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Contrast Media: Basics, Reactions, & Management—An Interactive Program.

Robert A. Older, with Special Consultant William H. Bush. Charlottesville: Urologic Multimedia, Inc.; 2000 (\$49)

Adverse reactions to intravascular contrast media vary from minor, self-limited physiological disturbances to major, life-threatening events and even death. The best means to treat a contrast media reaction is prevention, but when an adverse reaction occurs, the situation must be assessed rapidly, and appropriate treatment instituted quickly. Therapy demands readiness to treat the full spectrum of potential reactions and requires the rapid availability of appropriately trained personnel, equipment, and medications anywhere intravascular contrast media are administered. It is very important that the practicing radiologist not only recognize and be able to treat complications specific to the radiologic procedure being undertaken but also that he or she can recognize and treat other unexpected events.

This interactive CD-ROM covers the basics of contrast media reactions. It focuses on the prevention of nephrotoxicity and recognition and treatment of allergic-like reactions. The program is set up in a three-part lecture format (slide show), with narration keyed to each frame of the slide show. After the CD-ROM is inserted into the drive, the program starts up automatically and runs from the disk, obviating the need to dedicate any space on the hard drive to run the program and eliminating cluttered short cuts on your computer screen. The system requirements are Windows 95, 98, 2000, or NT Pentium 100, 16 MB of RAM, a video card capable of 24 bit (true color) at 640×480 , a sound card, and a CD-ROM drive (4× or better). The program also ran flawlessly with Windows XP.

The main menu window offers four choices: 1) Start Contrast Program (which, when selected, takes the reader automatically to the lecture series), 2) Help File (which offers basics information on maneuvering through the program and detailed technical help should glitches arise), 3) Interactive Uroradiology Web Site (which provides a link to the author's web site), and 4) Exit (which shuts the program down). After selecting Start Contrast Program, the reader is taken past an introduction and a wordy disclaimer slide to the main menu. The disk is divided into Basic Contrast Discussion, Adverse Reactions, and Interactive Case Scenarios.

The first two sections are in basic lecture format, with the discussion keyed to each slide. The reader presses enter to advance to the next slide or may use the mouse to advance, replay, go back, or quit. These on-screen controls allow ample time for the user to take notes. The author speaks clearly and slowly and is easily understandable. In the first section, the author delves into the basic pharmacology of contrast media and the differences between ionic and non-ionic contrast media. There are very colorful illustrations of the contrast media molecules, and the program stresses the differences in the side chains of various contrast media. After presenting all this detail, the disk only barely touches on the significance of osmolality and reaction occurrence. The program then automatically advances the reader to the next section. This first section should probably de-emphasize the exact molecular composition of each of the side chains of the various contrast media molecules and perhaps focus a little more on the clinical significance of increased osmolality and contrast media reactions.

Adverse reactions to contrast media constitute the subject of the next section of the CD-ROM. The section on contrast media-related nephrotoxicity is clear, concise, and complete. The subject of metformin and contrast medium administration is brief and very clear. What follows is an animated and well-illustrated discourse on the recognition and treatment of the most common reactions to contrast media. The author emphasizes from the start that adequate preparation and equipment are essential to the treatment of these reactions and even illustrates how to prepare the syringes of the 1:1000 and 1:10,000 epinephrine. The adverse reactions that are covered in this program are nausea and vomiting, urticaria, wheezing, laryngeal edema, diffuse anaphylactoid reaction, hypotension (with tachycardia), vasovagal, extravasation of contrast medium, angina, and cardiac arrest. The disk is thorough in its discussion of these scenarios, with the exception of defibrillation in cases of cardiac arrest, although for this subject, the reader is referred to several references on the matter. Considering the emphasis that the American Heart Association places on defibrillation in cases of cardiac arrest, including automatic external defibrillator use in basic life support, this subject should be more strongly emphasized.

At the end of the second section, just before the interactive quiz, several slides appear and seem out of place, as though they were "thrown in at the last second." These slides comment on the incidence and prevalence of contrast reactions associated with ionic and nonionic contrast media. There is also a slide about prevention of reactions with steroid and diphenhydramine premedication. These slides should have been included in the first section and would have provided the clinically useful data lacking in that first lecture.

The final section is also in the same slide show format, but in addition, the reader is asked to select a treatment or diagnosis in quiz format. Immediate feedback and explanations are included. This interactive quiz reinforces all the material presented in the previous two sections and is very helpful. After the quiz, a comprehensive list of references is displayed. In addition, pertinent references are offered throughout the disk after material is presented on each slide.

Some final comments are warranted. The program is best viewed in an uninterrupted fashion. If the reader exits during one of the three lecture sections, he or she must view the entire section again when the program is restarted. The reactions considered are only the most common. Other reactions to the administration of contrast media that sometimes occur are not covered (ie, pulmonary edema, angioedema, diffuse erythema, anxiety, rigors, seizures, hypoglycemia, autonomic dysreflexia, and hypertensive crisis). These probably deserve comment, if not on this disk, then perhaps in a future publication.

Overall, the disk is relatively well organized and provides a great introduction to the novice regarding contrast media-related reactions. There is some room for improvement, as noted in this review, but the program provides a solid background in contrast media management and should be a welcome addition to any radiology department's electronic library.