Original Article

# Acute immune thrombocytopenic purpura in childhood Presentation and treatment A Hospital based study

**Mahjoob Al-Naddawi*** DCH MRCP. (UK) FRCP(ED), FRCP (Lond.), FRCPCH
**Mohammad F. Ibraheem**** MBChB, DCH, FICM, CABP
**Faraqid J. Sharhan***** MBChB

***Summary:***

**Background:** Acute idiopathic thrombocytopenic purpura (ITP) is a self – limiting illness, usually occurring after an infectious disease, and it is due to decrease number of circulating platelets manifests as a bleeding tendency, easy bruising (purpura), or extravasations of blood from capillaries into skin and mucous membranes.

*Fac Med Baghdad 2014; Vol.56, No3*
*Received: April, 2014*
*Accepted June. 2014*

**Objective:** To study and analyze the natural history of idiopathic thrombocytopenic purpura and treatment used in children below 15years.

**Patients and methods:** A cross sectional descriptive study was carried on total of 72 patients their ages range between(1-15)years who were admitted to Children Welfare Teaching Hospital / Baghdad from 1st of July 2010 to30th of June 2011. Seventy two cases admitted during that period and diagnosed as acute immune thrombocytopenic purpura but bone marrow aspiration study was done in 57cases and those cases that were studied and were analyzed to all types of clinical presentation & management used.

**Results:** Age group were ranged from (1-15) years with peak in age group of (1-5) years 38(66.7%), male were 29 (50.9%) equal to female 28 (49.1%). Most cases were reported in spring 25(43.9%), with preceding viral illness was encountered in 37 (64.9%) patients. Most cases were presented with skin rash 54(94.7%) except three cases, the epistaxis was the second presentation 21(36.9%), and the least presentations were intracranial hemorrhage & menorrhagia 1(1.8%). Most of the cases were treated with steroid (91.1%).

**Conclusions:** Bone marrow exanimation is recommended in each case of the thrombocytopenia, and if decision of bone marrow exanimation is taken, it is essentially to do it prior to steroid therapy. Oral prednisolone is the readily available, inexpensive drug that can be taken orally in hospital and as outpatient. Methylprednisolone rapidly increases platelet counts so reduces period of hospitalization, but it is not always available and can be used as in patient treatment only.

**Keywords:** Acute immune thrombocytopenic purpura, children.

## Introduction:

Acute idiopathic thrombocytopenic purpura is a self – limiting illness, usually occurring after an infectious disease, and it is due to decrease number of circulating platelets (thrombocytopenia) manifests as a bleeding tendency, easy bruising (purpura), or extravasations of blood from capillaries into skin and mucous membranes ,the estimated incidence is 2-8 per100,000 people. (1,2).

The peak age at diagnosis is two to six years. Although acute ITP may be diagnosed in children at any age, adolescents and infants are more likely to have chronic ITP develop in combination with some other immune disorder, in children, ITP is seen equally in males and females(3). Chronic cases are seen in which crops of purpura and ecchymosis persist beyond 6 months and occur more frequently in children over 10 years of age and girls(4,5).

A preceding history of viral illness is described in 50–65% of cases of childhood ITP, However the attributable risk of ITP within 6 weeks after MMR vaccine remain low(6).

In chronic ITP, platelet surface membrane glycol – proteins become immunogenic stimulating the production of platelet anti bodies (7).

Despite very low platelet counts, ITP rarely complicated by serious bleeding. Five percent or fewer children experience serious bleeding most commonly from the nose or G.I.T (8). While intracranial hemorrhage occurs in less than 1% of all children with acute ITP but can occur years after diagnosis (9).

The presence of abnormal finding such as hepatosplenomegaly, lymphadenopathy, wasting, and poor nutrition indicate that the patient has another illness (7).

ITP with persistent low platelet count carries a bad prognosis (10).

