4. 30 % of adult patients with local deep burns required re-skin grafting, which can be explained by infectious complications and metabolic disorders in patients with chronic diseases.

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УДК 616.13/.14-073.75-06

OVERVIEW OF ANGIOGRAPHIC COMPLICATIONS AND STANDARD METHODS FOR THEIR REDUCTION

Rajendran Priyanka

Scientific supervisor: Ph.D., Associate Professor *M. L. Kaplan*

Educational Establishment
«Gomel State Medical University»
Gomel, Republic of Belarus

Introduction

Angiography is a type of X-ray imaging that visualizes blood flow in the body by evaluating the internal lumen of the blood vessels (arteries, veins and lymph) by introducing radiopaque substances into their lumen. It helps in detecting the structure, location, dilation, narrowing of vessels and even complete cessation of blood flow to the vessel [1]. It is a high-tech procedure that is performed by experienced doctors. A referral for examination is issued by several medical specialists like cardiologists, vascular surgeons, neurologists and other specialist. Angiography assists as a valuable diagnostic method eventhough there is an associated risk of complications [2]. Different types of angiography is performed according to the varied topography of vessels. Therefore, we have angiography of the brain for investigating cerebral vessels (cerebral angiography), angiography of coronary vessels for investigating coronary arteries (coronary angiography), angiography of great vessels (aortagraphy), angiography of veins and arteries of upper and lower extremities and many more. All over the globe, coronary angiography remains as a gold standard investigation to study arteries of the heart [1]. The angiographic procedure describes physician injecting a liquid dye through a thin, flexible catheter and moving the catheter to desired vessel by access point like either arm or groin [4]. The dye makes blood flow inside a vessel visible on X-ray. This dye is then subsequently eliminated from the body through kidneys on urinating. Some of the main indications for angiography includes vascular disorders, atherosclerosis, thrombosis, aneurysms, vasoconstricton, ischemic stroke, vascular malformations and tumors. It is also indicated for monitoring the effectiveness of surgery and drug therapy in order to evaluate the results of treatment [2]. Angiography procedure is contraindicated at acute inflammation and infections, blood clotting disorders, allergic reactions, pregnancy, renal and hepatic insufficiency, cardiac failure, venereal diseases and mental illnesses [4]. Complications of angiography ranges from minor to major that results due to inadequate preparations before the examination or due to patients individual medical conditions specifying tolerance levels [3]. Here, with the results

discussed below, we will have a clear picture on the complications of angiography and their reduction methods for better proceeding of investigations.

Goal

To determine the risk factors and complications associated with angiographic method of diagnostics and the overview of standard methods that helps in reduction of these complications.

***Material and Methods* of research**

This article is described on the basis of evaluation made with the use of scientific literatures review from New England Journal of Medicine, Radiological Society of North America, PubMed, American Journal of Roentgenology and Oxford Handbook of Clinical Surgery with the use of keywords angiography, complications, blood and vessels.

The results of the research and their discussion

Angiography has the possibility of developing complications that range from minor to major. Minor complications includes bleeding under the site of wound, pain at puncture site, nausea, bruising from catheter and allergy to contrast dye. Major complications includes damage to arteries from access point that is able to affect blood supply, cardiac attack, stroke, renal damage due to X-ray contrast, tissue damage due to prolonged radiation, severe bleeding and even death. Complications usually occur as a result of inadequate preparation methods before examination, age, tolerance, allergic reactions, development of nephrotoxicity with dye in patients with kidney disease and blocked arteries. Complications can develop even in case of insufficient time for planned procedure resulting in emergency procedure creating risk of adverse effects. Minor complications are very common and is easily treatable whereas major complications are rare and can even lead to mortality. Usually if we perform angiography according to right principles it will be considered the safest procedure and less invasive. In order for reduction of these complications it is necessary to follow up certain regulatory procedures before the examination. As a measure to prevent contrast associated complications we need to use minimal contrast and sufficient peri procedural hydration. Contrast induced nephropathy may need a short period of renal replacement therapy. Usage of modern angiography methods such as subtraction digital angiography can have advantages of contrast without catheterization thereby, reducing traumatic procedure. Radial access to angiography can help in lowering vascular complications. But it can only be performed on experienced basis. A fundamental knowledge for providing management of access points, risk factors and complete patients condition access should be under control in order to prevent complications.

Conclusion

Successful angiography needs efficient group of physicians and health care team who are skilled and experienced. Professional health care providers can bring this process in a well systemized manner in order to prevent development of complications. Adequate pre-preparation procedures, using modern less invasive methods, minimal contrast usage and other examinations of patients condition can prevent major risks of this procedure. Angiography always remains as an highly advantaged diagnostic method if used under regulatory principles.

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