# Background

- Recent studies reviewing immune mechanisms of immune thrombocytopenia (ITP) suggest acute and chronic forms may represent two distinct immunologic disorders.
- Extensive data suggest development of chronic ITP correlates with increasing age, yet no studies have evaluated a correlation of lymphocyte counts with age in ITP, which would validate an underlying immunopathologic basis for the observation.
- Changes in absolute lymphocyte counts (ALC) over disease course, where altered counts might suggest ongoing immune activation, have also not been reported.

# Objectives

- To evaluate whether absolute lymphocyte counts (ALC) at presentation or later in disease course are predictors for ITP outcomes.
- To correlate ALC values with age to determine if a distinct immunopathologic relationship exists for older children compared to younger cohorts.

# Methods

- In accordance with institutional IRB procedures, 204 of 227 patients diagnosed with ITP between August 2000 and May 2001 were eligible for analysis.
- Differential CBCs were ascertained at presentation, 3 mo, 6 mo, 8, 12 mo.
- Recursive partitioning and logistic regression with ROC curves were used to determine significant variables associated with ITP outcomes and optimal cutoff values.

# Results

## Table I. Comparison of ITP Outcomes with Presenting Characteristics at Presentation

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Overall</th>
<th>Gender</th>
<th>Male</th>
<th>Female</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age yrs (mean)</td>
<td>5.2 ± 3.3</td>
<td>6.4 ± 4.4</td>
<td>5.7 ± 3.4</td>
<td>5.0 ± 3.6</td>
<td>0.008</td>
</tr>
<tr>
<td>Platelet count</td>
<td>110 (54.3)</td>
<td>74 (67.6)</td>
<td>36 (26.5)</td>
<td>2.00 ± 1.9</td>
<td>0.001</td>
</tr>
<tr>
<td>ALC (x 10^9/l)</td>
<td>12.1 ± 7.3</td>
<td>11.5 ± 7.3</td>
<td>6.2 ± 5.7</td>
<td>6.5 ± 5.0</td>
<td>0.459</td>
</tr>
</tbody>
</table>

## Table II. Comparison of ITP Outcomes with ALC at 3 Months

<table>
<thead>
<tr>
<th>ALC (x 10^9/l)</th>
<th>Overall</th>
<th>Male</th>
<th>Female</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 0.00 ± 0.00</td>
<td>3.13 ± 1.41</td>
<td>2.79 ± 1.32</td>
<td>90 (56.1)</td>
<td>5 (50.0)</td>
</tr>
<tr>
<td>&gt; 0.00 ± 0.00</td>
<td>14 (11.0)</td>
<td>9 (12.2)</td>
<td>5 (6.7)</td>
<td>5 (5.0)</td>
</tr>
</tbody>
</table>

# Discussion

- Mean ALC values at presentation were significantly different between the group with disease > 3 mos (3.5) and those who developed chronic disease beyond 12 months, as previously described by Ahmed et al (Fig 1A).
- However, presenting ALC was not significantly associated with outcomes based on multiple logistic regression.
- Patients with lower presenting ALC were predominately older children.
- 63% (45/71) of pts < 8 yrs of age had an initial ALC < 3.0 × 10^9/l.
- Only 24% (32/133) of pts ≥ 8 yrs of age had an initial ALC ≥ 3.0 × 10^9/l.

# Limitations

- Retrospective study design – could not control for exposures or outcomes.
- ALC at an earlier time interval between diagnosis and 3 months was not recorded.

# Conclusions

- Unlike acute disease, chronic ITP is associated with lower absolute lymphocyte counts during the first few months of illness in patients with ITP.
- Chronic ITP likely has a distinct immunologic origin for heterogeneity of disease course.
- This provides further evidence that acute and chronic forms of ITP may actually represent two distinct immunopathologic disorders.
- Progression to lower lymphocyte counts over the first few months of disease may be a surrogate for identifying patients with ongoing immune activation causing chronic ITP.
- This study substantiates an underlying immunopathologic basis for the higher rates of chronic ITP observed in older children when compared to younger cohorts.
- Prospective analyses are warranted to confirm these findings and further research is needed to establish the pathophysiological mechanisms responsible for this association.

# Reference