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Interventional Pain Management in A Patient with Cardiac Implantable Electronic Device- Our Experience.

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ABSTRACT:

The number of patients with cardiac implantable electronic device (CIED) for pace maker dysfunction is on the rise. These patients with CIED pose unique challenges when they present for interventional pain relieving procedures. These challenges are CIED related, diagnosis related and treatment related. CIED related challenges include knowing about the type, functionality, battery life and chambers paced. The diagnosis related challenge is the inability to perform MRI and sole dependence on diagnostic blocks to arrive at the cause of pain. The treatment related challenges include the dilemma whether to change the pacemaker to asynchronous mode or not during the procedure and the inability to do radiofrequency ablation of the pain generator. Additionally in the presence of CIED (due to shortage of trained professionals and equipments for handling patients with CIED) it would be preferable to perform multiple pain relieving blocks at one sitting, thereby making it a therapeutic option rather than a diagnostic option. Considering the age and medical condition of this patient, we felt that the pain relief from low back ache would take precedence over narrowing on the pain generator. We would like to share our experience in the management of low back ache of a patient with CIED.

Introduction:

The incidence of pacemaker implantation in India exceeds 20,000 per annum and number of patients with pacemaker coming for non-cardiac procedures is on the rise.[1] Presence of the pacemaker poses additional challenges for the noncardiac procedures. The challenges were the precautions that had to be taken in a patient with CIED like assessment of functionality of pacemaker, battery life of the pacemaker, detail of the chambers paced, type of procedure the patient had to undergo and the need for instruments which cause electromagnetic interferences (Radiofrequency ablators and diathermy). Additionally in the presence of MRI incompatible CIED, MRI could not be done to narrow the cause of low back ache (LBA). Hence, we have to depend on the diagnostic block for the diagnosis and management of LBA. When it comes to the management of LBA in the presence CIED radiofrequency ablation has to be avoided as it causes EMI. We would like to share our experience in the management of a patient with CIED suffering from LBA.

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Case description:

A 75year old female patient suffering from chronic low back pain and right hip pain for the past 6 months was referred to our pain clinic. On evaluation the pain was burning in nature radiating to the entire right thigh and back of the leg. The pain was severe (NPIS 8/10) and was affecting her sleep. The pain was refractory to oral NSAIDS and gabapentin. On examination SLR and FABER test were positive on the right side. There was tenderness over the right SI joint and hip joint. The sensation of the limb was intact and the CT scan of the lower back revealed multiple disc bulges at lumbar level with canal stenosis The patient gave a history of suffering from right hip arthritis for the past two years and underwent conservative management. The patient was on CIED for the past 6 years for the management of sinus node dysfunction which manifested as frequent syncopal attacks [figure 1and 2]. The patient did not develop any syncopal attacks following the CIED insertion.

The patient was assessed fit under ASA PS 3. The patient was fasted for 6 hours prior to the procedure. After shifting the patient to the operation theatre, intravenous access was obtained with 18 G cannula. Minimal mandatory monitors were connected to the patient. The patient was sedated with 1mg of midazolam and 100microgram of fentanyl. The blocks were performed under local anesthesia. The patient was placed in the prone position with a pillow under the abdomen and a check fluoroscopy shot was taken focusing the right sacroiliac joint. The fluoroscopy was rotated to the left side and a 23G Quincke needle was directed in the end on view towards the lower part of the sacroiliac joint[figure 3]. On entering the joint the fluoroscopy was rotated to obtain the lateral view of the joint[figure 4]. 1ml of non-ionic dye was injected and the spread was noted. After confirming the avascular position of the needle, 10mg of depot steroid was injected with 4ml of 1% lignocaine. Then the fluoroscopy was rotated to neutral position and the caudal space was identified. A 23G Quincke needle was advanced into the caudal space and 2ml of non-ionic dye was injected and the spread was noted (figure 5). After excluding intra vascular and subarachanoid spread of the dye 20mg of depot steroid with 10ml of 1% lignocaine was injected. The patient was then placed in the supine position the right hip joint was scanned with a curvilinear ultrasound probe. A 23G Quincke needle was advanced and placed near the neck of femur. 10mg of depot steroid and 4ml of 1% lignocaine was injected incrementally after repeated aspiration. Patient was assessed after one hour. The patient's pain scale reduced to 1/10 with the SLR and FABER test turned negative. The patient was monitored with continuous ECG, SpO2 and NIBP monitors through the perioperative period. The patient was followed up for three months and the patient was ambulating without pain.

Discussion:

The main challenge we faced in this case was non availability of MRI spine (Due to CIED which was not MRI compatible), which could have helped us in narrowing the diagnosis.[2]Based on clinical examination the possible pain generator in our patient could be right SI joint or the right hip joint. The contribution of multiple disc bulges revealed by the CT scan could also be a contributing a factor to the LBA. As the pain generator could not be assessed accurately we had to subject the patient to SI joint block, hip joint block and caudal epidural injection on different days. As the patient was without any syncopal attacks following the CIED insertion, we were sure that the CIED was functioning well. The battery life of the CIED would be around 10 years and hence the chance of device failure was remote.[3] In order to avoid EMI radiofrequency ablator was not used in this patient. The CIED was not reprogrammed as the procedure was involving the lower half of the body and the need for instruments which induce EMI (diathermy and radio frequency ablation) were avoided.

In view of the controversy between the clinical and diagnostic setting, we posted the patient for combined right sided SI joint block, right hip joint block and caudal epidural injection. The major drawback of combining all the three blocks is that although it may provide a good pain relief it will not identify the pain generator. Performing one block at a time to identify the pain generator was difficult as the man power and logistics (transcutaneous pacing facility) that had to be dedicated would be enormous. As the procedure did not require any instruments which could cause EMI, we did not reprogram the CIED to asynchronous mode.[4]

Conclusion:

Hence we conclude that in selected conditions we could carry out multiple pain relief blocks at the same time,

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though we may not be able to narrow on to the pain generator, we could improve the quality of life of the patient

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NSAIDS- Non steroidal anti inflammatory drugs

SLR- Straight leg raising test

FABER- Flexion abduction external rotation test

CT- Computerized tomography

CIED- Cardiac implantable electronic device

MRI- Magnetic resonance imaging

SI- Sacroiliac joint

LBA- Low back ache

EMI- Electro magnetic interference

USG- Ultasonography

ECG- Electrcardiogram