Emergency Medicine: Avoiding the Pitfalls and Improving the Outcomes

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Emergency Medicine: Avoiding the Pitfalls and Improving the Outcomes
This text is dedicated to the residents and faculty in Emergency Medicine at the University of Maryland Medical Center for providing the inspiration for this work; to my colleague Deepi Goyal, a true friend, scholar, and role model; to Mary Banks and Blackwell Publishing for supporting this work; to my children Nikhil, Eleena, and Kamran for providing the greatest inspiration in my life; and to my wife Sejal for her incredible support of all that I do, and without whom none of this would be possible.

Amal Mattu, MD

This text is dedicated to all those whose support and inspiration brighten my every day: to the Emergency Medicine residents, faculty, and nurses at Mayo Medical Center whose curiosity, patience, and passion benefits all those they touch; to Amal Mattu, a colleague, teacher, and mentor who I feel truly fortunate to call a friend; and most importantly to my wife Bhargavi and my children Kiran and Seeta whose unfailing support and understanding have made this all possible.

Deepi Goyal, MD
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Emergency Medicine is a high-risk specialty. The seasoned practitioner is well aware that even the most mundane of patients may, at any moment, be on the brink of a catastrophic outcome. The emergency physician must, therefore, be ever wary of these “disasters in waiting.” It seems that most pitfalls in emergency medicine, many of which result in medicolegal consequences, occur not purely due to a lack of knowledge but rather to simply “letting one’s guard down.” This text was created in order to focus the attention of emergency physicians on these common pitfalls. The text is not comprehensive in scope, but rather it focuses the readers’ attention on an assortment of chief complaints and patient groups that are frequently encountered in Emergency Medicine. The authors of each chapter were chosen for their expertise in the respective topics, and they have focused their text on potential pitfalls in everyday clinical practice that represent high risk for patient morbidity, mortality, and litigation. At the end of each chapter, they have provided important pearls for improving patient outcomes. Although the text is primarily intended for use by the seasoned practitioner, physicians-in-training should find many teaching points that will assist their education as well. Finally, we hope that the reader will not relegate this text to the bookshelf alongside other voluminous, dusty reference books. Rather, we hope that the reader finds the text of appropriate size and practicality to read cover-to-cover and to use frequently during everyday practice in the Emergency Department and other acute-care settings.

Amal Mattu, MD
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Introduction

Chest pain is a common emergency department (ED) complaint with a well-known differential diagnosis. Yet compared to the abdomen, the chest contains relatively few structures (e.g., the heart, the lungs, the great vessels, the esophagus) to consider as the source of the complaint when evaluating a patient with chest pain. In these few structures, however, there exists the potential for several life-threatening maladies, some of which unfortunately occur rather commonly. In patients with chest pain, initial attention is often devoted to establishing the presence or absence of acute coronary syndrome (ACS), but indeed there are several other syndromes of critical importance and clinical relevance to consider. In this chapter, we consider six pitfalls related to ACS, followed by a variety of pitfalls related to other diseases of the chest: aortic dissection (AD), pulmonary embolism (PE), pericarditis, pneumothorax, esophageal rupture, and finally, herpes zoster.

Pitfall | Over-reliance on the classic presence of chest pain for the diagnosis of acute myocardial infarction (MI)

Although chest pain has long been considered the hallmark clinical feature of acute myocardial infarction (MI), it is important to recognize that the absence of chest pain in no way excludes the diagnosis. In a large observational study, Canto et al. examined the presenting complaints of nearly 435,000 patients with confirmed MI enrolled in the National Registry of Myocardial Infarction 2 (NRMI-2) database and found that one-third of the patients presented to the hospital without chest pain [1]. Other studies have reported similar findings. In one study, over 20% of 2096 patients diagnosed with acute MI presented with symptoms other than chest pain [2]. In another smaller study, nearly half (47%) of 721 patients hospitalized for acute MI presented to the ED without chest pain [3]. Risk factors associated with the absence of chest pain included age, female gender, non-white race, diabetes mellitus, and a prior history of congestive heart failure or stroke (see Table 1.1) [1].

Table 1.1 Risk factors for painless acute MI [1].

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>% Without Chest Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior heart failure</td>
<td>51</td>
</tr>
<tr>
<td>Prior stroke</td>
<td>47</td>
</tr>
<tr>
<td>Age &gt; 75 years</td>
<td>45</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>38</td>
</tr>
<tr>
<td>Non-white</td>
<td>34</td>
</tr>
<tr>
<td>Women</td>
<td>39</td>
</tr>
</tbody>
</table>

In the elderly population, chest pain is reported less frequently according to the NRMI-2 database, patients experiencing an acute MI without chest pain are, on average, 7 years older (74 versus 67 years) [1]. Uretsky et al. reported a mean age of 69.1 years in those patients without chest pain as compared to 58.7 years in those with chest pain [4]. Under the age of 85, chest pain is still present in the majority of patients but other non-pain symptoms (referred to as “anginal equivalents”) such as shortness of breath, syncope, weakness, and confusion are common. Over the age of 85, 60–70% of patients with acute MI present without chest pain; shortness of breath is the most frequent anginal equivalent in this population [5].

Women are more likely than men to experience acute MI without chest pain [1–3, 6]. In one study, women over the age of 65 were the most prevalent group to experience acute MI without chest pain [6]. In another study of 515 women surveyed after experiencing an acute MI, only 57% reported chest pain at the time of their MI. The most frequent anginal equivalents reported were shortness of breath (58%), weakness (55%), unusual fatigue (43%), cold sweats (39%), and dizziness (39%) [7].

Patients with diabetes mellitus are at increased risk for acute MI and are more likely to present without chest pain [1, 8]. Medically unrecognized acute MI has been noted in up to 40% of patients with diabetes as compared to 25% of the non-diabetic population [8]. Although the NRMI-2 database noted that diabetics were more likely to experience acute MI without chest pain (32.6% versus 25.4%), two-thirds of those who experienced acute MI without chest pain were still non-diabetics [1].