In the Limelight: October 2019

This monthly feature highlights four articles in the current print and online issue of Mayo Clinic Proceedings. These articles are also featured on the Mayo Clinic Proceedings’ YouTube Channel (https://youtu.be/akXq3BhRung).

SUICIDE AND HEALTH CARE UTILIZATION

Life is such a surpassing gift that the relinquishing of this gift by suicide fundamentally challenges our comprehension. Among the possible antecedents to the tragic taking of one’s life are an unspeakable and seemingly unresolvable anguish, a profound sense of personal failure, a feeling of alienation and isolation, a loss of self-worth, and an unrelenting sense of hopelessness. Suicide exerts enduring and far-ranging effects on loved ones and families, health care providers, friends, and coworkers, and evokes such soul-searching questions as to why were the depths of these feelings of the deceased never discerned in time and what could have been done to avert the tragedy that ensued. To the point of the latter question, substantial literature centers on factors that may predispose to or are associated with increased rates of suicide including, among others, individual characteristics (age, sex, education, ethnicity, occupation, sexual orientation), behavioral patterns (prior suicide attempt or ideation), life stressors present (divorce, loss of occupation) and past (abuse in childhood), exposure to firearms, family history, and assorted clinical conditions (psychiatric illness, medical comorbidities, chronic pain syndromes, substance abuse). In the present issue of Mayo Clinic Proceedings, Chock et al highlight the significance of increased health care utilization by suicide decedents prior to their death. In this large retrospective case-control study of patients cared for by the Kaiser Permanente Southern California Integrated Health Care System, Chock et al used the electronic medical record (EMR) to analyze health care visits in the four quarters of the year preceding death. The data demonstrate that suicide decedents as compared with controls had significantly more inpatient hospitalizations for mental health and nonmental health-related conditions; for emergency department (ED) visits for mental health and nonmental health-related diagnoses; and for outpatient visits with mental health-related diagnoses, but not for nonmental-health related diagnoses. Total health care visits for suicide decedents as compared with controls were significantly increased for each quarter of the year; rose over the course of the year while visits for controls were essentially unchanged; and were increased three-fold as compared with controls within 3 months of death. The importance of this study resides in the following considerations. First, this study involved a large representative population, included a control group, and has the strength of generalizability. Second, as discussed by the authors, the present findings as regards increased visits in conjunction with relevant predictive models incorporated into the EMR may signal to providers the need to consider the risk for suicide in a given patient. Third, health care providers in acute health care settings (hospitals and EDs) are positioned to serve as sensors for possible suicide risk in their patients, and such vigilance should not be relaxed because the underlying diagnosis
was nonmental health-related. The study by Chock et al significantly adds to the field of suicidology by delineating what may be a telling statistic and sign.


SKIN ASSESSMENT, FRAILTY, AND OUTCOMES IN THE CARDIAC ICU

In addition to increasing the risk for assorted chronic conditions, age commonly increases the severity of and complications resulting from acute organ injury. Indeed, in the intensive care unit (ICU), age is a determinant of poor outcomes and increased mortality. Increasing age is also a risk factor for frailty, a condition characterized by increased susceptibility to and unfavorable outcomes from diverse forms of stress. Frailty reflects a level of impairment of constitutive and inducible physiologic responses that cannot be explained simply by age, and is underpinned by inflammatory, immunologic, endocrine, and other humoral processes. Frailty, as distinct from age, is also associated with poor outcomes in the ICU. Frailty may be assessed by various methods, but such assessment may be challenging in the ICU. In the present issue of Mayo Clinic Proceedings, Jentzer et al assessed frailty by using the Braden Skin Score (BSS) and determined whether such assessment correlated with outcomes in the cardiac ICU. This study builds upon their prior work demonstrating that while cardiac ICU patients older than 70 years of age, as compared with those less than 70 years old, were sicker and had greater mortality, in the older age range mortality was less reliably predicted by scoring systems for disease severity (Jentzer et al, Am J Cardiol 2018; 122:1773-1778). Jentzer et al posited that this less reliable prediction of mortality in the older age range reflected the need to consider the effects of frailty, the latter not generally incorporated in such predictive scoring systems. Since its introduction, the BSS is now an established method for assessing the likelihood of skin pressure injury, and is usually assessed on a daily basis in hospitalized patients; the BSS integrates six indices that evaluate activity, mobility, sensory perception, nutrition, moisture, and friction/shear. Jentzer et al reasoned that BSS reflects, at least in part, features of frailty, including, for example, the degree of activity, mobility, and nutrition. In their current study in Mayo Clinic Proceedings involving more than 9500 patients in the cardiac ICU, BSS on admission inversely associated with in-hospital mortality and remained so after adjustment for disease severity and comorbidities. Admission BSS also inversely associated with mortality after hospital dismissal, both before and after adjustment for recognized predictors of in-hospital mortality. The significance of the work by Jentzer et al is that it highlights a well-established, straightforward, standardizable bedside scoring system (the BSS) as a reliable predictor of mortality in cardiac ICU patients, and, as BSS provides a window into underlying frailty, this work underscores the role of frailty in determining such outcomes in these patients.


