

# Incidence and Prevalence of Immune Thrombocytopenia in a Multiple Sclerosis Clinic Cohort

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## BACKGROUND

While an association of Multiple Sclerosis (MS) with other autoimmune illnesses has been reported (1), data are limited. In the era of new MS therapeutics, there is concern regarding induction of autoimmune illness, including Immune Thrombocytopenia (ITP) (2).

## OBJECTIVE:

To report the incidence, prevalence and severity of ITP in a typical predominantly adult, MS clinic cohort, most all on approved MS therapies.

## METHODS

After local Institutional Review Board approval was obtained, a retrospective study of 382 active patient charts from 2010 and 2011 was done to compile the incidence and prevalence of record documented autoimmune illnesses associated with MS. All patients had a confirmed MS diagnosis based on 2010 McDonald Criteria (3). Here we report our findings regarding Immune Thrombocytopenia, with this diagnosis based on The American Society of Hematology 2011 evidence based practice guideline for immune thrombocytopenia (4).

## RESULTS

- During this time period, three patients experienced new incident ITP, mild, with platelet counts  $>50,000 < 100,000$ /microliter (mcl).
- One patient was on Glatiramer Acetate and also had a history of Alcoholism and Lyme Disease.
- The other two patients were on Natalizumab, one also having a low positive Antinuclear Antibody titer of 1:80.
- Six additional patients had prior evidence of ITP, ranging from mild to severe including two patients with platelet counts of 2000/mcl and 4000/mcl, and signs of bleeding. These two severe patients were both on Glatiramer Acetate with negative re-challenge, one experiencing the original episode before the MS diagnosis. One patient was on Beta Interferon 1B and switched to Beta Interferon 1A weekly. One patient was treated with Beta Interferon 1B and switched to Natalizumab. One patient received Beta Interferon 1B and also took Carbamazepine for Trigeminal Neuralgia. One patient was on Beta Interferon 1A weekly. (Table 1)

Table 1:

Incident of Immune Thrombocytopenia				
Patients	Severity	MS Therapy	Confounding Factors	ITP Therapy
Patient #1	Mild	Glatiramet Acetate	Alcoholism Lyme Disease	None
Patient #2	Mild	Natalizumab	None	None
Patient #3	Mild	Natalizumab	ANA 1:80	None
Additional ITP Patients Noted in the Cohort				
Patient #4	Severe	Glatiramet Acetate (negative re-challenge)	None	Intravenous Gamma Globulin Cortico-steroids Platelet transfusion Splenectomy (#5)
Patient #5	Severe	Glatiramet Acetate (negative re-challenge)	ITP diagnosis before MS diagnosis	
Patient #6	Mild	B-Interferon 1B switch to B Interferon 1A weekly	None	None
Patient #7	Mild	Beta Interferon Switch to Natalizumab	None	None
Patient #8	Mild	Beta Interferon I-B	Carbamazepine	None
Patient #9	Mild	Beta Interferon I-A weekly	None	None

## DISCUSSION

- Little data exist regarding the incidence or prevalence of ITP or severe, potentially life threatening, ITP in MS patients (5). Epidemiological studies regarding ITP have varied methodologies and wide-ranging results, some focusing on prevalence and others on incidence (5).
- In an analysis of administrative data by Segal and Powe (6) overall prevalence of ITP, based on recorded diagnostic codes, was 9.5/100,000 persons in the State of Maryland (USA), and a concurrent diagnosis of Multiple Sclerosis was 25 times higher than anticipated, with these cases seen in children.
- Terrel et al (7) in a critical review of published reports on the incidence of ITP in children and adults reported an incidence of 1.9-6.4 per100,000 children/year and 3.3 per 100,000 adults/year.
- Reid (8) reported the incidence of chronic (6 months or more) ITP to be 0.46/100,000 children/year in the Northern health region of the United Kingdom.
- A study by Sachs (9) indicates the incidence of ITP in adults to be 5.8-6.6/100,000 per year in a German cohort.
- Using the United Kingdom General Practice Database, Bennett et al (10) estimate the prevalence of ITP in adults to be 50.23/100,000, higher in women and increasing with age.
- Feudjo-Tepie et al (11) analyzed the de-identified Integrated Healthcare Information System database, estimating the prevalence of ITP in adults (18 years+) to be 23.6/100,000, higher for women and increasing with age.
- An American Veterans Administration Hospital cohort study (12) by Landgren et al found the age adjusted prevalence of ITP in male adults (18+ years) to be 189.3/100,000 for African-Americans and 176.4/100,000 for white Americans.
- The phase two (13) and phase three (14,15) clinical trials comparing Alemtuzumab to Beta Interferon 1A reveal an incidence of ITP ranging from 1% (0.5% per year) to 3% (1% per year) for Alemtuzumab, generally severe, and 0% to 1.6% (0.8% per year) for Beta Interferon 1A, generally mild.

## CONCLUSIONS

- The incidence of ITP in this MS clinic cohort is 3/382 or 0.8% over 2 years (0.4% per year).
- The prevalence is 9/382 or 2.4%. 3 patients were on Natalizumab, 3 on Glatiramer Acetate, and 3 on Beta Interferon.
- No single agent can be implicated as the causative factor.
- These data provide some further perspective regarding the incidence and prevalence of ITP in the MS population.

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## DISCLOSURE:

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