Surgical Pathology Archive of Urology in Iraq; where Do we Stand?

Ausama Saadi Abdul Muhsin *, Gontero Paolo **, Zitella Andrea **, Stefan Biesterfeld *, Thűroff JW ******

ABSTRACT:

BACKGROUND:

The international surgical centres recognised the progressive importance of archiving the written pathological data as well as the pathological materials such as paraffin blocks and slides using updated techniques to facilitate possible future retrieval of patients' pathological data and research plans.

OBJECTIVE:

To highlight the difficulties and pitfalls of the current pathological archive of urology in Iraq and demonstrate the characteristics of urology archives in advanced urology centres represented by Torino University (Italy) and Johannes Gutenberg University – Mainz (Germany). Recommendations are suggested to optimise our surgical pathology archive in general and urology archive in particular in the third millennium.

CONCLUSION:

Surgical pathology archive is an essential component of the daily surgical practice and research procedure. In Iraq clear legislation is needed to protect and regulate the surgical pathology archive including that of urology, as well as adequate economic funding to implement new international standards and techniques in this field.

KEY WORDS: pathology archive, urology practice, urology research.

INTRODUCTION:

For thousands of years human being was trying to document the knowledge and scientific experience acquired in his life to preserve them for others. Regardless of the method used to document this information, the knowledge was kept from loss and further information and experiences were added by the people who came later on. Civilisations were progressing according to the amount of the stored documents of various aspects of knowledge (including medicine) they had. In Iraq for example, a Sumerian medical tablet which is over 4000 years old was discovered. It contains the world's oldest-known medical handbook [(1)]. Thus such tablet Similarly the Ebers Papyrus of about 1550 BC is archived the medical data available at that time. Figure (1).

among the most important medical papyri of ancient Egypt. It was written in hieratic Egyptian writing and preserved for us the most voluminous record of ancient Egyptian medicine known [(2)].

Over centuries the archiving process of medical and surgical data witnessed many advances and recently one of the criteria to recognize international surgical centers is the presence of a qualified surgical pathology archive to offer the best service to patients and assist any future related research plan. This article briefly discusses the main features, pitfalls and difficulties of the current urological archive in Iraq in contrast to other international urology centers which are presented by Urologia 1, University of Studies of Torino (Italy) and Department of Urology in Johannes Gutenberg University - Mainz (Germany).

*Urology, College of Medicine, Nahrain University, Baghdad – Iraq.

** Urologia 1, University of Studies of Torino, Italy.

*** Chief Consultant Pathologist. Institute of Pathology. Johannes Gutenberg University. Mainz - Germany.

**** Professor and Chairman. Department of Urology, Johannes Gutenberg University. Mainz - Germany

Urology Archive in Iraq

Surgical Specialties Hospital – Baghdad was chosen as a model because it is the largest and the main teaching hospital for postgraduate surgical specialties including urology in Iraq, since 1990. The pathology department in this center includes qualified pathologists and paramedical staff.

Unfortunately the method of archiving the written pathological data still depends upon the manual hand writing in books / files despite some patients had printed records.

The serial number given to the patient upon admission is not correlated by any mean to his \ her serial number in the pathology department in case any biopsy or specimen is taken for histopathology examination, making retrieval of the pathological data when required a time consuming process. Besides, every time the patient needs a new biopsy e.g. those patients with bladder cancer, a different pathology serial number is used. Thus to revise the pathology data of a particular patient with bladder cancer, one must go through all the biopsies taken for that year. What makes the situation worse is the fact that recording the name of some patients is incomplete. In Iraq many patients have similar first, second and even third name, so without precise and fixed serial number for the pathology data, confusion occurs and this complicates collecting data for the research purposes.

In the department of pathology of Iraqi teaching hospitals there is no separate archive of urology. In other words, all the surgical specialties share the same book / box file to record the pathological data for that specific year. So, if one wishes to have a research for bladder cancer, the review would include box file(s) containing all the biopsy and specimen records of other surgical specialties as well as other urology biopsies and specimens apart from the bladder cancer for that particular year.

The process of archiving written pathological data and pathological materials such as slides in Iraq is not regulated by particular laws or legislations.

Therefore, pathological archiving is a variable process among hospitals and unprotected by a clear legal authority. In the surgical specialties hospital for instance the written pathology archive of urology dated back to 1990, but this may not be the situation in other hospitals.