**The Iraqi Board for Medical Specialization.*
***Corresponding Auther: Mohammad F. Ibraheem Dept. of Pediatrics, College of medicine, Baghdad University. mohammedalqaisi@yahoo.com*
****Children Welfare Teaching Hospital.*

**Patients &methods:**

Cross sectional descriptive study was carried on total of 72 patients their ages range between(1-15)years admitted to Children Welfare Teaching Hospital from 1st of July 2010 to30th of June 2011. Those patients were diagnosed as cases of ITP according to history ,clinical examination & investigation including low platelet count & bone marrow aspiration study, B.M aspiration study was done in 57cases ,while it was not done to the other 15 cases( because these cases were already on steroid before admission to hospital) that's why these cases not included in the study. Data of this study include information which was taken from patients file, regarding age, gender, residence, seasonal variation, history of preceding viral illnesses, family history, presentation (including sign &symptoms), investigation & treatment were collected &analyzed. Collected cases of acute ITP were presented with bleeding tendency lasting few days or weeks but no longer than 6 months, and the severity of bleeding based on symptoms and signs so it ranged from no symptoms, mild (bruising and petechiae occasional minor epistaxis, very little effect on daily activities),moderate(more severe mucocutaneous bleeding, more offending epistaxis and menorrhagia), and severe(bleeding, epistaxis, melena requiring transfusion or hospitalization, symptoms interfering seriously with quality of life). Diagnosis was based on clinical & laboratory finding of low platelet count with normal other blood indices & this supported by normal bone marrow aspiration study. PT and PTT were done in some cases and it was normal. Anti-D not used because it is not available. This study describe the cases of ITP regarding presentation ,way of diagnosis investigation and response to treatment during admission but not the long term response because it was difficult to follow up the cases after discharge .

**Results:**

In this cross sectional study, seventy two children with acute ITP were assessed in a period of one year, fifteen cases were diagnosed on clinical bases with low platelet count without B.M.A study so these cases excluded from the study.

The 57 patients included in this study their age was range between (1-15) years, they were 29 male (51.9%) and 28 female (49.1%). It had been found that ITP was more prevalent among the younger age rather as in others, 38 out of 57 (66.7%) case were between 1-5 years, 14(24.5%) cases were > 5-10 years and 5 cases (8.8%) out of all cases were aged >10-15 years (Table-1).

About 25(43.9%) of cases occurred during Spring, and 12(21%) of cases during Summer, while 11(19.3%) during Winter and 9(15.8%) during Fall. Preceding viral illness was found in 37(64.9%).

Regarding residency it was found that, 32(56.1%) from urban area and 35(43.9%) case from rural area. (Table-2)

Most of cases 39(68.4%) presented with mild symptoms, 17 (29.8%) presented with moderate symptoms and only one case (1.8%) had severe symptoms. (Table-3)

Skin rash was present in 45(94.7%) cases &was the only manifestation in 22 (38.5%) cases. Epistaxis was present in 21(36.8 %) case & was the only manifestation in 3 (5.3%) cases. On the other hand menorrhagia and ICH were the least prevalent event (1.8%) of cases for each. No cases of hematuria reported. (Table-4)

It had been found that, 30 cases (52.5%) received prednisolone tablets as 1st line of treatment, 25 (83.3%) of those cases responded to treatment within three weeks of treatment which it had been shown by clinical improvement and rise of platelet count to more than (20×109/L), the other 5 cases (16.7%) did not respond.

Seventeen cases (29.8%) received methyl prednisolone as 1st line of treatment, on the other hand three cases were kept under observation because their platelet was about $50^{x}10^{9}/L$ and they had mild symptoms and were referred from other hospital for B.M.A, and two cases (3.6%) were treated with IVIG, one case had ICH and the other had low platelet count with severe symptoms. (Table-5)

It had been found that methyl prednisolone had dramatic response regarding increment in platelet counts and decrease period of hospitalization as compared with prednisolone as shown in (Table-5).

The durations of hospitalization were described in (table- 6) which shows that 80.7% of patients were admitted for (1-9 days) and only one patient was admitted for 14 days this patient developed chest infection. Most of the cases discharged with good response (platelet count $\geq 50^{X}10^{9}/L$), three cases discharge with platelet count between $30\text{-}48^{X}10^{9}/L$ with mild symptoms, except one patient who died with ICH.

