | 13 | 20 | 7 | 10.8 | 20 | 30.8 |
| >10 | 2 | 3 | 1 | 1.6 | 3 | 4.6 |
| TOTAL | 42 | 64.6 | 23 | 35.4 | 65 | 100 |

Table NO. (2) : Initial Hb and platelet counts

| Initial Hb | Initial Platelet Count |
|---|---|

| <1ogm/dl | | >10gm/dl | | <20.000 | | >20.000 | |
|---|---|---|---|---|---|---|---|
| 28 | 43% | 37 | 57% | 30 | 46% | 35 | 54% |

Table NO. 3 : Demographic characteristic of all studied ITP patients .

| PARAMETER | MINIMUM | MAXIMUM |
|---|---|---|
| Patients age (yr) | 2 | 12 |
| Initial plat. count $\times 10^9$/L | 11 | 50 |
| Initial Hb | 8 | 11 |
| Initial plat. response(day):- | | |
| Group 1 | 7 | 18 |
| Group 2 | 2 | 3 |
| Group 3 | 3 | 6 |

Table NO.4: Platelet rising in response to different treatment options in comparison with other acute ITP studies.

| PLATELETS RESPONSE | Present study | Al-Nadawi | Obren SH et al | Bcker T, Salama A . |
|---|---|---|---|---|
| Group1 | 86.5% | 91% | ------- | -------- |
| Group2 | 89 % | 93% | 90% | -------- |
| Group3 | 60% | ------ | ------- | 7O% |

Table N0.5 comparison of group-1 and group-3 in regard to initial platelet rising .

| group 1 | | | group 3 | | | P-value |
|---|---|---|---|---|---|---|
| *n* | *responder* | *%* | *n* | *Responder* | *%* | 0.012 |
| 37 | 32 | 86.5 | 10 | 5 | 60 | |

Table-5 showed significance difference (p-value 0.012) in response to platelet increment for group-1(with prednisolone) and group-3(with anti-D) .

Table NO.6 comparison of grorp-2 and group-3 in regard to initial platelet rising.

| group 2 | group 3 | P-value |
|---|---|---|

| *n* | *responder* | *%* | *n* | *responder* | *%* | 0.023 |
|---|---|---|---|---|---|---|
| 18 | 16 | 89 | 10 | 5 | 60 | |

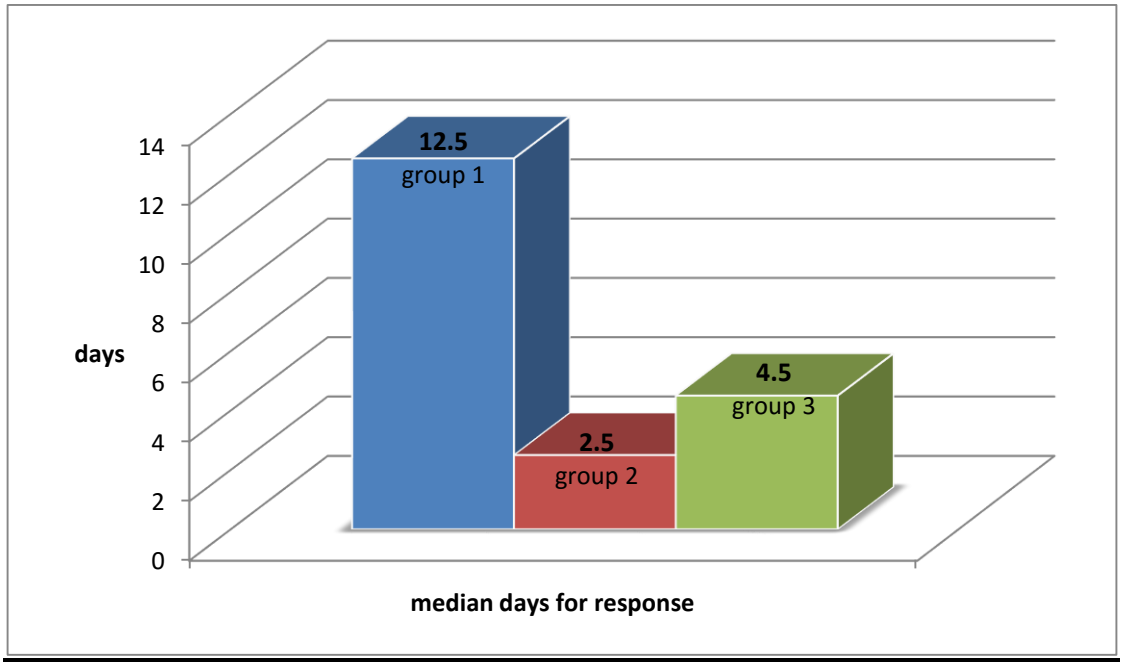
The same thing is noted in table-6 which show significance difference (p-value 0.023) in regard to group-2(with I.V-Immunoglobulin)and group-3(with Anti-D) .

