Table 1
Choking techniques ($N = 194$)

Squat/bend at waist, hyperventilate, stand quickly; choker applies pressure on neck/chest	80 (41%)
Squat, hyperventilate, stand quickly, Valsalva maneuver/hold breath	56 (29%)
Stand, ±hyperventilate; choker applies pressure on neck/chest	31 (16%)
Sleeper hold	15 (8%)
Ligature (towel, belt, rope)	12 (6%)

demonstrating and participating in the practice, propagating and possibly normalizing the behavior [4]. The primary aim of this proposal was to characterize the popularity, pattern, and descriptions of the "choking game," a high-risk adolescent activity that is easily and often viewed on the video-sharing Web site YouTube.

We conducted a retrospective content analysis study. Using YouTube's search engine, data was collected by searching for videos on YouTube using 36 different terms for recreational partial asphyxiation, such as "space monkey, "choke out," elevator," "fainting game" and "funky chicken." We did not analyze videos without sound, duplicate content, news reports, or public service announcements. Videos were identified and viewed between November and December 2014. Results were sorted by the number of views using YouTube's sort function (i.e., from most to least viewed).

Videos were examined across a number of key quantitative and qualitative descriptive variables, including the length of the video, number of views, and video quality. Standardized abstraction forms were used to guide data collection. Three abstractors were trained using a set of "practice" videos; the training consisted of initially reviewing videos with respect to each variable and discussing coding guidelines. One of the investigators (JSJ) met frequently with abstractors to resolve questions. Descriptive statistics and frequency tables were used to describe research findings. Interrater reliability was determined using the Kappa score.

During the 2-month study period, 194 YouTube videos of the choking game were identified. The videos were collectively viewed 1,671,642 times on YouTube with the mean number of views per video being 8601. These videos were marked as a "favorite" a total of 6178 times with an average of 31.8 times per video. Ninety-four videos (49%) documented a group event with several participants concurrently choking themselves but the other 100 videos documented a single asphyxia event. In total, 620 participants or observers were identified in the videos; most were male (78%). Fifty-one percent of people identified in the videos appeared to be Caucasian; 29% appeared to be African-American, and 16% appeared to be Hispanic. The estimated age of participants was 11 to 15 years in 65% of the videos. The activity usually took place in a private setting (161 videos, 83%) with the remaining 33 undertaken in a public location. The choking technique used varied considerably (Table 1). The most common practice involved the subject squatting or bending, followed by standing rapidly. Then the choker applied pressure to the chest or neck until consciousness was lost. Some variant of this technique was employed in 79 videos (41%). Neurologic sequelae following asphyxia were loss of consciousness (92%) and hypoxic seizures (28%). Participant's reaction upon recovery included behavioral changes (41%), confusion/disorientation (31%), euphoria (13%) and hallucinations (2%). Interrater reliability was calculated across 30 videos using the Kappa score (Kappa = 0.83).

YouTube has enabled millions of young people to watch videos of the "choking game" and other dangerous activities. With over 1.3 billion people using the website, and 300 h of video being uploaded each minute, the scope of the dissemination of information is staggering [5]. Seeing videos demonstrating or relaying information about the "choking game" may normalize and reinforce the behavior among adolescents. Parents, teachers, and health care professionals need to be aware of the scope of this activity and its prevalence on YouTube. Frank discussions and open communication with adolescents about both long- and short-term dangers of partial asphyxiation, including chronic headaches, short-term memory loss, seizures, concussions, stroke, brain damage and death, should be communicated [3]. Further work is needed to identify effective prevention efforts that can be integrated into existing health curricula, as well as to inform parents, teachers and health professionals of signs and signals to look for if they suspect children may be participating in this dangerous and sometimes deadly behavior.

Lindsey Ouellette[1]
Michigan State University College of Human Medicine, Department of Emergency Medicine, United States

Maxwell Wingelaar[2]
Heather Heiser[2]
Anne Broad[2]
Rebecca Andrews-Dickert[2]
Jeffrey Jones*
Michigan State University College of Human Medicine, Department of Emergency Medicine, United States
Department of Emergency Medicine, Spectrum Health Hospitals, Grand Rapids, MI, United States
*Corresponding author at: 15 Michigan St NE Suite 701, Grand Rapids, MI 49503, United States.
E-mail address: Jeffrey.Jones@spectrumhealth.org (J. Jones).

