Some light from the heat: implications of rave parties for clinicians

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Adolescence and young adulthood in Western culture have been marked by recreational activities viewed with unhappiness, trepidation and alarm by more senior members of society, from nightclubs of the "naughty" 1890s to rock cxoncerts of the late 1960s and the rave scene of the 1990s.[1] The death of a young man who collapsed at a rave party brought much heat to the issue of raves but, for the clinician, little light.[2] In this issue of *CMAJ*, Erica Weir provides some light with an important contribution to the literature that health care providers who work with adolescents should add to their core library.[1]

Raves, which are nocturnal dance parties, have become increasingly common since the late 1980s. They are usually alcohol free and are characterized by vigorous non-stop dancing to computer-generated music. Attendees are generally middle-class 15- to 25-year-olds who typically spend 2 years in the rave scene. Recreational drugs used include marijuana, cocaine and methamphetamine, as well as 3,4-methylenedioxymethamphetamine (MDMA, also known as ecstasy), ketamine and gamma-hydroxybutyrate (GHB). MDMA is an amphetamine that produces euphoria. Adverse effects include tachycardia, muscle spasms and fatal hyperthermia associated with rhabdomyolysis and renal and cardiac toxicity, the risk of which may be decreased by the high environmental and core temperature and vigorous activity likely to occur at a rave party.[3] Ketamine is an anesthetic that can produce a dissociative state, sometimes with adverse effects. It has recently become popular with "ravers."[4] Life-threatening adverse effects centre around apnea and loss of the airway. An emerging problem is that dealers package ketamine to resemble MDMA, thus leading to unintentional ketamine ingestions. GHB, a neurotransmitter, stimulates release of endogenous opiatelike substances and has become notorious as a "date rape" drug. Serious adverse effects include coma and respiratory depression; only supportive therapy (including ventilation) is available.[5] In chronic users, agitation, delerium and hypertension have been reported, presumably as a consequence of physical dependence.[6–8] It should be noted that GHB can be obtained over the Internet.[7]

What are the implications of rave culture for the physician? First, it is important to be aware that rave parties are common, often involve large numbers of attendees and can result in illness and even death. It is likely that emergency physicians will be called on for the first review of patients with possible rave-related problems and will thus have a key role in the initial evaluation and stabilization of these patients. When adolescents and young adults present with abrupt alterations in level of consiousness, the physician should be alert to the possibility of rave-related problems such as hyperthermia, dehydration, electrolyte imbalance and drug use. Initial assessment of patients possibly suffering from rave-related adverse effects should include rapid assessment of the ABCs and measurement of core temperature. A general assessement including evaluation of level of consciousness and hydration should follow. The clinician should be prepared to move rapidly to intravenous rehydration and should obtain blood gas and electrolyte measurements to guide therapy. Second, the adverse effects of certain drugs, such as MDMA, are a much higher risk at rave parties than in other circumstances; this is especially true of severe hyperthermia. In this case, active cooling is indicated. Dantrolene has been proven effective in the therapy of malignant hyperthermia, but in the setting of MDMA-induced adverse effects dantrolene therapy remains unproven and should be conducted with guidance from experts at the regional poison control centre.[9] Third, given the euphoriant and amnestic properties of drugs used at rave parties, the clinician should be alert to the possibility of sexual assault. Fourth, follow-up should be arranged keeping Weir's sensible advice concerning risk reduction in mind.[1] Finally, clinicians who routinely see adolescents should practise anticipatory guidance and employ Weir's risk-reduction strategies, especially as their patients move from early to middle adolescence. It should also be noted that there is emerging evidence that GHB produces physical dependence and significant effects on withdrawal.[6–8]

As to the societal implications of rave parties, Weir astutely notes that risk reduction is much more likely to succeed in reducing the serious adverse effects associated with rave parties than is prohibition.[10,11] Given society's experience with prohibition, strict bans may prolong the popularity of the rave scene and make rave-related problems more difficult to control than if a modest degree of regulation and education were implemented. It is to be hoped that Weir's advice will be heeded by all parties involved in the debate.[1]

What is the future of the rave scene? A historical perspective suggests that raves will evolve over time and will, in all likelihood, be replaced by another form of recreational activity that will earn the profound disapproval of today's ravers, who by then will be the senior members of society.

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Competing interests: None declared.

References

1. Weir E. Raves: a review of the culture, the drugs and the prevention of harm. *CMAJ* 2000;162(13):1843-8.
2. Anonymous. Inquest in the death of Allan Ho announced [press release]. Toronto: Ontario Ministry of the Solicitor General; 2000 Jan 27. Available: www.newswire.ca/government/ontario/english/releases/January2000/27/c3613.html (accessed 2000 May 25).
3. Green AR, Cross AJ, Goodwin GM. Review of the pharmacology and clinical pharmacology of 3,4-methylenedioxymethamphetamine (MDMA or ecstasy). *Psychopharmacology (Berl)* 1995;19:247-60.
4. Green SM, Rothrock SG, Lynch EL, Ho M, Harris T, Hestdalen R, et al. Intramuscular ketamine for pediatric sedation in the emergency department: safety profile in 1022 cases. *Ann Emerg Med* 1998;31:688-97.
5. Steele WT, Watson WA. Acute poisoning from gamma hydroxybutyrate (GHB). *Mo Med* 1995;92:354-7.
6. Galloway GP, Frederick SL, Staggers FE Jr, Gonzales M, Stalcup SA, Smith DE. Gamma-hydroxybutyrate: an emerging drug of abuse that causes physical dependence. *Addiction* 1997;92:89-96.
7. Hernandez M, McDaniel CH, Costanza CD, Hernandez OJ. GHB-induced delirium: a case report and review of the literature of gamma hydroxybutryic acid. *Am J Drug Alcohol Abuse* 1998;24:179-83.
8. Craig K, Gomez HF, McManus JL, Bania TC. Severe gamma-hydroxybutyrate withdrawl: a case report and literature review. *J Emerg Med* 2000;18:65-70.
9. Denborough M. Malignant hyperthermia. *Lancet* 1998;352:1131-6.
10. Farrell AD, White KS. Peer influences and drug use among urban adolescents: family structure and parent-adolescent relationship as protective factors. *J Consult Clin Psychol* 1998;66:248-58.
11. Blum RW. The 1998 Herbert C. Needleman award lecture: Adolescent health: priorities for the next millenium. *Matern Child Health* 1998;2:181-7.

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