Emergency Room Visits and Nutritional Supplements

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Reference: Emergency Department Visits for Adverse Events Related to Dietary Supplements. n engl j med 373;16 nejm.org October 15, 2015

From the Abstract: "BACKGROUND Dietary supplements, such as herbal or complementary nutritional products and micronutrients (vitamins and minerals), are commonly used in the United States, yet national data on adverse effects are limited. METHODS We used nationally representative surveillance data from 63 emergency departments obtained from 2004 through 2013 to describe visits to U.S. emergency departments because of adverse events related to dietary supplements. CONCLUSIONS An estimated 23,000 emergency department visits in the United States every year are attributed to adverse events related to dietary supplements. Such visits commonly involve cardiovascular manifestations from weight-loss or energy products among young adults and swallowing problems, often associated with micronutrients, among older adults. (Funded by the Department of Health and Human Services.)"

This paper reported Adverse Events (AE) also known as Adverse Drug Event (ADE) rates for ER visits caused by dietary supplements. The reporting of AE rates is an important part of Public Health as well as the constant reassessment required of medical practice to ensure improved quality and delivery of health care. Reporting AE rates for dietary supplements is certainly a portion of this work.

As I know other reviews of this paper will be written I have decided to focus on two key areas of discussion I think most important to clinical practice as well as patient information. Those areas are the patterns in AE seen for dietary supplements and the relative risk of an AE from a dietary supplement versus prescription medication.

First we should look at the patterns of AE based on type of supplement.

The most common supplement categories implicated in the AE were those for "weight loss" 25.5 % and "energy" 10.0%. Most common shared reasons for the ER visits in these categories were: Palpitations, chest pain, or tachycardia; Headache, dizziness, presyncope, or other acute sensory or motor impairment; Nausea, vomiting, or abdominal pain; Mild or moderate allergic reaction and Anxiety.

In the category of "Micronutrient" the multivitamin or "unspecified nutrient" category was highest reported at 16.8% AE. The most common AE for this category were: Mild or moderate allergic reaction; Pill-induced dysphagia or globus and Airway obstruction from choking.

Clinical Discussion:

Having spent time working in emergency rooms and emergency medicine I have seen firsthand many AE from medications, supplements and foods. They can be both serious and distressing to the patient. Knowing which supplements are most likely to cause AE and the most common mechanisms is of great help to any health care practitioner in or out of a hospital. As opposed to drug AE a majority of AE reported in the dietary supplement categories were caused by misuse or improper use based on supplement indication. The weight loss and energy supplements (rarely recommended or monitored by a healthcare practitioner) were associated with AE commensurate with their mechanisms of action. Knowing that most of these are self-prescribed it is not a wonder that a person taking too much of a stimulant laden supplement would experience palpitations, chest pain and tachycardia as an example.

Similarly the "vitamin, unspecified nutrient category" were associated with mild or moderate allergic reaction; Pill-induced dysphagia or globus and Airway obstruction from choking. In my experience true allergy to nutrient supplements are rare, but this is the category any natural supplement poorly identified or unknown to the reviewer (or chart data extractor) were assigned to so there could be other items than a true nutrient being reported in this category. While most of these were likely self-prescribed supplements it does underscore the importance of the health care provider recommending supplements to follow up regarding tolerance and reactions. The other large category was choking and obstruction from the mechanical aspects of pill ingestion. The authors report that this is more pronounced in the elderly population, which would fit my experience as well. Just as checking for allergy and tolerance is incumbent upon the health care provider assessing ability to swallow / ingest supplements also is of import.

As with many AE reports I have read in regard to natural products this paper is instructive (as to types of reactions) and also supportive of the concept that most AE can be prevented with proper assessment and monitoring by a health care provider.

Secondly we should look at the relative risk of an AE from a dietary supplement versus prescription medication.

The Agency for Healthcare Research and Quality in a March 2015 update [https://psnet.ahrq.gov/primers/primer/23/medication-errors] reported the following: "An adverse drug event (ADE) is defined as harm experienced by a patient as a result of exposure to a medication, and ADEs account for nearly 700,000 emergency department visits and 100,000 hospitalizations each year. ADEs affect nearly 5% of hospitalized patients, making them one of the most common types of inpatient errors; ambulatory patients may experience ADEs at even higher rates."

And Tejal Gandhi, MD (president of the National Patient Safety Foundation and associate professor of medicine, Harvard Medical School) reported in a Senate Hearing held in July 2014 that "Preventable medical errors persist as the No. 3 killer in the U.S. – third only to heart disease and cancer – claiming the lives of some 400,000 people each year."

Compare this to 23,000 ER visits and 2000 hospitalizations as reported by the authors of this paper and you can see the relative risk of ER visit for supplements versus medications. One key difference as well is that while the majority of AE were driven in the supplement reports by largely non healthcare provider driven supplement use the majority of those in the medication AE groups are prescribed and monitored by health care providers.

Practice Implications:

My experience in clinical and emergency medicine has shown me that all things that come in contact with humans can cause potential AE. Food, medications, chemicals, other humans etc. As responsible healthcare providers it is part of our job to assess and monitor as many of these potential AE triggers in our patient population as possible. This would include medications proscribed by any provider, natural products prescribed by us as well as those self-prescribed items most of our patients take.

This paper is an excellent example of the way these data can be used to guide decision making and preventive counseling in our patients. It is also an excellent example of the relative safety of natural products in comparison to prescription medications, even in self-prescribed natural items.