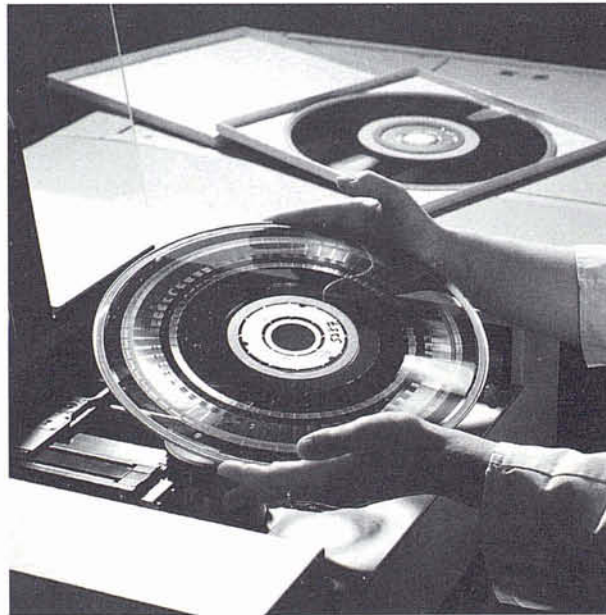


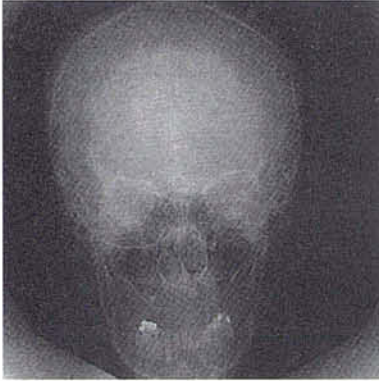
DIGITALIZATION OF X-RAY IMAGES IN CATALONIA

COMPUTERIZED RADIOGRAPHY IS ONE OF THE WAYS OF PRODUCING DIRECTLY DIGITALIZED IMAGES WHILE AT THE SAME TIME REDUCING RADIATION LEVELS. IT ALSO OFFERS THE CHANCE TO REPROCESS IMAGES ONCE THEY HAVE BEEN OBTAINED, AND SAVES ON STORAGE SPACE THROUGH THE USE OF AN OPTICAL DISK STORAGE UNIT.

COMPUTERIZED RADIOGRAPHY OPENS THE WAY TO THE INTEGRATION OF CONVENTIONAL RADIOLOGY IN A DIGITAL IMAGE STORAGE AND COMMUNICATIONS SYSTEM.



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For some years now, digital treatment of radiodiagnostic images has been used in techniques such as computerized tomography, digital angiography, nuclear medicine and magnetic resonance imaging. Until recently, attempts to digitalize conventional radiology images, which account for 75 % of the total, had not been widespread. These methods were of two types: direct image digitalization and X-ray digitalization.

Computerized Radiography is one of the ways of producing directly digitalized images using already existing equipment and conventional exploration techniques. This system can produce high quality clinical images, while at the same time reducing radiation doses by up to 90 %. It also eliminates the need for repetitions caused by mistakes in the technical characteristics of the exposure, which in Catalan hospitals are estimated at between 10 and 15 % of the total number of explorations. This is made possible by a system which automatically adjusts the level of radiation received. This system also allows the possibility of reprocessing images once they have been obtained, so that a single X-ray can show the different radiological densities which, with a conventional system, can only be obtained through further exposures of different technical characteristics.

Another of the system's great advantages is the saving on storage space, since, using an optical disc storage unit, all the X-rays can be stored in a digital archive, with all the associated advantages of indestructibility of information, high-speed image-storage and retrieval, etc.

Computerized Radiography opens the way to the integration of conventional radiography in a digital image archive and communications system (Picture, Archive and Communications System = PACS), which allows a complete range of medical images of each patient (computerized tomography, ultrasound, magnetic resonance imaging, nuclear medicine, digital angiography, computerized radiography and others that may be produced in the future) with the corresponding radiological reports in a single digital archive. With the visualization of images on high-resolution screens distributed throughout the hospital via an optic-fibre network, it is possible to do away with X-ray films and make the whole of the diagnostic information more readily and easily available to the doctor, avoiding the possibility of losses or delays. In the future, this network will have to form part of the hospital's unified information and medical archive system.

Telecommunications will also make it

possible to establish long-distance expert advice systems, since any hospital or medical attendance centre able to digitalize its radiological images (this will be possible using a negatoscope, a video camera, a modified personal computer and a modem) will be able to consult the reference hospital, avoiding unnecessary journeys for the patient and gaining time and security in the diagnosis.

In Catalonia, the Institut Català de la Salut, as part of its high-technology study programme, has installed Computerized Radiography equipment at the Vall d'Hebron Children's Hospital, and is planning to install a complete PACS in the next two years, so as to study the possibilities of this new technology in the field of medicine. As part of this approach, the Radiology Service is taking part in the Telemed project, under the auspices of the European Community's RACE programme, for the study of image communications systems between various European hospitals, and has been selected as a Pediatric Radiology reference centre for long-distance advice and for the formation of a data base of normal and pathological X-ray images for education and research, which will be made available to other participants over the next few years, via the European telecommunications networks. ●