surgery with a total of 1,902 prescriptions, followed by internal medicine (1,660), obstetrics and gynecology (875), and intensive care (713).
Conclusions: We have identified wards at our institution with the highest rates of first generation-antihistamine prescribing with the surgical, obstetrical and medicine wards being the top three. Physicians, pharmacists, and nurses—especially in these identified areas of the hospital—may benefit from education around the potential for serious harm of first-generation antihistamines and the availability of safer alternatives. Additionally, limiting access to first-generation antihistamines in hospital would encourage safer prescribing habits and familiarity with second-generation agents.

Urticaria/Angioedema

#66

Presence of autoantibodies in subjects with chronic spontaneous urticaria: a systematic literature review

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Background: While the pathogenesis of chronic spontaneous urticaria (CSU) remains unknown, autoantibodies have been found in subjects with CSU. It has been speculated that these autoantibodies cause the condition. Thus, the objective of this review was to investigate the presence of autoantibodies in CSU subjects.
Methods: A systematic review was conducted within the PubMed, Medline and CENTRAL databases to identify all studies that assessed the presence of IgG anti-FcεR1α, IgG anti-IgE and anti-TPO antibodies in CSU subjects.
Results: 27 papers were included in this review. 14 assessed the presence of IgG anti-FcεR1α antibody in CSU subjects. In five papers that studied CSU subjects with positive-autologous serum skin tests (ASST), 58% had IgG anti-FcεR1α, while in 3 papers that studied CSU subjects with negative-ASSTs, 22.9% had IgG anti-FcεR1α. In nine studies where ASST was not performed, IgG anti-FcεR1α was detected in 43.1% of CSU subjects. In 11 controlled studies, 38.8% of the CSU population had IgG anti-FcεR1α, compared to 6.7% of healthy controls ($p < 0.0001$). CSU subjects were 6.5 times more likely to have IgG anti-FcεR1α present ($p = 0.001$). Five studies found IgG anti-IgE antibody in 41.8% of CSU subjects. In four controlled studies, 44% of CSU subjects had this autoantibody present, compared to 15.3% in healthy controls ($p = 0.09$). CSU subjects were 2.4 times more likely to have IgG anti-IgE present ($p = 0.03$). In 11 studies, anti-TPO antibody was detected in 17.8% of CSU subjects. In six controlled studies, anti-TPO was found in 16.9% of CSU subjects compared to 5.1% in healthy controls ($p = 0.03$). CSU subjects were 5.0 times more likely to have anti-TPO present ($p = 0.02$).
Conclusions: Elevated levels of FcεRIa-specific, IgG anti-IgE and anti-TPO autoantibodies were found in CSU subjects compared to healthy controls, which may indicate that autoimmunity may contribute to the pathogenesis of this disease or be an inflammatory marker associated with the condition.

#67

Don't forget the poop!" Resolution of chronic spontaneous urticaria with treatment of common stool parasite

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Background: Chronic spontaneous urticaria (CSU) is defined by spontaneous appearance of wheals, angioedema or both for at least 6 weeks. Previous studies have reported an association between parasitic infections and CSU in pediatric patients. While the etiology of CSU is restricted for pediatric patients, there are commonly known etiological factors including thyroid diseases, infections and autoimmune diseases. Currently there is extensive research on these etiological factors, however there is limited literature exploring parasitic infections as a cause for CSU.
Case Presentation: A 5 year old female presented with chronic urticaria for the past 4 years. The rash presented as typical urticarial lesions: transient, pruritic skin lesions located ubiquitously. Further examination revealed intermittent angioedema located on the lips and ears. The patient's urticaria was spontaneous in nature though exacerbated by various: unrelated foods, frigid surfaces, heat, stress, and pressure. Additional questioning precluded common inducible forms of urticarial. Blood work indicated normal thyroid function, negative celiac screening, negative inflammatory markers, and negative autoimmune work up. IgE was elevated at 131 kU/L. Analysis of a stool culture revealed the presence of an amoeba, Dientamoeba fragilis, often felt to be non-clinical relevant in the pediatric gastrointestinal literature. The patient was prescribed Paromomycin for the resolution of the parasitic infection. Subsequently, the patient's urticarial symptoms reduced in severity by 90%. Patient was advised to perform a repeat stool test.
Conclusions: Parasitic infection in relation to CSU have been reported. This case identifies the benefit of further investigational screening in select CSU patients and the eradication for a low toxicity parasitic agent. The gradual increase of parasitic related cases in tropical and non tropical countries would suggest that parasitology should become a part of the routine screening for childhood CSU. Further research is required to determine a causal relationship between parasitic infections and CSU.