**Table- 1: Age and gender distribution**

| Age Group | Gender | | |
|---|---|---|---|
| | Male | Female | Total |
| 1- 5 | 20 (35.1%) | 18 (31.6%) | 38 (66.7%) |
| >5- 10 | 6 (10.5%) | 8 (14%) | 14(24.5%) |
| >10 -15 | 3 (5.3%) | 2 (3.5%) | 5 (8.8%) |
| Total | 29 (50.9%) | 28 (49.1%) | 57 (100%) |

**Table -2: Seasonal, Residential and family history characteristics**

| Variable | No. of cases |
|---|---|
| Season | |
| Spring | 25 (43.9%) |
| Summer | 12 (21%) |
| Winter | 11(19.3%) |
| Fall | 9 (15.8%) |
| Total | 57 (100%) |
| Residency | |
| Urban | 32 (55.1%) |
| Rural | 25 (43.9%) |
| Total | 57 (100%) |
| Family history | |
| Yes | 0 (0%) |
| No | 57 (100%) |
| Preceding viral illness | |
| Yes | 37 (64.9%)<br>22(3 ((69.5%)<br>50<br>22<br>0 |
| No | 20(35.1%) |
| Total | 57 |

**Table -3: Distribution according to the severity**

| Gender | Severity | | | |
|---|---|---|---|---|
| | Mild | Moderate | Severe | Total |
| Male | 20(35.1%) | 8(14%) | 1(1.8%) | 29(50.9%) |
| Female | 19(33.3%) | 9(15.8%) | 0 | 28(49.1%) |
| Total | 39(68.4%) | 17(29.8%) | 1(1.8%) | 57(100%) |

**Table -4: Frequency distribution of presentation by sex group.**

| Presentation | Male | Female | Total |
|---|---|---|---|
| Skin only | 10(17.5%) | 12(21%) | 22(38.5%) |
| Epistaxis only | 2(3.5%) | 1(1.75%) | 3(5.25%) |
| Skin& epistaxis | 10(17.5%) | 8(14%) | 18(31%) |
| Skin &Gum bleeding | 2(3.5%) | 4(7%) | 6(10.5%) |
| Skin& GIT bleeding | 1(1.75%) | 1(1.75%) | 2(3.5%) |
| Skin& ICH | 1(1.75%) | 0 | 1(1.75%) |
| Skin& Menorrhagia | 0 | 1(1.75%) | 1(1.75%) |
| Skin& hepatomegaly | 2(3.5%) | 1(1.75%) | 3(5.25%) |
| Skin &splenomegaly | 1(1.75%) | 0 | 1(1.75%) |
| Total | 29(50.9%) | 28(49.1%) | 57(100%) |

**Table -5: The number and percentages of patients on different treatment types**

| Type of treatment | No. of patient |
|---|---|
| Prednisolone tablets only | 30 (52.5%) |
| Prednisolone tablets with methyl prednisolone | 5 (8.8%) |
| methylprednisolone only | 17 (29.8%) |
| I.v. immunoglobulin | 1 (1.8%) |
| I.v. immunoglobulin+ platelet | 1 (1.8%) |
| Observation | 3 (5.3%) |
| Total | 57 (100%) |

**Table-6: Duration of hospitalization.**

| Duration (days) | No. of patients | Percentage% |
|---|---|---|
| 1-9 | 46 | 80.7 |
| 10-14 | 10 | 17.5 |
| >14 | 1 | 1.8 |
| Total | 57 | 100 |

**Discussion:**

Among children assessed were male 29 (50.9%), while 28 (49.1%) were female. There is no significant difference had been noticed between males and females & this disagree with

Naima Al-Mula et al(11) ,the disease was more prevalent in males(64.5%) when compared with females(35.5%), while agree with a study done in Canada by Belletrutti M et al(12) and Celkan in turkey(13) . in this study the age distribution was more in the age (1-5yrs),there was (66.7%)38 cases this agree with many studies: Naima Al-Mula et al in Qatar (11) , Celkan in turkey(13) , Al-Nadawi MN(14,15),Sawsan S. Abbas(16) ,and Regarding the preceding viral illness ,it was common to find in 37 cases(64.9%) which is in agreement with many studies Al-Nadawi MN(14)& SawsanS. Abbas(15) and Naima Al-Mula et al (11).