AUTONOMIC DYSFUNCTION AND FAILURE

The autonomic nervous system (ANS), a part of the peripheral nervous system, innervates diverse organs and tissues via its sympathetic and parasympathetic components. The ANS is critically involved in maintaining homeostasis and eliciting appropriate adaptive responses, doing so, as its name implies, reflexively and unobtrusively. Dysfunction of the ANS may thus lead to numerous symptoms and abnormalities, central to which is orthostatic hypotension. In the present issue of Mayo Clinic Proceedings, Coon et al provide a scholarly and comprehensive review of pure autonomic failure (PAF), a neurodegenerative condition that presents, essentially, as orthostatic hypotension, but may extend to adversely affect numerous organs and tissues. PAF is a type of
synucleinopathy wherein α-synuclein accumulates in autonomic ganglia and nerves. Coon et al discuss the historical background of this disease and the significance of eponymous descriptions such as the Bradbury-Eggleston and Shy-Drager syndromes. They discuss the distinctions that separate PAF from α-synucleinopathies with central involvement such as Parkinson disease (PD), multiple system atrophy (MSA) and dementia with Lewy bodies (DLB), as well as the potential transition of PAF to these α-synucleinopathies; the prognosis of PAF is broadly outlined and how its prognosis is adversely altered when PAF transitions to MSA, PD, or DLB. The review discusses the clinical features of PAF and the pathophysiologic processes that underlie orthostatic hypotension, supine hypertension, genitourinary dysfunction, thermoregulatory dysfunction, neurologic symptoms, and systemic involvement, among other manifestations of the disease. In considering a diagnosis of PAF, the authors delineate the need to rule out causes of nonneurogenic orthostatic hypotension, other causes of syncope, various autonomic neuropathies, and inherited disorders. Notably, as pointed out by the authors, while PAF is a relatively uncommon condition, symptoms such as orthostatic hypotension and syncope are relatively common and are seen in patients presenting to various specialties; PAF thus needs to be considered in differential diagnoses when patients are seen in a broad range of specialties. In establishing the diagnosis of PAF, Coon et al discuss various tests of autonomic function including those that assess sudomotor, cardiovagal, and adrenergic function; nuclear imaging studies that assess cardiac sympathetic innervation; brain magnetic resonance imaging studies; and levels of norepinephrine in the supine and upright positions. This timely review concludes with an in-depth discussion of therapeutic concepts and specifics, including ones that involve nonpharmacologic and pharmacologic approaches.


**DRUG MANAGEMENT OF THE OPIOID USE DISORDER**

Opioid abuse and addiction constitute a national epidemic and crisis in the United States that remain unabated. This topic is of special importance to *Mayo Clinic Proceedings*, and in one of its previous issues in 2018, Rummans et al broadly discussed the morbidity, mortality, and adverse socioeconomic consequences of this epidemic, and then analyzed in-depth the historical backdrop and factors that fueled the emergence of this crisis (Rummans et al. Mayo Clin Proc. 2018;93(3):344-350). In the current issue of *Mayo Clinic Proceedings*, Oesterle et al comprehensively discuss medication-assisted treatment for opioid use disorder, the latter also treated by assorted psychosocial programs and services. The authors preface their article by delineating the criteria needed for the diagnosis of opioid use disorder and the tools available that estimate the likelihood that this disorder may develop when opioids are used. They then discuss the three drugs that are approved by the FDA for the management of this disorder: naltrexone (opioid antagonist), buprenorphine (partial agonist at the µ-opioid receptor and antagonist at the k-opioid receptor), and methadone (opioid agonist). Each medication is discussed in specific sections on background, benefits, challenges, and preparation/administration; this is followed by a comparison of the strengths and limitations of each medication vis à vis the other two. A table summarizes for each medication their specific FDA indications; route and frequency of administration and therapeutic dose; kinetics, bioavailability, and protein binding; and onset and duration of action. Recommendations regarding the use of these medications are made within the context of other relevant considerations including psychosocial strategies, the need for opioid detoxification and pain relief, and input from the patient regarding the desired setting for their management. The authors also discuss special circumstances when these medications may be used such as...
pregnancy, adolescence, perioperative use, and pain due to accompanying comorbidities. The authors bring their article to a close in a wonderfully nuanced way that emphasizes the following: First, there are clear benefits that accrue from the prudent application of medication-assisted treatment; second, such treatment programs merit greater usage than what is presently prescribed; and, third, greater efficacy in the management of opioid use disorder in the future, as envisioned by the authors, may be achieved by a more encompassing integrated approach in which medication-assisted treatment is but one of a spectrum of strategies, services, and support.


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