Statement of Consent: Written informed consent for this case report was obtained from the patient.

#68

Mild COVID-19 respiratory infection associated with moderate flare of chronic spontaneous urticaria in a 43-year old female long-term care worker on omalizumab

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Background: Viruses, including COVID-19, are known triggers of urticaria. Omalizumab, an anti-IgE monoclonal antibody, is indicated in chronic spontaneous urticaria (CSU) patients who are refractory to antihistamines. Omalizumab has been found to reduce the duration, frequency, and viral shedding of rhinovirus infections. We hypothesize that CSU patients on omalizumab may have a decreased risk of severe infection with COVID-19. As such, we describe a long-term care worker on omalizumab who experienced a mild COVID-19 infection with CSU flare.
Case Presentation: We present a 43-year old Caucasian, non-obese, non-atopic female with a 20-year history of CSU with eosinopenia who was well-controlled on cetirizine 10 mg/day and omalizumab 300 mg SC q4weeks since 2017 with an Urticaria Activity Score 7 (UAS7) of 0 on a background of severe anxiety/depression and active smoking (20-pack year). She had normal lung function and no cardiac comorbidities. On March 30th, 2020, she tested positive for COVID-19 after 5 days of worsening nasal congestion, headache, and fever, while working at a long-term care facility heavily impacted by a COVID-19 outbreak. Her COVID-19 symptoms resolved without intervention after 7-days, which was followed by a moderate flare of her CSU (UAS7 16). Omalizumab was given the week before symptom onset and 14-days after symptom resolution. She did not require a burst of prednisone to control her urticarial flare.

Conclusions: Despite her smoking history and intense occupational exposure risk, she only had a mild COVID-19 infection. Additionally, despite her high underlying stress levels, baseline eosinopenia, and acute viral infection, she only had a moderate flare of CSU. This case suggests that targeted anti-IgE therapy may lessen the severity of COVID-19 infection and prevent severe exacerbations of CSU, which is theoretically preferable to more broad immunosuppression with corticosteroids. Larger studies are needed to clarify guidance on withholding or continuing omalizumab in CSU patients with COVID-19.

Statement of Consent: Written informed consent for this case report was obtained from the patient.

#69

Review of C1-INH therapy in angiotensin converting enzyme inhibitor or angiotensin receptor blocker induced angioedema—a Manitoba population analysis

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Background: Angiotensin Converting Enzyme Inhibitors (ACEi) are a common cause of Emergency Room presentation for angioedema. Although no treatment guidelines exist, C1 esterase inhibitor concentrate (C1-INH) is used on an off label basis for management of ACEI acquired angioedema.
Methods: A retrospective chart review, from three academic hospitals in Winnipeg, Manitoba, was conducted examining all patients with ACEI induced angioedema, who received Berinert treatment, between 2010 and 2018.
Results: Nine patients, from 3 academic sites, were identified through Allergy Service consultation data and records from Diagnostic Services Manitoba, Canada from 2010–2018. The majority of the patients (n = 7/9) required endotracheal intubation prior to the initiation of Berinert. Overall, approximately 44% of patients (n = 4/9) had resolution of angioedema ranging between 12–13.5 h, with a median time of 12.75 h, and no recurrence. One patient had transient symptom resolution in 14 h, however, recurrence of angioedema required re-intubation. The remainder of patients (n = 5/9), had resolution of angioedema between 22–34 h, with a median time of 22 h.
Conclusions: This study adds to the current medical literature, as we have specifically investigated the efficacy of C1-INH concentrate administration in patients who have been intubated for airway protection from ACEi induced angioedema. Our findings suggest that administration of C1-INH concentrate may shorten the time spent in the intensive care unit in a subgroup of patients. Ultimately, further research into characterizing this subgroup of patients needs to be completed.

