Claustrophobia and MRI Scan

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MRI (Magnetic Resonance Imaging) is a non-invasive procedure. There are several problems faced while it is done, such as claustrophobia, noise, peripheral nerve stimulation etc. Among all the problems faced, the effect of claustrophobia is the most problematic. One study indicates that anywhere from 5–7% of the world population is affected by severe claustrophobia. Claustrophobia is defined as "A fear of being in a confined or enclosed place" and it is an anxiety disorder with psychological origin. If the patients have claustrophobia, they may feel panicked, sweat, shake or experience heart palpitations. They may cry or yell. They might attempt to get out of the situation by any means possible. Some people with claustrophobia find it difficult to breathe.

Researchers are not yet certain what factors may cause claustrophobia. Many speculate that it may be rooted in a bad childhood experiences. Others believe that it may be a warping of an evolutionary survival mechanism. Either way, it appears that a history of being nervous in enclosed spaces may eventually lead to full-blown claustrophobia.

Many people discover the severity of their claustrophobia for the first time when undergoing MRI scans. For most scans, the patients’ entire body will be inside the bore, with the top close to patients’ face and shoulders brushing its sides. In a study involving claustrophobia and the MRI, was reported that 13% of patients experienced a panic attack during the procedure (Harris et al, 1999). So they have refused to go through the procedure or terminate it early. Another study estimates that this percentage could be as high as 37% (McIsaac et al, 1998). The problem of claustrophobia is more severe in older MRI machines which are low magnetic strength; closed bore systems feature a fairly long tunnel as the spaces are smaller. The time taken for MRI scan in these machines is longer and even individual with mild claustrophobia may not be able to tolerate it. The newer MRI machines are fitted with wider space where the patient has to lie while undergoing the procedure. Due to bigger space the problem of claustrophobia is less and the patients can easily tolerate it.

If the patient is nervous and claustrophobic, some strategies can help to reduce discomfort associated with MRI scan:
Pre-scan Patient Preparation:

- Sedation can be done with sedatives
- Visualization techniques.
- Visiting the scanner room to see the structure and practice lying on the table
- If nothing above helps, general anesthesia may be required for MRI scan.

The majority of claustrophobic patients will be sufficiently relaxed with orally or intravenous sedatives.

Managing/Coping The Patient Inside The Scanner Bore:

- Instruct the patient to close eyes and cover eyes with washcloth or eye mask.
- Having a relative in the room to hold hand or reassure them
- Holding a “panic button” (if available)
- Build the scan rooms with colorful soft lighting systems, music and images on the wall or ceiling.
- Place a diagonal mirror above the eyes to allow the patient to look down the tunnel rather than at the bore wall immediately above their faces.
- Listening to music on headphones or watching a movie, using mirror-glasses and a projection screen or via a Head-mounted display, while in the machine.

Alternative scanner designs, such as open or upright systems, can also be helpful where these are available. Though open scanners have increased in popularity, they produce inferior scan quality because they operate at lower magnetic fields than closed scanners. However, commercial 1.5 Tesla open systems have recently become available, providing much better image quality than previous lower field strength open models. Open MRI has been a boon for imaging older children. Open MRI scanners are much quieter than their closed counterparts, and allow both parent and child to make eye contact. For babies and young children chemical sedation or general anesthesia is the norm, as these subjects cannot be instructed to hold still during the scanning session.

The study published in *Cyber-Psychology and Behavior* (2007), showed that immersive virtual reality may be effective in helping those who suffer from claustrophobia. They found that virtual reality was more successful than distraction with music. Only two clients, both of whom were diagnosed with claustrophobia, were involved and both attempted 10-minute mock MRI scans, but reported high levels of anxiety and asked to terminate the scans early. For a second attempt, one was distracted with music, while the other was immersed in a virtual reality world. The client who listened to music reported high anxiety and asked to terminate the scan. The client immersed in virtual reality was able to successfully complete the scan, reporting low anxiety and a high feeling of self-efficacy.
References


