

Medical Emergencies in the Dermatology Office: Incidence and Options for Crisis Preparedness

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Practice Points

- Medical crises are not uncommon in the general dermatologic outpatient setting.
- It is appropriate for dermatologists to be prepared to handle such emergencies.
- Training in basic life support and an emergency action plan should be considered for the dermatologic office setting.

Medical emergencies may occur in any setting, including dermatology offices. We examined the incidence of medical emergencies in a survey of 34 dermatologists. Fifty-five events occurred over 565 combined years of clinical practice, an incidence of 1 episode every 10.3 years. We also review options for better preparedness for medical emergencies in dermatology practices, ranging from an emergency action plan for emergency personnel, basic life support (BLS) certification, advanced cardiac life support (ACLS) certification, and on-site automatic electronic defibrillators (AEDs).

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Medical emergencies can occur in any setting, including the general community, athletic functions, and medical care institutions and hospitals. Initial response has been an important determinant of the successful outcome of such crises. To that end, the American Heart Association has developed 2 programs for community and professional

education and training in the emergency management of medical crises: basic life support (BLS) certification and advanced cardiac life support (ACLS) certification.¹ Automatic electronic defibrillators (AEDs) have been placed in many community facilities where large numbers of people might be expected to aggregate, such as airports, hotels, restaurants, and sports arenas.

We sought to determine the incidence and type of medical emergencies that are likely to occur in the general dermatologic care setting, primarily in private facilities. Because emergency medical services (EMS) response time has been known to be an important predictor for favorable outcome,¹ we included distance from local EMS and EMS response time in our survey. We also evaluated the type of dermatology practice, specifically if surgical or medical practices had a greater risk for medical emergencies. Based on these survey results, we offer recommendations for creating a system of preparedness for medical emergencies, which dermatologists may use as a guide.

Methods

A questionnaire was presented to all members of the Cleveland Dermatological Society attending a meeting in Cleveland, Ohio, in November 2010. Members polled were all board-certified or eligible dermatologists practicing clinical dermatology in either private or institutional clinical dermatologic practices in the geographic area of northeast Ohio,

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western Pennsylvania, and/or western New York. Polled physicians were all in practice for at least 1 year and were asked to consider all years of their practice in providing responses. If adverse events had occurred, respondents were asked to provide clinical details of the event.

A total of 35 of 61 dermatologists present returned the questionnaire. A single respondent answered none of the questions, and commented that he had concerns regarding malpractice liability should he complete the form. The remaining 34 respondents were included in the analysis.

Results

Medical Emergencies Described by Survey Respondents—A 72-year-old overweight man with a history of mild hypertension and cardiovascular disease presented to a dermatologist's office as part of ongoing clinical care of the patient. On routine checking after psoralen plus UVA therapy, the nurse found him sitting upright in the chair, unconscious, apneic, and pulseless. The patient was placed on the floor wherein spontaneous respirations occurred leading to initial bradycardia and a gradual return to normal pulse and consciousness. Emergency medical services were contacted and arrived with a response time of 3 minutes. Subsequent medical evaluation was unremarkable and it was concluded that he had experienced a vasovagal episode.

A 78-year-old man presented to a dermatologist's office for removal of a basal cell carcinoma on the face via Mohs micrographic surgery. After 1 treatment stage the patient collapsed in the waiting room, became unconscious, and experienced generalized tonic-clonic seizures. Pulse and respirations were maintained. Emergency medical services were contacted with a response time of 7 minutes. Medical evaluation identified serum sodium levels of 110 mEq/L (reference range, 136–142 mEq/L). The patient noted consumption of 3 gallons of water daily; therefore, a diagnosis of acute water intoxication was established. Recovery was uneventful.

A 61-year-old overweight man presented to the dermatology office for evaluation of depigmented patches on the dorsal aspect of the hands. The physician found the patient cyanotic, unconscious, and collapsed over the examination table without a pulse and with gasping and agonal respiration. Cardiopulmonary resuscitation was initiated and EMS was contacted. An AED was obtained from an adjacent internal medicine office but was determined to be nonfunctional. Because of other emergencies, EMS response time was prolonged at 11 minutes. Electrocardiography and AED evaluation ultimately showed ventricular tachycardia and pulseless electric

activity. Precordial shocking was performed with conversion to sinus rhythm after administration of amiodarone. Hospital evaluation demonstrated occlusive cardiovascular disease. Stenting was performed and the patient recovered uneventfully.