27 April 2018

https://doi.org/10.1016/j.ajem.2018.05.001

References

[1] Ramowski SK, Nystrom RJ, Rosenberg KD, et al. Health risks of Oregon eighth-grade participants in the "choking game": results from a population-based survey. Pediatrics 2012;129(5):846–51.
[2] Bernacki JM, Davies WH. Prevention of the choking game: parent perspectives. J Inj Violence Res 2012;4(2):73–8.
[3] Defenderfer EK, Austin JE, Davies WH. The choking game on YouTube: an update. Global Pediatric Health 2016;3:1–6.
[4] Linkletter M, Gordon K, Dooley J. The choking game and YouTube: a dangerous combination. Clin Pediatr 2010;49(3):274–9.
[5] FortuneLords. 37 mind blowing Youtube facts, figures and statistics. https://fortunelords.com/youtube-statistics/; 2018. (accessed 23 April 2018.

[1] 15 Michigan St NE 736B, Grand Rapids, MI 49503, United States.
[2] 15 Michigan St NE Suite 701, Grand Rapids, MI 49503, United States.

A time of day for aggressive behavior? Possible insights for ED personnel

To the Editor:

Todd et al. recently demonstrated that aggression propensity exhibits a circadian pattern, with a peak in the evening, and this daily variability is directly modulated by a circuit of hypothalamic nodes, mediated by GABAergic subparaventricular zone (SPZ^{GABA}) transmission [1].

What, will you wondering, has it to do with the emergency department (ED) activity?

Aggressive behavior has different forms and definitions. Animals express proactive aggression, a low arousal, calculated behavior intended to obtain a reward. Humans, more frequently exhibit reactive aggression, characterized by high arousal and impulsivity, as a response to a potential threat. This latter type of aggressive behavior represents

interesting point for emergency physicians, especially whether it may exhibit rhythmic cycles in presentation [2]. The circadian regulation and control of bodily functions depends on many variables, also including individual circadian preference, or chronotype [3]. Being a morning type (M-type) or evening type (E-type) has implications also on sleep architecture, and shorter sleep duration correlates negatively with verbal and physical aggression, and anger. Morningness-eveningness is associated with the hostility scale with eveningness related to higher hostility, and men score higher than women in physical and verbal aggression [4]. Moreover, aggression or antisocial behavior is more pronounced in E-types than in M-types [5].

Even if conducted on murine model, the study by Todd et al. [1] may have great importance also for humans. The authors cited as their first reference a previous study from our group [6], where we found a circadian variation for episodes of violence committed by psychiatric inpatients against one another and hospital staff, with an afternoon peak, irrespective of gender [6]. Aggressive behavior on ED represents actual and widespread criticality. Data from the National Health System personnel in England showed that violent attacks at work, and physical assaults on nurses and mental health staff increased by 10% in 2016–17 compared with 2015–16 (https://www.theguardian.com/society/2018/apr/17/rise-in-attacks-on-nhs-workers-blamed-on-lack-of-staff-money-and-delays). Up to 50% of all attacks on healthcare workers occur in the ED [7], and one out twenty ED visits is the result of behavioral emergencies [8]. Moreover, in humans, another important aspect is self-direct aggressive behavior, i.e., suicidal behavior. In the past, we have prospectively studied all patients who attempted suicide by deliberate self-poisoning and were admitted to the ED [9]. Deliberate self-poisoning was diagnosed from the clinical history, physical examination, and toxicological assay. Self-poisoning risk was greatest in the early evening, with significant peaks both for the whole population and sex subgroups [9]. It could also be argued, however, that people who attempt suicide with this method often do not have a serious suicidal intent, and the attempt is a cry for help in hours of the day when help is easily available. Moreover, an early evening peak was reported also for opiate overdose, a particular form of parasuicide [10], although the highest risk of death was shown in the late-night and early morning frame, probably due to a circadian variation in the individual sensitivity to opiates [11]. We further investigated the completed suicidal behavior, and found a significant peak in late morning-early afternoon hours, both for the entire sample and sex subgroups [12]. A further step was to investigate whether the circadian occurrence of suicidal behavior could exhibit differences depending of violence of self-harming, as an indicator of strongest ideation [13]. The used suicidal methods were a priori assigned to two groups. In particular, group I (score X-60 to X-69), included non-violent methods, such as self-poisoning by ingestion of drugs, alcohol, petroleum derivatives, pesticides and other chemical products used in agriculture, inhalation of toxic gases and inhalants, and group II (score ≥ 70) included violent methods, such as self-harm by hanging, suffocating, drowning, firearms, explosives, fire and flames, cutting, jumping from a height, and crashing by moving vehicles. Although with a slight difference in time of events among group II and group I (respective peaks at 2.31 PM vs. 4.05 PM), suicidal behavior was more likely during diurnal activity span [13].

