Prolonged Radial artery spasm in the catheterization laboratory - relief by pharmacological intervention


Abstract:
Radial spasm is often very prolonged and painful to the patient. Here, we describe a novel way to deal with the same. The total spasm lasted over 4 hours. A 3.4 6 JR catheter was introduced via the femoral route and papavine one ampoule was injected directly into the right subclavian artery. After about 10 min, were able to pull out the radial catheter.

Radial angiography is a simple procedure with reportedly less complications 1, 2. How ever, it has one major complication radial spasm. We describe here a patient with radial spasm that persisted for more than 2 hours and how we dealt with it.

Our patient is Mrs. K, aged 40 years. She had recurrent effort angina class 3 as to be unable to carry out her work on a day to day basis. She had chest pain and breathlessness for 6 months and was a Diabetic for the last 13 years on treatment. She had history of Systemic hypertension recently detected. No history of ACS or CAD in the past. There was no family history of CAD.

On examination her heart rate was 70 per min. Her blood pressure was 120/70. Her cardiovascular system examination was normal.

Her ECG showed Sinus rhythm, rate 60/min and normal PR interval with T inversion in 3 and avf. Her echo cardiogram was normal, EF - 58%.

She was taken up for CAG because she was a diabetic.

Coronary angiography-The right radial artery was cannulated through a radial needle and a 5 French sheath was placed. Usually in our Centre we give intra arterial nitroglycerine and diltiazem 2.5 mg before using the Tiger catheter to prevent spasm.

We rarely encounter any spasm on cag, and usually switch to the femoral route only for angioplasty.

A 5 French Tiger catheter was passed up to the aorta, ascending over a terumo guide wire. But before any coronary angiogram could be done the patient has severe pain and the catheter could not be turned. Even slight turning caused severe pain. If was thought that the local anesthesia was not sufficient, so the patient was sedated with 5 mg Morphine i/v and emset. But even after 15 min the patient had severe pain and the catheter could not be removed. It was decided to wait for 1 hour. So the A.C was turned off the limb was covered and we waited exactly 1 hour. Still the catheter could not be removed. So an attempt was made to give local in the inguinal region for femoral puncture. But the patient reacted anxiously and lifted her leg. She then developed severe rigor. At this time we thought she had allergy to lignocaine and waited. The anesthetist was called. The cardiac surgeon was also called. By this time 2 hours had elapsed. In spite of giving fentanyl the radial catheter could not be pulled out.

The second dose of 3000iu of heparin had just been given. So we did not consider spinal block of the axilla.

It was then decided to cannulate the femoral artery. The Right femoral artery was cannulated with a 3.4 6 JR RCA catheter and this was advanced in the right subclavian artery till resistance was felt. One ampoule of papavine was pushed. At this time the patient developed severe sweating.

* Sr. lecturer, **Professor, ***Professor & Head of Cardiology, Medical College Thiruvanthapurum
and tachycardia and ST elevation. She was given i/V dextrose 25%, 100 ml and 1/V nitroglycerine and the CAG was performed from the femoral route that showed normal coronaries. After this the radial catheter could be pulled out. (after a total of 4 hours)

After this except for some fever the patient was stable. She was discharged on augmentin after 2 days.

**Discussion:**

This is to highlight a novel way to deal with severe spasm of the radial artery.

Radial artery spasm has been described to occur in 10% of the number of cases. Usually with good sedation and pain relief this disappears. Tearing and avulsion of the artery are described if the catheter is pulled out during the spasm.

Radial artery spasm has been described as considerable friction and patient discomfort encountered when the catheter is manipulated. It is caused by mismatch of the inner lumen of the radial artery and outer lumen of the radial artery sheath or catheter. Other causes of mismatch are fixed atherosclerosis, vessel tortuosity, or small radial artery. Some times the catheter enters into a side branch and not the main radial artery.

An automatic pull back device was used to quantify radial spasm (APD). Here, weights were used to quantify the amount of radial spasm. The “maximum pull back force” in those with severe spasm was 1 kg in those with severe pain.

**Methods to reduce spasm:**

Giving an intra-arterial cocktail of (5 mg verapamil and 200 mcg of nitroglycerine reduces spasm.

A hydrophilic coating to the arterial sheath, has been shown to reduce spasm. Removal of a coated Terumo Radifocus sheath requires less force than an identical uncoated sheath. This also causes less discomfort to the patient.

We hope that this technique will help others with a similar severe spasm.

**References:**
