ARC Journal of Cardiology
Volume2, Issue 1, 2016, PP 4-5
www.arcjournals.org

Pre-Cannulation Spasm during Transradial Access for Coronary Procedures: Can it be Prevented?

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The success of transradial approach for coronary angiography and interventions depend on meticulously obtained radial artery access which in turn depends on palpating a good radial pulse. Unlike transfemoral approach wherein the access of femoral artery is rarely a problem, access and cannulation of radial artery has always been a nightmare for a subtle but significant group of operators opting for transradial approach for coronary angiography.[1] Spasm of radial artery is the Achilles' heel of transradial coronary angiography and is usually encountered after cannulation of radial artery.[2] Sometimes, this spasm can occur prior to cannulation as a result of repeated painful failed punctures of radial artery.[3] This entity is called "pre-cannulation spasm".[4] Once this occurs radial pulse will be lost, then transradial approach needs to be abandoned and switched over to transfemoral approach. Vasodilatation of radial artery on administering nitroglycerin through intravascular (both artery[5] and vein[6]) and topical[7] routes has been well established. Of late, there is growing interest in administering various doses of nitroglycerin subcutaneously at the site of puncture for facilitating transradial access.[3,8,9] Nitroglycerin does not depend on endothelium for its action and, when administered subcutaneously leads to smooth muscle relaxation and vasodilatation by releasing nitric oxide. Compared to many other muscular arteries, radial artery is more sensitive to nitroglycerin. In a recent study published, it has been objectively proven using ultrasonography that 500mcg of nitroglycerin infiltrated subcutaneously along with local anaesthesia significantly increases the diameter of radial artery.[4] This vasodilation enhances the palpability of radial artery, prevents pre-cannulation spasm and enables the transradial puncture.

Therefore, unsuccessful punctures of radial artery can lead to pre-cannulation spasm of radial artery and this is prevented by administering nitroglycerin subcutaneously along with local anesthesia during transradial access.[4] with experience, the dose of nitroglycerin practically selected for this purpose may be 100-200mcg and this can be routinely added to the local anaesthetic solution during transradial access.

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