It is not surprising that a circadian variability exists also for the access to the ED. We reviewed all emergency calls addressed to the Emergency Coordinating Unit of our Hospital, and found significant peaks for cardiologic, neurologic, respiratory, psychiatric, intoxications, neoplasms, and traumatic groups. In particular, psychiatric emergencies peaked in the afternoon, between 1:30 and 3:50 PM [14]. At that time, we concluded that increased demand of specific facilities in certain hours of the day could have influence in determining quantity and quality of ED staffs. Now, we stress that ED staffs should be aware of times of highest risk of both receiving patients' objects of aggression or self-aggression, and being exposed themselves to aggressive behaviors. For every aspect of life, the demonstration of rhythmicity means predictability. Advancements in the understanding of the circadian system's role in aggression and anger could add precious knowledge for preventing and treating these complex behaviors.

Conflicts of interest

None, for all authors.

Financial disclosure

This study is supported, in part, by a scientific grant (Fondo Ateneo Ricerca –FAR– prof. Roberto Manfredini) by the University of Ferrara (FAR 2014), Italy.

Acknowledgements

The authors thank Dr. Claudia Righini and Dr. Donato Bragatto, from the Biblioteca Interaziendale di Scienze della Salute, Azienda Ospedaliera-Universitaria “S.Anna”, Ferrara, for precious support.

Roberto Manfredini*
Fabio Fabbian
Rosaria Cappadona
Roberto De Giorgio
Luigi Grassi
Faculty of Medicine, Pharmacy and Prevention, University of Ferrara, Ferrara, Italy
*Corresponding author at: Faculty of Medicine, Pharmacy and Prevention, Department of Medical Sciences, University of Ferrara, Via Fossato di Mortara 64/b, 44121 Ferrara, Italy.
E-mail addresses: roberto.manfredini@unife.it (R. Manfredini), f.fabbian@ospfe.it (F. Fabbian), rosaria.cappadona@unife.it (R. Cappadona), roberto.degiorgio@unife.it (R. De Giorgio), luigi.grassi@unife.it (L. Grassi).