Table NO.7 comparison of all patients groups responders to different treatment modalities .

| group 1 | | | Group 2 | | | group 3 | | | P-value |
|---|---|---|---|---|---|---|---|---|---|
| *n* | *responder* | *%* | *n* | *responder* | *%* | *n* | *responder* | *%* | 0.020 |
| 37 | 32 | 86.5 | 18 | 16 | 89 | 10 | 5 | 60 | |

It has been noted that in table-7; there were significance difference(p-value 0.020) in regard to different therapy taken for I.T.P .

**Figure-1** median days of response to different therapy in patients with acute idiopathic thrombocytopenic purpura .




The histogram showed that median days of response to platelets increment was 2.5 days in patients receiving I.V immunoglobulin-G and in comparison to patients who take Anti-D ;the response need 4.5 days, while those patients with oral prednisolone had less initial response of about 12.5 days for platelets increment .

## Discussion:

In this study , 64.6% of cases, age in the range of (2-5)years which is in the agreement of many studies in Iraq[15,16] and abroad in Norway[17] and South Africa[11] , also female were affected more than male(1.7: 1),a finding that is similar to previous studies([15,16,17]) .

In regard to initial platelets count, table-2 showed significant number(46%)were

<20.000 which in the agreement of Al-Nadawy[16], Erdura[19], and Rosthoj[20].

As patients in this retrospective study, divided into three groups and received different options of treatment such as oral prednisolone, I.Vimmunoglobulin, and anti- D drug. Complete response of platelet rise was noted in 86.5% group-1, who received prednisolone ..A finding consistent with Al-Nadawy[16] and O'bren SH et al[17]. And in comparison with I.V immunoglobulin-G as primary form of therapy in present study, which showed (89% )response…a similar result was even proved by Al-Nadawy[16].

Also we observed that platelets rise in patients with ITP was ( 60% ) responding to anti-D therapy in Rh-positive individual, which is in the agreement of Pecker T.,[21] and Panzer T[22] study.

In addition, it has been noted in table-3 that onset of platelets response for rising was variable based on initial drug used but ,its more evident with I.V immunoglobulin-G infusion than with oral prednisolone or anti-D …A finding that's approximately similar to many studies [11,16,17,23].

## Conclusion:

Regarding various treatment modalities of (I.T.P),it has been noted that oral prednisolone is the best, single, readily available, inexpensive drug that can be taken orally and as outpatient .

**Recommendation:**The availability of other treatment options such as I.V-immunoglobulin-G should be adopted in our hospitals in cases of life- threatening illness as it induces more rapid rise in platelets in comparison with other drugs

## References :


1.George JN, Woolf, SH, Raskob GE, et al: B,2001. Idiopathic thrombocytopenic purpura:A Practice guideline developed by explicit methods foe The American Society of Hematology .Blood,2003;aug. 88:3.

2.J.I.O Craig, D.B.L. MeClelland, and C.A. Ludlam. I.T.P principles and practice of medicine**, Churchil Livingstone**, 20th, Ed: p.1056:1057 .

