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INFECTION IN RADIOLOGY DEPARTMENT

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ABSTRACT

Hospital infections are serious concerns for healthcare workers and patients. Needle stick injuries, blood contacts, airborne infections and any kind of contamination pose a risk for hospital infections. The risk of hospital infection has been increased in radiology since the number of the patients and the Exposure times between patients and radiology workers have increased especially with the usage of new modalities in the last three decades. Hospital infection risk and some universal standards and policies for protection were summarized in this article.

KEY WORDS

Cross-infection, radiology

INTRODUCTION

Radiology clinics have been going through rapid changes in the last three decades. Apart from conventional x-ray applications, techniques that have recently joined the radiology family namely US, CT, MRI, and DSA, have accelerated the pace of change whereas a new discipline such as interventional radiology has brought new responsibilities. An important outcome of such change has been patient's longer stay in radiology clinics due to the increase in the number of patients and more complicated nature of evaluations. Interventional radiological applications such as opening an intravenous line, and catheterizations performed for enteroclysis, as well as colonography, cystography and similar examinations require direct contact between patients and health care workers. The use of common instruments and equipment for patients in hygienic conditions and appropriate disposal of wastes attribute serious responsibilities to radiology clinics.

Patients have to be referred to a single center due to the costly and immovable radiological equipment or limited number of radiologists available. This necessitates rendering radiology services in one center to all kinds of patients ranging from hospitalized to outpatients, intensive care to emergency patients, chemotherapy patients to patients with tuberculosis, with the same equipment and within the same environment. The physicians, nurses and technologists working in radiology clinics usually lack the necessary knowledge and

skills concerning issues of asepsis and antisepsis. Furthermore, it is a fact that these concepts have not been covered in the professional education of technologists. Therefore, radiology clinics are risky places in terms of hospital infections. In addition, because radiology departments do not have standards to control hospital infections, this risk is further aggravated. Hospital infections are infections which develop within 48-72 hours after the hospitalization of the patient or in the first 10 days after the patient is discharged (except for infections which need longer incubation time). They occur only in hospitals or are induced by microorganisms acquired from hospitals [1].

The importance of hospital an infection lies in patient mortality and morbidity and, furthermore, in their impact on the hospital stay and cost[2, 3].

Hand washing habit

The hand hygiene and antisepsis of health care workers is alone the most important controllable factor to prevent the spread of hospital infections[4]. The lack of hand washing habit, which is in fact a simple and cheap measure, is responsible for more than 50% of hospital infections [5].

The pathogens in the skin flora are grouped in two categories:

Permanent and temporary flora. Permanent flora bacteria are not responsible of hospital infections in the absence of severe immune system disorders and prosthetic implantations. Temporary flora consists of pathogens, which are mostly on the skin surface, which are acquired from infected patients, environment or equipment and which have newly developed and have a contamination character. This is the flora group that can be identified on the hands of the health care workers and is held responsible of hospital infections in contrary to the permanent flora. The most common pathogens of the temporary flora are pseudomonas, meticillin-resistant staphylococcus, and coliform bacteria from the Enterobactericeae family [5].

Although surgical hand washing is necessary to remove or to reduce the permanent flora, hygienic hand washing alone is also enough to remove the temporary flora.

The most important factor, which has a positive impact on hand washing habit, is the hand washing units that are fully equipped in an organized manner and are easily accessible. The negative factor is the use of gloves. Personnel should be careful to wash their hands in the above-mentioned conditions, even though they wear gloves.

Interventional radiological procedures must be considered to be surgical operations and the hand washing technique should be the surgical hand washing technique. Small holes even on the quality sterile gloves are possible to occur during the operation.

Therefore, long acting agents in the post-contact period are preferred in surgical hand washing technique. Agents like chlorhexidin gluconate foam type detergant solutions and povidon-iodine are commonly used for this purpose. Since the hands will be washed up to the elbows, short sleeve shirts must be worn before starting the operation.

SURGICAL HAND WASHING TECHNIQUE

1. All the jewels in the hands are taken off.
2. Surgical cap and mask are worn covering the hair entirely without disturbing the nose and mouth.

3. The tap is turned on automatically by the elbow or the knee. Warm water foams the soap better, therefore water must be adjusted to “warm”.
4. The hands are wetted keeping them above the elbow level.
5. The hands are washed with an antiseptic agent such as chlorhexidin gluconate or povidon-iodine in order to remove the flora on the skin.
6. Surgical hand soap is taken at an appropriate amount and the hands are washed for 3-5 minutes as follows: Washing begins from the tip of the fingers in circular movements. The soap is foamed up to the elbows. The same procedure is carried out for the other hand. The hands are brushed lightly with a disposable surgical brush, which is preferably sponge on one side and brush on the other side, paying attention to the nails and grooves in the hand.
7. The hands are kept above the elbow level and both arms are rinsed separately so as to drain the water downwards.
8. If the tap is not automatic, it is turned off using the elbow or the knee.
9. The hands are dried separately using sterile towels for both hands.
10. Sterile scrubs and gloves are worn without touching anything and keeping the hands at the waist level.

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