9 May 2018

https://doi.org/10.1016/j.ajem.2018.05.014

References

[1] Todd WD, Fenselau H, Wang JL, Zhang R, Machado NL, Venner A, et al. A hypothalamic circuit for the circadian control of aggression. Nat Neurosci 2018 Apr 9. https://doi.org/10.1038/s41593-018-0126-0 [Epub ahead of print].
[2] Hood S, Amir S. Biological clocks and rhythms of anger and aggression. Front Behav Neurosci 2018 Jan 23;12:4.
[3] Fabbian F, Zucchi B, De Giorgi A, Tiseo R, Boari B, Salmi R, et al. Chronotype, gender and general health. Chronobiol Int 2016;33:863–82.
[4] Randler C, Vollmer C. Aggression in young adults—a matter of short sleep and social jetlag? Psychol Rep 2013;113:754–65.
[5] Schlarb AA, Sopp R, Ambiel D, Grünwald J. Chronotype-related differences in childhood and adolescent aggression and antisocial behavior—a review of the literature. Chronobiol Int 2014;31:1–16.
[6] Manfredini R, Vanni A, Peron L, La Cecilia O, Smolensky MH, Grassi L. Day-night variation in aggressive behavior among psychiatric inpatients. Chronobiol Int 2001;18:503–11.
[7] Stowell KR, Hughes NP, Rozel JS. Violence in the emergency department. Psychiatr Clin North Am 2016;39:557–66.
[8] Rossi J, Swan MC, Isaacs ED. The violent or agitated patient. Emerg Med Clin North Am 2010;28:235–56.
[9] Manfredini R, Gallerani M, Caracciolo S, Tomelli A, Calò G, Fersini C. Circadian variation in attempted suicide by deliberate self poisoning. BMJ 1994;309:774–5.
[10] Manfredini R, Gallerani M, Calo G, Pasin M, Govoni M, Fersini C. Emergency admissions of opioid drug abusers for overdose: a chronobiological study of enhanced risk. Ann Emerg Med 1994;24:615–8.
[11] Gallerani M, Manfredini R, Dal Monte D, Calò G, Brunaldi V, Simonato M. Circadian differences in the individual sensitivity to opiate overdose. Crit Care Med 2001;29:96–101.

[12] Gallerani M, Avato FM, Dal Monte D, Caracciolo S, Fersini C, Manfredini R. The time for suicide. Psychol Med 1996;26:867–70.
[13] Caracciolo S, Manfredini R, Gallerani M, Tugnoli S. Circadian rhythm of parasuicide in relation to violence of method and concomitant mental disorder. Acta Psychiatr Scand 1996;93:252–6.
[14] Manfredini R, La Cecilia O, Boari B, Steliu J, Michelini V, Carli P, et al. Circadian pattern of emergency calls: implications for ED organization. Am J Emerg Med 2002; 20:282–6.

Sanjeev Ramachandran*
Robert William Foley
Cambridge University Hospitals NHS Foundation Trust, United Kingdom
*Corresponding author.
E-mail address: sanjeevramachandran.sr@gmail.com (S. Ramachandran).

Harish Venkatesh
Royal Berkshire NHS Foundation Trust, United Kingdom

8 May 2018

Can the Ottawa Subarachnoid Haemorrhage Rule help reduce investigation rates for suspected subarachnoid haemorrhage?

https://doi.org/10.1016/j.ajem.2018.05.015

The Ottawa Subarachnoid Haemorrhage (SAH) Rule is a clinical decision tool to facilitate identification of subarachnoid haemorrhage in alert, neurologically intact adults admitted to the Emergency Department (ED) with acute non-traumatic headache. It was developed by Perry et al. on the basis of data derived from a multicentre cohort study in Canada [1]. It takes into account clinical features that were deemed high risk for SAH, including age ≥ 40, neck pain/stiffness, witnessed loss of consciousness, onset during exertion, thunderclap headache and limited neck flexion on examination. It had been originally purported that the tool had the potential to reduce investigation rates by approximately 10–20% [2]. We performed an up-to-date review of the literature and present a summary of the current evidence base for the validity and usefulness of the Ottawa SAH Rule.

From 66 unique citations identified using our search strategy, we found four relevant articles [3-6]. Across a total of 3317 patients enrolled from four countries in these studies, the Ottawa SAH rule had not missed a single case of SAH, with a pooled sensitivity of 100%. Employing the rule correctly may have the advantage of reducing the investigation rate for patients, in turn reducing radiation exposure from computed tomography (CT) scanning and avoiding invasive tests such as lumbar puncture. In addition, the rule may provide a cost-effective screening tool for physicians in resource-constrained or remote healthcare facilities when formulating decisions for transferring patients to suitable centres for further work up. The strength of the current evidence base is that it includes two large multicentre prospective cohort studies externally validating the rule [4,5].