#70

CSU and autoimmunity: another lead-gluten enteropathy

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Background: Chronic spontaneous urticaria (CSU) is characterized by the appearance of chronic/recurrent wheals, angioedema, or both for at least 6 weeks with reproducible triggers in a subset. While autoimmune disease is generally included in the workup of CSU, Celiac disease (CD) testing is generally overlooked. CD classically presents with gastrointestinal (GI) symptoms, but occasionally presents with cutaneous manifestations alone as can be seen in the case below.

Case Presentation: A 29 year old female with CSU presented with a history of recurrent episodes of periorbital angioedema and pruritus of the ear and throat most notably during and after exercise. Skin prick testing revealed a positive reaction to common outdoor inhalant allergens and cat. A diagnosis of exercise induced urticaria possibly aggravated by the ingestion of highly allergenic food prior to exercise was made. She was therefore advised to avoid consumption of the relevant foods before commencing her exercise routine. Despite having adhered to medical advice, the patient required further assessment due to persistent symptoms and new onset nausea. Blood work identified an elevated Thyroid Stimulating Hormone, Anti Thyroid Peroxidase and Anti Tissue Transglutaminase indicating an autoimmune etiology. A subsequent Gastroenterology consult confirmed CD on endoscopic biopsy. At follow up improvement of her urticaria and facial swelling improved after implementation of a gluten free diet.
Conclusions: Leznoff et al. originally identified association of CSU patients with the presence of antithyroid antibodies suggesting an autoimmune link [2]. Thyroid testing including autoantibody thyroid evaluation is now common practice in CSU. The above case highlights the benefit of CD screening in mildly GI symptomatic patients with CSU. Evaluation on functional inquiry of GI symptoms with antibody screening will help identify patients where gluten avoidance may be helpful in CSU management.

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Statement of Consent: Written informed consent for this case report was obtained from the patient.

#71

Salt-dependent aquagenic urticaria: case of a rare physical urticaria

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Background: Salt-dependent aquagenic urticaria is a rare physical urticaria which occurs in response to cutaneous exposure to ocean/sea water. There have been less than a dozen reported cases in the literature, and this condition appears to primarily affect young women. Confirmation of diagnosis with provocation testing using a cloth soaked in 3.5% NaCl water solution at room temperature and applied to the patient for 20 min is recommended.
Case Presentation: We present a case of a 19-year-old female presenting with an eight-year history of recurrent urticaria after swimming in the ocean. She could tolerate bathing at home and had gone swimming multiple times in freshwater lakes and swimming pools with no adverse reaction. She denied any systemic symptoms suggestive of anaphylaxis. She otherwise had a history of exercise induced urticaria and allergic rhinoconjunctvitis with sensitization to tree and grass pollen. Provocation testing had previously been negative on multiple occasions for cold-induced and aquagenic urticaria when conducted with freshwater. A paper towel was soaked in room temperature ocean water and applied to the patient's chest for 20 min. The paper towel was removed and 20 minuets after removal, 1–3 mm pruritic wheals, with associated flare developed on her chest where the ocean-soaked paper towel had been. The patient reported improvement of her symptoms with avoidance and use of non-sedating antihistamine therapy.
Conclusions: We identified a case of salt-dependent aquagenic urticaria in a young female patient, with convincing history and confirmatory provocation testing. Although extremely rare, salt-dependent