Regarding seasonal variation, most of the cases were collected in Spring 25 cases(43.9%) followed by Summer 12 cases(21%) which is disagree with Naima Al-Mula et al(11), Celkan in turkey(13) & Sawsan S. Abbas(16) where there was no seasonal variation, this may be explained by frequency of infection, while the results, regarding Spring, agree with a study done in Canada by Belletrutti M et al(12).

In this study, there is no family history in association with the ITP, while positive in study was done in Qatar by Naima Al-Mula et al (11) in about 19.4%. In the distribution of cases according to presenting symptoms &signs: petechial rash & ecchymosis are found in 54 cases(94.7%),while three cases are presented with epistaxis as first manifestation without skin rash, while petechial rash & ecchymosis were100% in Al-Nadawi MN(15)& Sawsan S.Abbas(16). .

Epistaxis present in 21 cases(36.8 %) & this agree with Al-Nadawi MN(15) (30.1%)& Sawsan S. Abbas(16)(48.4%,41%) &approximate to Naima Al-Mula et al(11) (29%) & in contrast to study was done in Lebanon by Moussalim M.Yassin(17) .The least presentation was menorrhagia one case(1.8%) ( this finding is expected because There was only two cases above 10 years) & intracranial hemorrhage , one case(1.8%) ,which was not found in Al-Nadawi MN(15)& Sawsan S. Abbas(16)because it is a rare complication but was reported in Canada by klaassen Robert (18)& in Japan by Lyori et al(19).

BM study was done for all cases except those were already received steroid, this agree with Naima Al-Mula et al (11), while according to Diane et al (20) in U.S.A it is usually not necessary to perform a BMA with isolated thrombocytopenia, but if more than one cell lineage is decreased and the patient has splenomegaly or adenopathy, the bone marrow must be evaluated prior to administration of medications. Splenomegaly was found in 1case (1.8%) which is also found in Al Nadawi MN (15) (2.4%) & is approximate Sawsan S. Abbas (16) & Naima Al-Mula et al(11)(1%),splenomegaly normally found in 10% of cases. Hepatomegaly was found in three cases (5.3%), while in Naima Al-Mula et al(11) in Qatar(3.4%),cases with hepatomegaly need further evaluation.

In this study, most of cases were treated with steroid, oral prednisolone which was used in 30 cases (52.5%) because it is available and cheap treatment & can be used as outpatient treatment, which is similar to klaassen Robert (18) Canada (50%), while in Naima Al-Mula et al (11) the most common treatment used as 1st line of treatment was IVIG in 74%, and in Ahmed S. et al (21) in USA was 79.6% because it is available in their hospitals. Also according to Diane et al(20) in U.S.A if the decision is made to treat a child with ITP, the most common approach would include either IVIG, anti-D immunoglobulin in the Rh+ patient, or steroids once one is confident there is no risk of leukemia.

Regarding period of hospitalization, 46 case(80.7%) were hospitalized for less than 10 days, while in Al- Nadawi MN(15)(68.7%),this may explained by trials of hospital to limit the admission.

One case (1.8%) admitted for more than 14days in contrast to Al-Nadawi MN(15)(6%).

**Conclusion:**

Bone marrow exanimation is recommended if there are other abnormal blood indices or an abnormal physical examination like lymphadenopathy or hepato-splenomegaly and if decision of BMA is taken, it is essentially to do it prior to steroid therapy, oral prednisolone is the readily available, inexpensive drug that can be taken orally in hospital and as outpatient. ethylprednisolone rapidly increases platelet counts so reduces period of hospitalization, but it is not always available and can be used as in patient treatment only.