However, there appear to be a number of other factors which limits the use of the Ottawa SAH score. Most importantly, its specificity has been shown to be universally poor, with point estimates ranging from 7.6% [3] to 13.6% [5]. Physicians should be cautious not to investigate patients merely because they demonstrate one or more high risk features; in these circumstances, the score should act as a prompt to apply clinical judgement more keenly in formulating a clinical diagnosis of SAH. Secondly, the actual or potential reduction in investigation rate has been shown to be relatively modest at 4.7% by both Perry et al. [5] and Chu et al. [6]. Furthermore, Bellolio et al. suggest that the rule can only be applied to a small proportion (9%) of the ED cohort [3]. Nevertheless, given the substantial rise in CT imaging rates in recent years [7], even modest reductions may accrue benefits for healthcare institutions. Thirdly, interobserver variability may limit the reliability of the tool. This has, however, been addressed by Perry et al. who have demonstrated excellent interobserver reproducibility [5]. Whilst it is true that this may be partly confounded by the fact that they enrolled the same centres as from the original derivative study, this may highlight the role of education and training in maintaining adequate interobserver reliability.

To conclude, it appears that based on the current literature, the Ottawa SAH rule is a reliable clinical decision tool in excluding SAH and can avoid unnecessary investigations in a small, select proportion of patients. It is limited by a poor specificity and clinical judgement must be applied in managing patients who demonstrate one or more high risk features from the rule.

References

[1] Perry JJ, Stiell IG, Sivilotti ML, Bullard MJ, Hohl CM, Sutherland J, et al. Clinical decision rules to rule out subarachnoid hemorrhage for acute headache. JAMA Sep 25 2013; 310(12):1248–55.
[2] Perry JJ, Stiell IG, Sivilotti ML, Bullard MJ, Lee JS, Eisenhauer M, et al. High risk clinical characteristics for subarachnoid haemorrhage in patients with acute headache: prospective cohort study. BMJ Oct 28 2010;341:c5204.
[3] Bellolio MF, Hess EP, Gilani WI, VanDyck TJ, Ostby SA, Schwarz JA, et al. External validation of the Ottawa subarachnoid hemorrhage clinical decision rule in patients with acute headache. Am J Emerg Med Feb 2015;33(2):244–9.
[4] Kimura A, Kobayashi K, Yamaguchi H, Takahashi T, Harada M, Honda H, et al. New clinical decision rule to exclude subarachnoid haemorrhage for acute headache: a prospective multicentre observational study. BMJ Open Sep 9 2016;6(9):e010999.
[5] Perry JJ, Sivilotti MLA, Sutherland J, Hohl CM, Émond M, Calder LA, et al. Validation of the Ottawa Subarachnoid Hemorrhage Rule in patients with acute headache. CMAJ Nov 13 2017;189(45):E1379–85.
[6] Chu KH, Keijzers G, Furyk JS, Eley RM, Kinnear FB, Thom ON, et al. Applying the Ottawa subarachnoid haemorrhage rule on a cohort of emergency department patients with headache. Eur J Emerg Med Dec 5 2017 [Epub ahead of print].
[7] Royal College of Radiologists. Information submitted to Health Education England workforce planning and education commissioning round – 2015/16. London: RCR; 2016; 8–10.

Does the use of steps decrease the quality of cardiopulmonary resuscitation when children as rescuers perform chest compression?

Dear editor,

I have read the article by Otero-Agra et al. titled “What biomechanical factors are more important in compression depth for children life-savers? A randomized crossover study” with great interest [1]. Although the study results showed that the use of steps did not increase cardiopulmonary resuscitation (CPR) quality, I have several concerns about the study conclusion, and will share these with the authors and readers of the journal.

I think that the authors designed this study to verify whether the use of steps could increase the quality of CPR during chest compressions delivered by children as rescuers. This issue is important to basic life support because CPR delivered by children is of lower quality than that provided by adult rescuers, as noted by the authors. The positive effect of using steps on CPR quality is based on the height difference between the patient and the rescuer [2-4]. Most CPR training is conducted on the floor in a kneeling position beside a manikin because CPR guidelines describe the standard position for CPR as a kneeling position beside the patient on the floor. Changes in position between the patient and rescuer caused deterioration of CPR quality in previous studies [5-7]. Interestingly, this deterioration disappeared when the bed height was adjusted to the knee height of the rescuer, because adjusting the bed height to knee height enables the rescuer to assume a position similar to that of standard position for CPR [8]. Therefore, the current hypothesis on the