Late Cognitive and Adaptive Outcomes of Patients with Neuroblastoma-Associated Opsoclonus-Myoclonus-Ataxia-Syndrome (OMAS): A Report from the Children's Oncology Group (COG)

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In Memoriam

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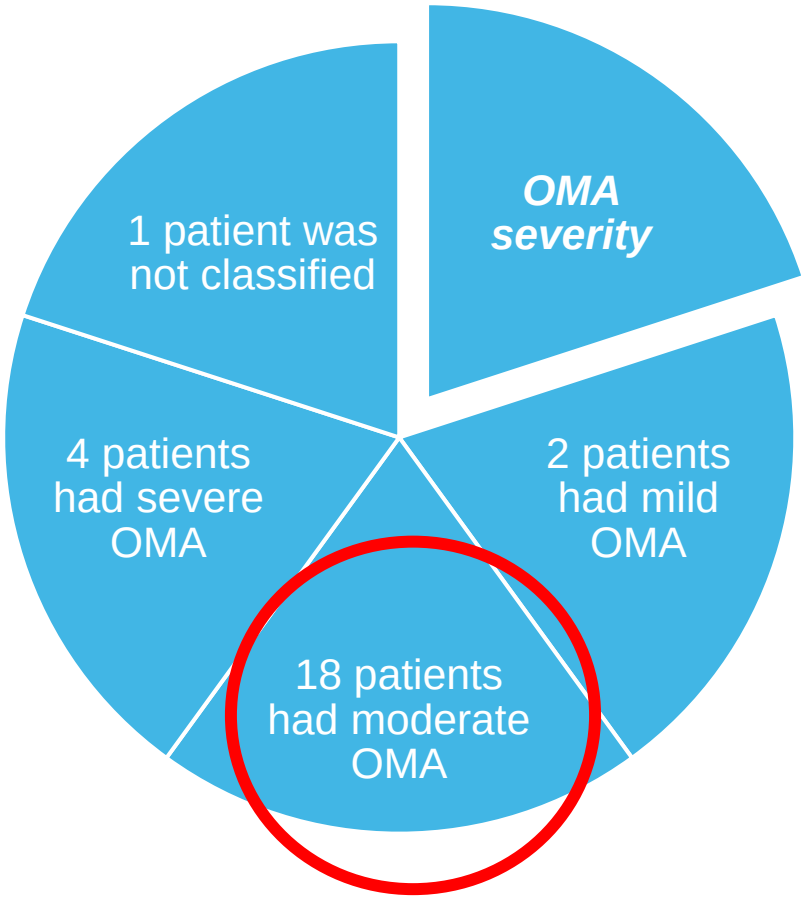
Introduction

- OMAS is a rare autoimmune disorder of the CNS with abnormal eye and limb movements, ataxic gait, and irritability.
- 2-4% of children diagnosed with neuroblastoma have neuroblastoma-associated OMAS (NA-OMAS).
- NA-OMAS is typically associated with low-risk neuroblastoma that is cured with surgery +/- modest chemotherapy.
- Most patients with NA-OMAS will have persistent significant neurological deficits, despite cure of the neuroblastoma.
- COG protocol ANBL00P3, a randomized prospective therapeutic clinical trial for patients with NA-OMAS, demonstrated that the addition of intravenous immunoglobulin (IVIG) to prednisone and risk-adapted chemotherapy significantly improved the OMAS 1-year response rate.
- Herein we report evaluation of long-term neurocognitive and adaptive functioning in these patients.

Methods

- Of 53 children enrolled on ANBL00P3, 25 submitted evaluable neurocognitive data (at diagnosis and at least once more within 2 years) and were included in the analyses.
- Adaptive development was assessed via the Vineland Adaptive Behavior Scale; validated, age-appropriate tools including the BSID, WPPSI-R, WISC-III were used to assess neurocognitive function.
- OMA symptoms involving stance, gait, arm/hand movement, opsoclonus, and mood/behavior were classified as mild, moderate, or severe.
- Neurological symptoms were evaluated and summated to categorize patients as having had a complete response (CR), partial response (PR), no response (NR), or progressive disease (PD). Patients who crossed over to receive IVIG and/or ACTH were classified as NR.
- Responders included patients with a CR or PR. Non-responders included patients with a NR or PD.

Results: OMA Severity



Results: Response by Treatment Arm

IVIG+

- 16 patients were treated with chemotherapy and IVIG (IVIG+).
- Most of these were responders (n=13).
- Of the 3 non-responders in the IVIG+ group, 2 crossed over to ACTH and 1 had stable disease.

Chemo only

- 9 patients were treated with chemotherapy only.
- A minority of these were responders (n=3).
- Of the 6 non-responders in the chemotherapy only group, 5 crossed over to IVIG and 1 had stable disease.
- Of the 5 patients who crossed over to IVIG in the chemotherapy only group, 1 additionally received ACTH.

Conclusions

- Descriptively, the IVIG+ group demonstrated greater improvements in adaptive development compared to the chemotherapy only group.
- Cognitive functioning was stable and adaptive functioning was stable to improved over time.
- The addition of IVIG to the chemotherapy-prednisone regimen appeared to offer additional benefit by further improving long-term adaptive outcomes.
- While statistical significance is limited by small sample size, findings suggest that aggressively treating NA-OMAS may be associated with improved long-term cognitive and adaptive functioning as compared to historical cohorts.

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