Survey Findings—A summary of the survey results is presented in Tables 1 and 2. Although they are not common, medical emergencies do occur in dermatology offices. In our survey of 34 dermatologists from northeast Ohio, western Pennsylvania, and/or western New York, 55 events were noted to have occurred

Table 1.

Medical Emergencies in Dermatology Practices: Practice Characteristics

No. of physicians	34
Average no. of years in practice	16.6 y
No. of emergencies	55
No. of EMS calls	36
Type of practice	
Medical ^a	21
Surgical ^b	13
Distance from EMS ^c	
<2 miles	26
2–4 miles	4
>4 miles	0
Average EMS response time	6 min
No. with emergency training	
BLS certified	27
ACLS certified	10

Abbreviations: EMS, emergency medical services; BLS, basic life support; ACLS, advanced cardiac life support.

^aThe 21 respondents in a medical practice represented a total of 367 years in practice (average, 17.5 years). They reported 38 medical emergencies. The risk per respondent=1.7, risk per year per respondent=.104, and frequency of events per respondent=1 event every 9.7 years.

^bThe 13 respondents in a surgical practice represented a total of 198 years in practice (average, 15.2 years). They reported 17 medical emergencies. The risk per respondent=1.3, risk per year per respondent=.086, and frequency of events per respondent=1 every 11.6 years.

^cOnly 30 respondents reported the distance.

Table 2.

Medical Emergencies in Dermatology Practices Requiring EMS Assistance^a

Type of Event	No. of Events
Vasovagal episode	15
Congestive heart failure/cardiac crisis/MI	10
Seizure	5
Syncope	4
Cardiac arrest	3
Office CPR performed	3
Respiratory distress/apnea	3
Sepsis	3
Hypotension/bleeding	2
Abdominal pain	1
Panic attack	1

Abbreviations: EMS, emergency medical services; MI, myocardial infarction; CPR, cardiopulmonary resuscitation.

^aThere were 5 undefined events.

over a span of 565 physician-years (years in clinical practice)(1 episode every 10.3 years). In the events that were reported in this survey, all patients survived. None of the practices polled used conscious sedation.

The most common emergency reported was vasovagal episodes (15 occurrences requiring EMS assistance). In addition, all polled dermatologists noted that their practices had experienced additional events of vasovagal episodes that did not require EMS assistance, which were not reflected in our poll.

Vasovagal episodes are frequently associated with patient anxiety, discomfort, or concomitant illness. They usually are characterized by sudden loss of consciousness (fainting), accompanied initially by apnea and pulselessness or bradycardia. Recovery normally involves the return of respirations, followed by improved pulse and return of consciousness. Medical intervention usually is not needed, though other causes of syncope must be considered.

Cardiac events were reported to occur nearly as frequently as vasovagal episodes. There were 13 occurrences of heart-related crises, including 3 instances of cardiac arrest. Seizure was the third

most frequent event (5 occurrences). Hypoglycemia was strongly considered as a cause in patients with known diabetes mellitus; other triggers of seizures such as hypotension, hypertension, metabolic abnormalities, or primary seizure disorder also were considered.

Events occurred more in medical practices (38 events; 1 every 9.7 years) than in surgical practices (17 events; 1 every 11.6 years). All events were reported by physicians who were in practice for more than 5 years. None of the cardiac events occurred during dermatologic surgery. Basic life support certification was noted in 27 respondents and ACLS certification was noted in 10 respondents.

Comment

The cases reported and the experiences of the physicians polled emphasize several features of a medical emergency. Although most offices were within 2 miles of a local EMS facility and all were within 4 miles, response time was still an average of 6 minutes. However, preservation of brain function is recognized to be most favorable if effective resuscitative efforts can be instituted within 4 minutes of the arrest.²

Additionally, in one case the AED designated for the building was nonfunctional. Determination of the nature of the cardiac problem and intervention were delayed until EMS personnel could arrive. Despite the challenges noted, all patients were successfully handled and survived.

