Cutaneous Hemorrhage Types as Supportive Factors for Predicting Chronic Immune Thrombocytopenia in children

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INTRODUCTION

Isolated Thrombocytopenia (platelet count <100,000/µL, with a normal white blood cell count and normal Hemoglobin levels). The annual incidence 1-6.4 cases per 100,000 children.

Affected children are young (peak age, approximately 5 years). The cause of ITP remains unknown in most cases, can be triggered by a viral infection or other immunologic or environmental factors.

Primary ITP is categorized into three phases

1. Newly diagnosed ITP : ITP within three months from of diagnosis.
2. Persistent ITP : Ongoing ITP between 3 to 12 months from of initial diagnosis.
3. Chronic ITP : ITP lasting for more than 12 months of diagnosis.

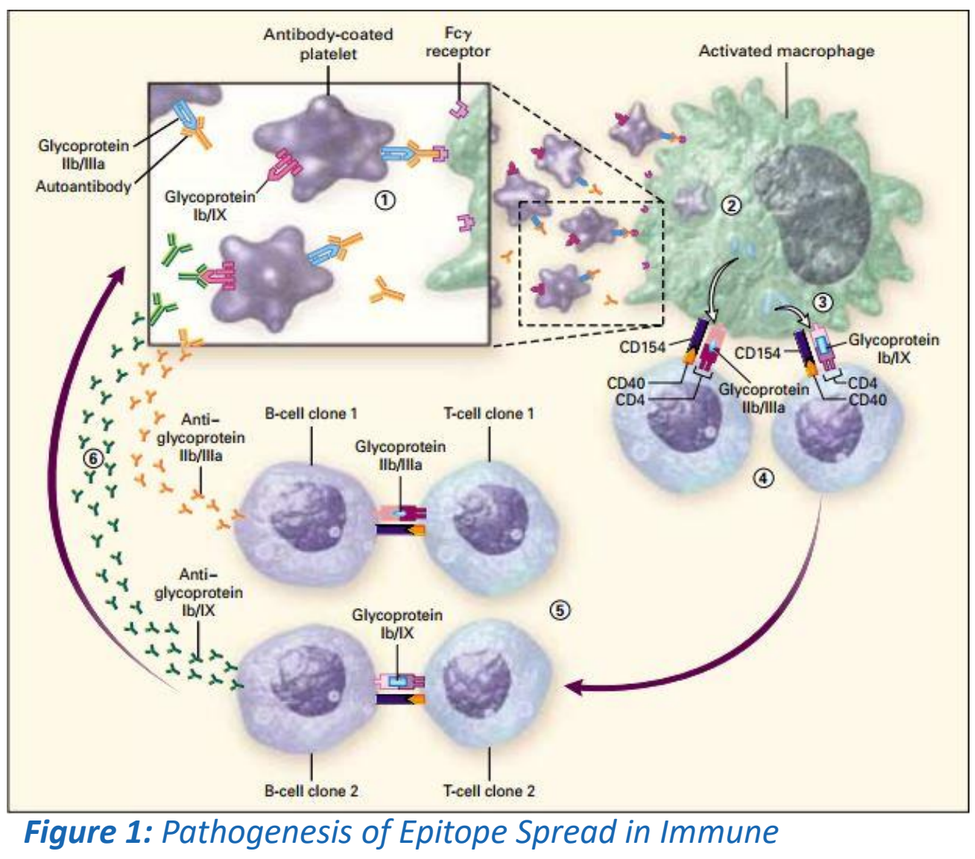

Figure 1: *Pathogenesis of Epitope Spread in Immune Thrombocytopenic Purpura.*
Immune Thrombocytopenic Purpura, NEJM, Vol.346, No.13, March 28, 2002.

OBJECTIVE

Chronic ITP has a considerable impact on the child and his family's lifestyle.

Up to 20% of newly diagnosed children will develop chronic ITP.

Our objective was to assess risk factors for developing chronic Immune Thrombocytopenia (ITP).

The study design was approved by the hospital's Research Ethics Committee.

The study was performed as Basic Science work.

The authors declare they have no conflict of interest.

METHOD

•**Retrospective** chart review conducted at the Children's Unit of Laniado Hospital, Israel.

•All consecutive charts of children **<18 years** old, diagnosed with primary ITP at our institution between **2000 to 2015.**

•A total of **65** consecutive charts were reviewed. Three of them were excluded (one patient was diagnosed with ALL, and two infant's diagnoses were due to maternal ITP).

•Thus, a total of **62 patients** were included in the study- **44 had acute ITP** and **18 developed the chronic form** of the disease.

•Children with acute and chronic ITP were analyzed separately and compared.

RESULTS

Patient characteristics

•A total of 62 patients were included in the analysis.

•The mean age at presentation was 6.13±4.71 years (ranging 7 months to 17 years).

•Sixty-one patients were Jewish and 72% of them were of Sephardic origin.

• In 10 cases (16.1 %), a background disease was noted (asthma, recurrent ear infections, recurrent pneumonia, cerebral palsy, depression).

•Only in 3 cases (4.8%), a family history of ITP was known.

	Acute [Total= 44]	Chronic [Total= 18]	P-Value
Age			
0-1 year	3 (7%)	2 (11%)	
1-7 years old	**29 (66%)**	**8 (44%)**	0.294
>7 years old	12 (27%)	8 (44%)	
Gender			
Male	25 (57%)	8 (44%)	0.413
Female	19 (43%)	10 (56%)	
Family history of ITP	1 (2.3%)	2 (11.1%)	0.200
Background diseases	**9 (21%)**	**1 (6%)**	0.256

Table 1 *Regarding patient characteristics, there was no statistical significant differences between the two groups.*

	Acute [Total= 44]	Chronic [Total= 18]	P-Value
History of preceding viral disease	16 (36.4%)	6 (33.3%)	1.000
Fever at presentation	7 (15.9%)	0	0.096
Bleeding*	8 (18.2%)	2 (11.2%)	0.709
Cutaneous hemorrhage Petechiae alone Integrated*	40 (90.9%) 7 (15.9%) 33 (75.0%)	11 (61.1%) 3 (16.7%) 8 (44.4%)	**0.010**
Mean PLT* count at presentation	22 959	32 824	0.083
Mean HB* at presentation	12.0	12.8	**0.021**
Mean WBC* count at presentation	16 762	10 541	0.299
At least one treatment administered	23 (52.3%)	10 (55.6%)	1.000

Table 2 *Children with the ac. Disease presented with statistical significant cutaneous hemorrhage.*

Clinical Presentation

A history of viral infection up to a month before presentation occurred in the two groups.

One patient was given an attenuated vaccine close to diagnosis.

Up to 82.5% had different type of cutaneous hemorrhage, with a larger proportion of the acute patients than the chronic patients.

The mean initial platelet count was 25,764 (range, 2490 to 93,000).

Multivariate analysis

Two parameters were found to influence the risk for a chronic disease:

•Older age- increase in one year of age increased the odds (OR=1.1, 95%CI 1.01-1.33, P-value=0.037)

•Combined skin manifestations reduced the risk (OR=0.167, 95%CI 0.03-0.86, P-value=0.032).

Platelet counts were not identified as a significant factor.

CONCLUSION

- Our study shows **for the first time** that the presence of **combined skin manifestations** is associated with reduced risk to chronic disease.
- Future studies should analyze differences in skin hemorrhage types because these are relatively simple to identify and can be used to add some information regarding the course of the disease when diagnosing ITP in children.
- The exact prognostic value of these symptoms should be determined in prospective, large-scale studies.