**Supplemental Tables**

**Supplemental Table 1: Comparison of Clinical Cohort participating in Vitamin D Study and Those not participating in the Vitamin D study**

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|  | **Clinical Cohort + Vitamin D Study**  **(N=70)** | **Clinical Cohort Only**  **(n=143)** | **P Value** |
| Age at Diagnosis (median;range in years) | 38.3 (range: 5.7-70.5) | 45.3 (range: 3-81.4) | 0.044 |
| Sex (Female) | 37 (52.9%) | 88 (61.5%) | 0.23 |
| Familial form | 15 (21.4%) | 31 (21.7%) | 0.97 |
| Fall/Winter Presentation vs. Spring/Summer | 30 (43.5%) | 59 (44.0%) | 0.94 |
| Present with hemorrhage | 29 (41.4%) | 46 (32.2%) | 0.18 |
| Chronic inflammatory disease | 23 (32.9%) | 34 (23.8%) | 0.16 |
| Concussion | 20 (50.0%) | 34 (39.5%) | 0.27 |
| Neoplastic disease | 13 (18.6%) | 28 (19.7%) | 0.84 |
| Aspirin | 8 (11.4%) | 31 (21.7%) | 0.089 |
| Vitamin D supplementation | 18 (25.7%) | 42 (29.4%) | 0.58 |
| Fish Oil supplementation | 11 (15.7%) | 28 (19.6%) | 0.49 |
| Use of Any Statin | 13 (18.8%) | 22 (15.4%) | 0.56 |
| Brainstem location | 21 (30.4%) | 41 (29.7%) | 0.91 |

**Supplemental Table 2: 25-Hydroxy-Vitamin D Levels by Comorbidity and Medication use**

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|  | **25-hydroxy-vitamin D Level (ng/ml) if has Disease indicated or Uses Medication indicated** | **25-hydroxy-vitamin D level (ng/ml) if does not have the Disease indicated or uses Medication indicated** | **P value** |
| **Chronic inflammatory Disease** | 35.0  (Range: 14-60) | 28.0  (Range: 11-59) | 0.016 |
| **Neoplastic Disease** | 30.0  (Range: 11-56) | 29.0  (Range: 14-60) | 0.97 |
| **Concussion** | 29.5  (Range: 11-60) | 26.0  (Range: 15-56) | 0.74 |
| **Aspirin** | 28.5  (Range:21-38) | 29.0  (Range: 11-60) | 0.73 |
| **Vitamin D supplementation** | 40.0  (Range: 18-60) | 26.0  (Range: 11-56) | <0.001 |
| **Use of any Statin** | 31.0  (Range: 23-56) | 28.5  (Range: 11-60) | 0.52 |