3.Hostynova, E, Cap, J. Raskova, Kadriliakova,A Zednikova, N, Bodova, I. ITP inchildren**. Bratsil-leklisty**. 2002 ;103 (3)13-116 .

4.Blanchette VS, Price V. Childhood chronic ITP : unresolved issue. **Journal of paediatric haemat. Oncol**, 2003; 25 Suppl. 1:s 28:33 .

5.Karpatkins :Autoimmune ITP Lancet 1997; May,24; 349 (9064). 1531:6.

6.Sandler SG, Kathrine I Schexneider,et. al. ITP J.e-Medicine,6, 2041:22.

7.Boltons Meggs PH . Severe bleeding in ITP J, Pediatric Haematol Oncol. 2003; Dec, 25 suppl l:s47:51 .

8.Butros ,L,J : Bussel, J-B, Intracranial haemorrhage in ITP ,a retrospective analysis .J .Pediatric haematol oncol. 2003 ;Aug. 25 (8) :660:4 .

9. Tarantino ,-M-D . Acute Immune ITP in children. blood Rev. 2002; Mar. : 16 (1) ; 19:21 .

10.Nugent DJ, childhood ITP .Blood-Rev. 2002;Mar.; 16 (1) 27:9 .

11.Jacobs P. Wood L. Novitskov N., Universty of Cape Town Leuk. Center, Republic of South Africa-IVimmunogloulin has no advantages over corticosteroid as primary therapy for ITP . Semin, thrombo- hemost.2003; 24 (6),605:617

12.Watts, RG , ITP :A 10 years natural history study at children hospital of Alabama , Clinical pediat (phila.),2004; 43(8) 691:702 .

13.Cohen, Y-C. Djulbegovic, B; Shamia-Lubovits, O; Mozes, B. The bleeding risk and the natural history of ITP in patient with persistent low platelet count .Arch, Int, Med. 2000; jun .12; 160 (11) :1630:8 .

14.Novis , ITP in children ,MED. –Pregl, 1998; 51 (3-4), 126:34 .

15.Sawsan S. Abbas, childhood ITP :A retrospective analysis of clinical features and response to treatment J. ,Fac. Med. Baghdad .2006; Vol. 48, No. 3, P.258:261 .

16.AL-Nadawi MN, AL-Hdad, SA, Umran SK,ITP ,Clinical manifestation and treatment, j .fact Med,2002; 44, 1,71:76.

17.O'brien SH, Ritchy AK, Smith KJ :Acost-utility analysis of treatment for acute childhood ITP , Pediat blood cancer. 2006;Mar. 20 .(2,124:126) .

18.Zeller B., Helgested, J., Hellepostad M.: ITP in childhood in Norway; a prospective population- based registration pediat. Haemat. Oncolog.2000; Oct.–Nov.7(17); 551:8.

19.Erduran E, Asian Y., Gedik Y., Orhan F. A randomized and comparative study of IV.IM and mega dose methyl prednisolone treatment in children with acute ITP , Turk, J. Pediatr,2003;45(4);295:300 .

20.Rosthoj S, Hedlund- treutiger L. ,Rajanite j. Duration and morbidity of newly diagnosed ITP in children : A prospective unselected study of cohort .J. Pediatr, 2003;143(3)302:4.

21.Becker T ,Kuenzlen K,Salama A, Mertens G,Kiefel V, Weib H, LamperG , Mullert – Echkarh RheC . Treatment of childhood ITP with Rhesus antibodies(anti-D) ;.Eur J Pediatr 1986; 145 :166 .

22.Panzer S Grumayer ER,Hass OA, Niessner H,Graninger W. Efficasy of rhesus antibodies(anti Rho-D)in auto immune thrombocytopenia , correlation with response to high dose IgGand the degree of hemolysis .Blut 1986; 52:117.

23.Bussel JB, Graziano JN, Kimberly RP,Pahwa S,Aledort AM,. : Intravenous anti-D treatment of immune thrombocytopenic purpura: Analysis of efficacy, toxicity and mechanism of effect . BLOOD 1991; May 1;77(9),1884:93