We believe it is important to have a system of preparedness for medical emergencies that includes both precrisis training and determination of a specific emergency action plan (Table 3). Many dermatologists are certified in BLS and/or ACLS. The American Heart Association, among other organizations, recommends that all individuals receive training in cardiopulmonary resuscitation.³ In 6 states there are school standards of education requiring cardiopulmonary resuscitation training as a component of mandatory health education.⁴ The decision to train for BLS or ACLS should be at the option of each physician and their personnel; however, we believe it is appropriate for all physicians to encourage at least basic training for themselves and their staff.

More extensive training is required for ACLS certification versus BLS certification and includes the recognition and pharmacologic management of cardiac crises. Although many dermatology-training programs provide ACLS training and certification during residency, daily implementation normally would not be part of most dermatologists' practices. None of the physicians we surveyed reported hospital certification requiring BLS or ACLS (or recertification). Although ACLS training might be helpful in reviewing the

nature of such emergencies, we believe pharmacologic interventions would be more appropriately carried out by EMS or trained cardiac personnel.

The issue of having an AED on site should be considered. Many cardiac arrests are associated with arrhythmias that can only be reversed by defibrillation. The use of AEDs for out-of-hospital cardiac arrests has been associated with a 1.75-fold increase in the likelihood of survival to hospital discharge.⁴ Also, more rapid defibrillation is associated with improved survival; for each minute of delay, there is a 7% to 10% decrease in survival.⁵ Cardiopulmonary resuscitation may prolong the window for rescue, but only defibrillation can reverse the arrhythmia.

Although AEDs may be required for restoring normal sinus rhythms, not all arrhythmias respond to defibrillation. Rhythms for which defibrillation would be appropriate account for 45% to 71% of out-of-hospital arrests and include ventricular fibrillation or pulseless ventricular tachycardia.⁶⁻⁸ Most AEDs are capable of identifying the arrhythmia present and thereby determining the usefulness of defibrillation. Of note, 21 of 34 responders in our survey noted that there was access to an AED in their medical building; however, the setup time and the time required to evaluate the rhythm after defibrillation, especially if it results in the interruption of chest compressions, may limit its usefulness.⁹ A quality unit may be purchased for less than \$1400.¹⁰

Malpractice risks have been a concern for many physicians. The federal Cardiac Arrest Survival Act was passed in 2000 with the hope of reducing barriers to the placement of AEDs.¹¹ Since then all 50 states have enacted legislation providing for Good Samaritan protection for their use.¹² Malpractice insurance premiums are unaffected by the presence of an AED on site (J. Winterich, oral communication, February 2011). The need to maintain such a unit, the cost, and the comfort level of the physician and staff may determine its appropriateness in any office.

We believe it would be helpful for dermatology practices to have defined emergency action plans; all personnel would have a laminated card detailing the steps to take in an emergency (Table 3). The card should include a short script to be used to summon EMS support and a list of the responsibilities of each person in the office. We also believe that each office should prepare an emergency kit comprised of the items necessary for immediate response to a medical emergency (Table 4). The contents should be individualized to the comfort level of the practice.

Conclusion

Our data indicate that medical crises in dermatology offices are not uncommon; therefore, we believe

Table 3.

Preparedness for Medical Emergencies in Dermatology Practices: Emergency Action Plan Template

1. Call 911 (script): "This is _____ of _____ (practice name), requesting EMS assistance to our office. We have a patient with _____. Our office is located at _____ (address). The EMS unit should come to the _____ (back/side/front) of the building. After entering the building, entry to the office is _____."
2. Activate nurse designated to go to emergency site and assist with CPR: _____
3. Activate nurse to bring emergency kit: _____
4. Activate person who directs EMS to emergency site: _____
5. Activate person who talks with other patients and family: _____
6. Identify nurse to maintain emergency kit, AED: _____

Abbreviations: EMS, emergency medical services; CPR, cardiopulmonary resuscitation; AED, automatic electronic defibrillator.

Table 4.

Emergency Kit Contents

- 4×4-in gauze pads
- 10-cc syringes
- AED (if available)
- Bandages
- Epinephrine autoinjector
- Gloves (latex and latex free)
- Karo syrup
- Oral glucose gel tubes
- Oxygen mask/BVM
- Oxygen tank
- Sterile tongue blades

Abbreviations: AED, automated external defibrillator; BVM, bag valve mask.

that all office personnel should be BLS certified and also should have a well-defined emergency action plan with designated responsibilities that should be carried out when such emergencies occur. The decision to pursue ACLS certification and/or to have an AED on site should be determined based on individual circumstances.

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