***References:***

*1. J. Paul Scott, Robert R. Montgomery. Idiopathic thrombocytopenic purpura Behrman RE, Kliegman RM, Jenson HB ,Stanton BF.Nelson Textbook of Pediatrics. 19th ed, Philadelphia. WB Saunders CO 2011: 6143– 6147.*

*2. L J Butros, J B Bussel. Intracranial hemorrhage in immune thrombocytopenic purpura: a retrospective analysis. J Pediatr Hematol Oncol 2003; 25:660–4.*

*3. Drew Provan ,Charles R. J. Singer ,Trevor Baglin ,et al. Childhood immune (idiopathic) thrombocytopenic purpura (ITP) .Oxford Handbook of Clinical Haematology, Second edition, 2004:466-467.*

*4. Goel M Krishna. Idiopathic thrombocytopenic purpura. Goel M Krishna , Gupta D K. Hutchison's Paediatrics, Second Edition, Jaypee Brothers Medical Publishers.313-314.*

*5. E. Hostynova, J. Cap, J. Raskova, et al; Immune thrombocytopenic purpura in children. Bratisl – Lek listy. 2002; 103 (3):113 – 116.*

*6- Corri Black , James A. Kaye , Hershel Jick .MMR vaccine and idiopathic thrombocytopenic purpura. Br J Clin Pharmacol. 2003; 55(1): 107–111.*

*7.Sandler SG, Review: immune thrombocytopenic purpura: an update for immunohematologists; J. of blood group seology*

*and education: 2004;20(2): 112-117.*
*8- Bolton Meggs PH. Severe Bleeding in ITP J. Paediatric Haematol oncol. 2003; 25(1):47 – 51.*
*9- Butros L J,Bussel JB. Intracranial haemorrhage in ITP' a retrospective analysis. J. Paediatric Haematol oncol. 2003; 25(8): 660 – 4.*
*10. Cohen Y C, Djulbegovic B, Shamai – Lubovits O, et al. The bleeding risk and the natural history of ITP in patient with persistent low platelet count. Arch Int Med. 2000; 160(11):1630 – 8.*
*11. AL-Mula Naima, Bener Abdulbari, Amer Aliaa, et al. ITP in childhood: a population-based study in Qatar. Jornal de Pedaitria 2009;85(3):269-272.[IVSL]*
*12. Belletrutti M, Ali K, Barnard D, Blanchette V ,et al . Chronic immune thrombocytopenic purpura in children: a survey of the canadian experience. J Pediatr Hematol Oncol. 2007; 29(2):95-100.*
*13. Celkan Tiraje. Changes in chilhood ITP treatment and follow-up in 2011.Turk Arch Ped. 2012; 47: 8-17. [IVSL]*
*14. Al-Nadawi MN, AL-Hadad SA, Umran SK, ITP, Clinical manifestation and treatment. J. Fac. Med; 2002,44(1) 71 – 76.*
*15. Al-Nadawi MN.ITP in children. Presentations & complications. J. Fac. Med. Baghdad.2008; 85:34-41.*
*16. Sawsan S. Abbas, childhood ITP: A retrospective Analysis of clinical features and response to treatment J. Fac. Med. Baghdad. 2006; 48(3):258 – 261.*
*17. Moussalim M., Yassin N., ITP in childhood: a Lebanese Perspective, Mol. Immunol. 2003; 39 (17 – 18): 1105 – 7.*
*18. klaassen Robert . Acute immune thrombocytopenic purpura: What do we do when things go well? Toronto Canada, Paediatr Child Health 2002; 7(6):384-385.*
*19. Lyori H, Besshof, Ookawa H et. al., Intracranial hemorrhage in children with ITP. Japanese study group on childhood ITP, Ann – Haemeto. 2002; 79 (12): 691 – 5.*
*20. Diane Nugent.ITP of childhood. Haematology. 2006; 1:97-103.*
*21.Ahmed S, Siddiqui A. K., Shahid R. K.,et al. Prognostic variables in newly diagnosed childhood immune thrombocytopenia. American Journal of Hematology .2004; 77:358–362. [IVSL].*