AbstractID: 8172 Title: Development of a search method to find lost chest radiographs in PACS server

Purpose:

Misfiled cases in the PACS environment may create serious medical accidents in the hospitals and medical centers. The purpose of this study was to show a potential usefulness of an automated search method by use of biological fingerprints [2)], i.e., some parts of chest radiographs, and image-matching technique to find lost chest radiographs in a large database.

Materials and Method:

We employed five biological fingerprints in a chest radiograph such as cardiac shadow, lung apex, the superior mediastinum, the right lower lung, and a thoracic field. To find a lost image in a large database, biological fingerprints were extracted from a target image, i.e., the previous image of the same patient. Each of the biological fingerprints of the target image was used as a template for determination of the correlation value with the corresponding biological fingerprints in the current chest radiograph in the database. Our database used in this study included 36,228 patients with PA digital chest radiographs including 20,278 females and 15,950 males. Forty-six target images were selected randomly, and used hypothetically as lost images to examine the potential usefulness of our method based on the biological fingerprints and image-matching technique.

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Results:

By use of all of images in our database, 78.3% (36/46) of the target images were correctly identified as the same patient's image by our method. Moreover, it was possible to identify 8.7% (4/46) of the additional target images correctly, when previous images with the top two to five correlation index were examined. These results appear to be promising in finding a patient with the lost images based on comparison with a large number of images.

Conclusion:

Our method by use of biological fingerprints and image-matching technique has potential usefulness to find the lost chest radiographs automatically in the PACS server.