Assessment of Cognitive Dysfunction in Mast Cell Activation Syndrome

Daniel L. Rosenberg M.D., Ravi K. Viswanathan M.D., and Sameer K. Mathur M.D., Ph.D.
University of Wisconsin-Madison, Department of Medicine, Division of Allergy, Pulmonary and Critical Care

Abstract

Mast cell activation syndrome (MCAS) referrals to primary allergy clinics are significantly increasing. Up to 30% of such patients report “brain fog”. Cognitive dysfunction has been demonstrated in patients with psychiatric or orthostatic tachycardia syndrome (POTS) via computer testing battery (Cogstate). 20-40% of MCAS patients self-report symptoms of depression or anxiety.

Introduction

A commonly cited complaint in this disorder is a non-specific condition commonly described as “brain fog.” Similar complaints have been noted in patients with psychiatric or orthostatic tachycardia syndrome (POTS). Executive cognitive function is assessed via a previously validated computer battery (Cogstate), PHQ-9, and GAD-7. Baseline data on mast cell activation markers including tryptase level and 24 hour urinary collections was abstracted from the medical record. Abbreviations as follow: NMH = n-methylhistamine, LTE4 = leukotriene E4, BPGF2alpha = beta prostaglandin.

Methods

- Data collected from Quality Improvement project (IRB-exempt).
- Patients diagnosed with MCAS in a UW Allergy Clinic completed Cogstate testing to assess cognitive function.
- Patients completed a Patient Health Questionnaire-9 (PHQ-9) to assess for depression, and a General Anxiety Disorder-7 (GAD-7) to assess for anxiety.

Conclusions

- 4 of 12 (33%) patients had evidence of cognitive dysfunction on testing, with 3 of 10 (30%) scoring <80 on two tests.
- All 4 patients with evidence of cognitive dysfunction had at least one positive biomarker.
- 3 of these patients had at least mild symptoms of depression and anxiety.
- 10 of 12 (83%) had at least mild depression, with 3 qualifying as moderate to severe.
- 6 of 12 (50%) had at least mild anxiety, with 1 qualifying as severe.

Goals

- Assess for cognitive dysfunction in patients with MCAS
- Evaluate for depression and anxiety in patients with MCAS

Results

- PHQ-9 scores were categorized as minimal (0-4), mild (5-9), moderate (10-15), and severe (15-20). GAD-7 scores were categorized as minimal (0-4), mild (5-9), moderate (10-15), and severely (16-19).

Table 1: Patients previously diagnosed with MCAS at a UW Allergy clinic were recruited to complete a computer battery of previously validated cognitive testing (Cogstate), PHQ-9, and GAD-7. Baseline data on mast cell activation markers including tryptase level and 24 hour urinary collections was abstracted from the medical record. Abbreviations as follow: NMH = n-methylhistamine, LTE4 = leukotriene E4, BPGF2alpha = beta prostaglandin.

Acknowledgements

We would like to thank our UW clinic patients for participating in this study, and Cogstate for providing the cognitive testing computer battery.

References

- Armit KK et al Clinical Characteristics of Patients in Allergy Clinic with Presumed Diagnosis of MCAS, AAAAI (2018)
- Anderson JW et al, Front Physiol. (2014)
- Cogstate Ltd: Melbourne, Australia.