

	transformed into visual display by computer.	changes within tissue	Patient may require sedation.
Digital subtraction angiography (DSA)	Contrast dye is injected intravenously; computer "subtracts" all tissues without contrast medium, leaving clear image of contrast medium in vessels studied.	Visualizes vasculature of target tissue Visualizes finite vascular abnormalities	Safe alternative to angiography. Patient must remain still during procedure; may require sedation.
Single-photon emission computed tomography (SPECT)	Involves IV injection of photon-emitting radionuclide; radionuclides are absorbed by healthy tissue at different rate than by diseased or necrotic tissue; data are transferred to computer that converts image to film.	Provides information regarding blood flow to tissues; analyzing blood flow to organ may help determine how well it is functioning	Requires lengthy period of immobility. Minimum exposure to radiation occurs. Patient may require sedation.

CNS, Central nervous system; *CSF*, cerebrospinal fluid; *CT*, computed tomography; *ICP*, intracranial pressure; *IV*, intravenous.

The importance of lying still for tests needs to be stressed. Children unfamiliar with the machines can be shown a picture beforehand. Although radiographic examinations are not painful, the machinery often appears so frightening that the child protests because of anxiety. This is especially true of CT and MRI, both of which require that the child's head be placed within a special immobilizing device. Chin and cheek pads are sometimes used to prevent the slightest head movement, and straps are applied to the body to prevent a slight change in body position. The nurse can explain these events to a frightened child by comparing them to an astronaut's preparation for a space flight. It is important to emphasize to the child that at no time is the procedure painful.

The nurse should not expect cooperation from a young child. Sedation may be required. If so, children should be helped through the preparation and administration and assured that someone will remain with them (if possible). Many different agents are currently used for sedation of children undergoing neurologic diagnostic procedures. Chloral hydrate or benzodiazepines have been used for decades as short-term sedative agents and remain safe methods of pediatric sedation ([Arlachov and Ganatra, 2012](#)). Other sedative agents have been used safely, alone and in combination, for children and include intravenous (IV) sodium pentobarbital (Nembutal), IV fentanyl (Sublimaze), IV midazolam (Versed), and