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POSTER ABSTRACTS

322.DISORDERS OF COAGULATION OR FIBRINOLYSIS: CLINICAL AND EPIDEMIOLOGICAL

Modern Scurvy and Hematology: A Retrospective Chart Review in Kingston, Ontario

Roslyn Mainland, MD¹, Pallavi Ganguli, MD², Paula James, MD FRCPC², C. Janet Lui, MD FRCPC², Natasha Satkunam, MBBS, FRCPC², Jennifer Leung, MD FRCPC²

¹Department of Medicine, Queen's University, Kingston, Canada

²Division of Hematology, Department of Medicine, Queen's University, Kingston, Canada

BACKGROUND Historically known as scurvy, Vitamin C deficiency is a rare disorder in developed countries that can lead to bleeding diathesis. A recognized increase in the number of patients found to have Vitamin C deficiency at Kingston Health Sciences Centre (KHSC) prompted a need to re-evaluate the prevalence, predisposing factors, and management of this nutritional deficiency.

METHODS We conducted a retrospective chart review of patients evaluated by the Hematology service at KHSC between March 2017 and June 2023 who were found to be Vitamin C deficient, defined as a Vitamin C level $<25 \mu\text{mol/L}$. Twenty-three patients were identified. Data collected included patient demographics, socioeconomic status, co-morbidities, clinical presentation, concurrent hematologic abnormalities, and treatment strategies.

RESULTS Twenty-three patients with Vitamin C deficiency were evaluated by Hematology at KHSC between March 2017 and June 2023. Almost half (43.5%, $n=10$) of patients were first assessed in the General Hematology clinic, while 30.4% ($n=7$) were seen by the inpatient Hematology consult service and 26.1% ($n=6$) were first seen in the Bleeding Disorders clinic.

Most patients (65.2%, $n=15$) were assigned male sex at birth. All adult age ranges were represented: 30.4% ($n=7$) were younger than 40, 56.5% ($n=13$) were ages 40 through 65, and 13.0% ($n=3$) were older than 65.

Four (17.4%) patients had previously undergone weight loss surgery, while five (21.7%) had Type 2 diabetes mellitus. Close to half (43.7%, $n=10$) of patients were taking a proton pump inhibitor daily, while 78.3% ($n=18$) were taking nutritional supplements other than Vitamin C.

Over one quarter (26.2%, $n=6$) of patients reported significant alcohol use, defined as greater than or equal to 10 drinks per week on average. The majority (69.6%, $n=16$) of individuals used recreational substances daily, including cigarettes, alcohol, or marijuana. The primary source of income for 30.4% ($n=7$) of individuals was government-funded income support, while 30.4% ($n=7$) were retired and 26.1% ($n=6$) were actively employed.

The most common reasons for referral to Hematology was assessment for bleeding disorders (43.5%, $n=10$) and cytopenia(s) (43.5%, $n=10$), followed by splenomegaly ($n=1$), pulmonary embolism ($n=1$), and macrocytosis ($n=1$). Seven patients (30.4%) experienced major bleeding, defined as bleeding that required hospitalization or guideline-directed transfusion of red blood cells. Common symptoms at presentation included menorrhagia (42.9% of female patients, $n=3$), gingival bleeding (34.8%, $n=8$), hematoma (30.4%, $n=7$), epistaxis (30.4%, $n=7$), subjective easy ecchymosis (30.4%, $n=7$), and subjective delayed wound healing (26.1%, $n=6$).

A Vitamin C level (\$20.50 CAD per test at KHSC) was ordered on the first assessment by Hematology in 73.7% ($n=14$) of patients. The Vitamin C level was undetectable ($<5 \mu\text{mol/L}$) in 47.8% ($n=11$) of patients. The mean Vitamin C level among patients in which it was detectable was $13.5 \mu\text{mol/L}$. Vitamin C levels were repeated in four patients and remained low in one. Studies for von Willebrand Disease (\$268.76 CAD per patient at KHSC) were obtained in 43.5% ($n=10$) of patients; one of these patients was diagnosed with acquired von Willebrand disease.

Nearly one third (30.4%, $n=7$) of patients were also Vitamin B12 deficient, while 39.1% ($n=9$) were iron deficient and 13.0% ($n=3$) were Vitamin D deficient. The mean hemoglobin when first assessed by Hematology was 126 g/L among females and 117 g/L among males.

Three patients (13.0%) were treated with intravenous Vitamin C; the remainder were treated with oral Vitamin C supplementation or dietary modifications. Ten patients (43.5%) were referred to a dietician as part of their treatment plan. Three patients (13.0%) were prescribed tranexamic acid for bleeding symptoms.

DISCUSSION Despite its perceived rarity in modern times, Vitamin C deficiency has contributed to a variety of presentations of bleeding diathesis encountered by Hematologists in Kingston, Ontario in recent years. Thus, detailed dietary and social histories, with consequent consideration of Vitamin C status, should be undertaken in the assessment of undifferentiated bleeding disorders. Increased awareness of the prevalence and presentation of Vitamin C deficiency could facilitate earlier diagnosis and appropriate management, including a decrease in costly testing for other bleeding disorders.

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