Digital Repeat Analysis in Digital Mammography

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1. INTRODUCTION

A quality control program has three main goals: to improve the quality of the radiographic image, reduce costs and doses given to patients and has among the main proceedings, a refined analysis of rejected tests, assessing its causes and classifying them according with them.

2. OBJECTIVE

This work describes the breast images that was rejected for a period of two months in Computed Radiography System (CR)

3. METHODS

The methodology is based on recommendations from Honea et al.[2], rejected following examinations before and after printing in order to quantify the needs of rejection after introduction of a CR system. The recommendations of the Ministerial Order 453/98 item 4.44 (vii) have been followed in the collection period, which should be two months. Many tests were printed and only then evaluated by doctors, or have rejected the monitor working. Table 1 shows the causes of rejection.

Table 1 - Causes of rejected exams

Causes of rejection	Causes of rejection
Motion artifact	Wrong film size
Grid artifact	Wrong images positioning
IP artifact	Despised by the medical examination
Artifact of skin fold	Identification data over the images
Compression plate artifact	Wrong patient identification
Artifact for deodorant, talcum powder or ointmen	Lack of Identification
Metal artifact	Wrong patient name
Wrong positioning	Problems in mammography equipment
Inadequate exposure	Markers missing or wrong
Windowing (dark)	Without rejection cause
Windowing (ligth)	Images reversed in the film
decentralized structure	Wrong images size
Identifying the area of interest	Stereotactic Calibration
Structure without clipping	Tests
Structure cut	Film damaged

4. RESULTS

The results show the possibility to refine the analysis, separating the rejections that lead to new expositions, which contribute to patient dose increasing, and rejections that would lead only to the need to reorganize the presentation of results, generating more work and demanding increasing in costs. In a department of radiology, both aspects are relevant.
The rejection rate was 3% of the total of examinations performed.
If we evaluate the causes that lead to the need of repetition, chart 1, we have the classification of inadequate exposure, with a percentage of 0.85%, that seems very low. However, despite of being classified under a different name, artifact rejection by anti diffuser grid, with 0.85%, can also be classified as inadequate exposure.

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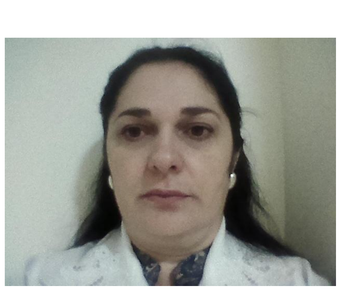

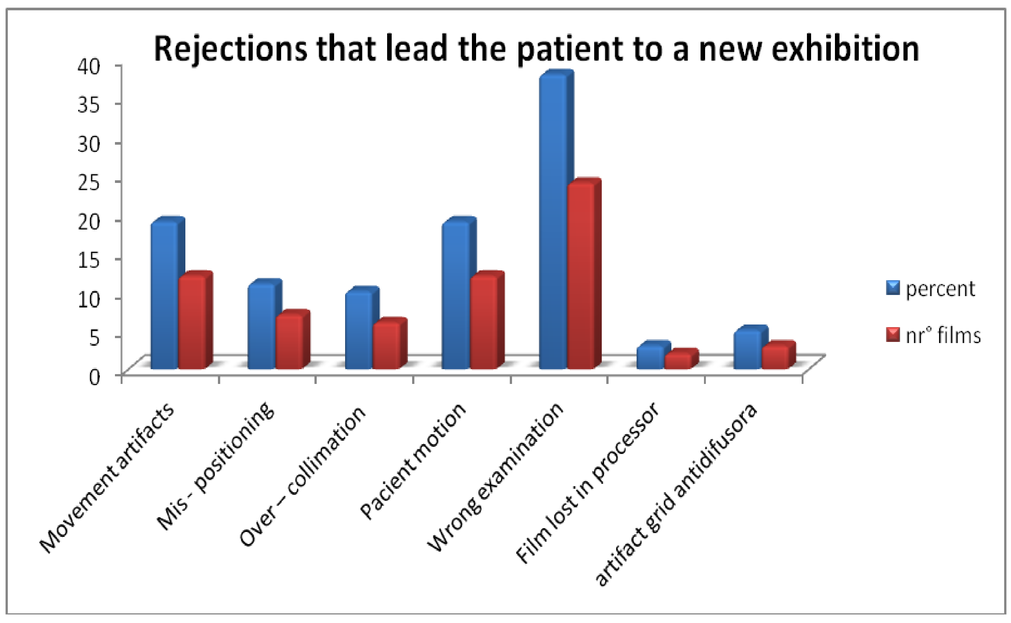

Chart 1 - Rejections that lead the patients a new exhibition

The causes of rejection which did not lead to the need of repetition totalize 78,63% and are showed in the chart 2. However, they cause additional expenses and demand work time from the involved crew. The major rejection, 18,38%, correspond to duplicated film, followed by rejections without identified cause, with 13, 68%.

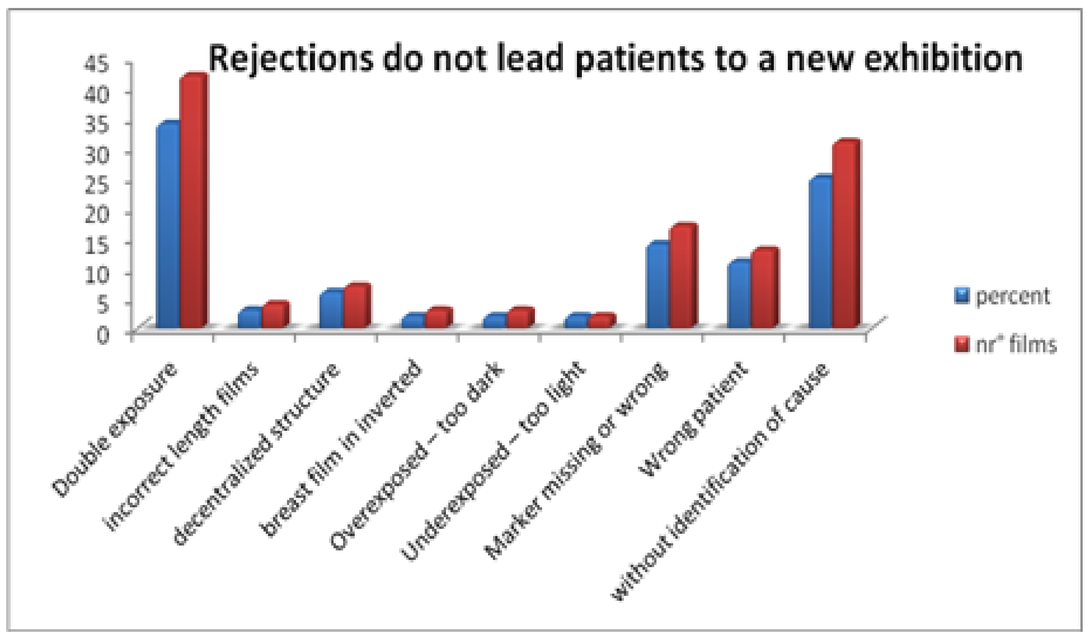

Chart 2 - Rejections do not lead patients a new exhibition

5. CONCLUSION

Changing system for CR technology makes it necessary to perform the analysis procedure of rejection of tests.
However, it is possible to extract data from the CR or PACs (Picture Archiving Communication System), analysis can be done through the registration of technicians who did the exams. The team being aware of the need for identification of faults, for a schedule of training and maintenance, making notes properly.With the reduction of rejection, there will be reduction of the dose to the patient.

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6. REFERENCES

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