For all the above mentioned reasons, the surgical service offered to certain patients may not be optimum due to the difficult retrieval, loss of valuable pathological data or both. Also a research involving large series of patients is a challenging task and some of the patients' data which are incorrectly archived have to be excluded. In addition, such manually documented valuable archive is highly susceptible to loss with time or accidents.

Urology Archive in Italy

To summarize the main features of a surgical pathology archive in Italy, it is better to start from the basic structure that a pathology archive has to show according to Italian national law. An Italian legal document [3] written in the year 1963 set the rules governing the saving of any medical records: "the medical records and all the attached reports must be stored for an unlimited time as they represent the official acts that are needed to warrant the rights of any citizen. Moreover they are precious documents for clinical and historical research." A second paragraph of the aforementioned law states that the records must be stored in the initial archive for at least 40 years and then they can be sent to a different archive. A law [4] written in the year 1974 allowed the storage of microfilmed files. So, the pathology report must be stored for an unlimited time either in paper archives or in electronic archives (e.g . pdf files).

In the year 1984 a Presidential Decree [5] set the definitive rules for paraffin embedded specimen and pathology slides. All the biopsies and tissue specimens must be stored for 20 years regardless of the diagnosis. The cytology slides must be stored for up to 5 years.

Besides these common basic rules, each single institution can add procedures or software to improve the search across the archives for research or clinical applications.

In the University of Torino, a simple database (categories contained: patient identification number (ID), sample ID, macroscopic description, microscopic diagnosis) is used by pathologists to retrieve the sample ID given the patients' ID. The sample ID is needed to gain a quick and easy access to the archive of slide and paraffin embedded sample. This database is not used for research purposes. Each department has developed an internal database for research and clinical purpose specifically designed to fulfill the different fields of interest.

At the Urology Department, there is a safety comprehensive archive for pathology reports made of printed document ordered by patient name and year. As the main research fields include prostate and bladder cancer, we developed a specific "excel database" to save the data of all the biopsies, and specimens of patients with prostate cancer and bladder cancer. This database contains basic fields such as patient ID, specimen ID and microscopic diagnosis report as well as clinical data (e.g. prostate specific antigen (PSA), Tumor Node Metastasis (TNM) stage, allocated treatment, follow up status) and matching information to link the data with a frozen bank for tissue (- 180 °C) and plasma (- 20 °C) that were developed since 2003 for all prostate and bladder cancer patients.

The main difficulty experienced in building this database is in trying to find the right balance between the wish to store as many information and samples (for bio – bank) as possible and the high costs in term of human costs to fill up a personal computer (PC) database is time expensive and in terms of equipment (cryogenic freezer, refrigerator, centrifuge,…etc). Given the limited human resources and the limited funding for equipment, we finally found that a printed archive for all pathology reports is easy to keep up and is cost effective too. We focused our job and our funds on the efforts to store data and samples (plasma and tissue) of the patients with an established diagnosis of prostate or bladder cancer. This strategy has proved to be affordable and effective both for clinical and research purposes.

Urology archive in (Germany)

The German law [6] (106. Deutscher Ärztetag, Köln) stated that medical reports have to be stored for a period of 10 years. In pathology departments the term "medical report" also includes histopathologic and cytologic slides. For paraffin blocks storage, however definitive legislation has not yet been defined and the German association of pathologists (Berufsverband Deutscher Pathologen) recommends storing them as long as possible for clinical and scientific purposes.

The written pathology archive.

This archive in Johannes Gutenberg University – Mainz evolved through three stages. Pathology records of patients were initially archived manually in certain books. These books contain pathology records belonging to the $1970_{(s)}$ and are rarely used nowadays. The next stage started in the $1980_{(s)}$ with the use of microfilms which contain the pathology records since 1985. These microfilms can be revised and printed whenever necessary.

The introduction of computer systems replaced the microfilms to document the written pathology records.

The electronic pathology archive started in 1993 with limited patient information but since 1995 more detailed information including the pathologic diagnosis was added. The computer system used recently in the pathology department is the IFMS system.

The slides and paraffin blocks archive

The pathology archive in the institute of pathology in Johannes Gutenberg University contains pathology slides for the last 35 years and paraffin blocks for the last 20 years. All pathological (including urological) specimens were fixed using buffered formalin since 1995 to offer an extra advantage of performing molecular pathology research such as polymerase chain reaction (PCR) tests, as such technique allows preservation of the cellular DNA content. Besides, a more careful decalcification – technique for bone or dental material using certain media was used since 1995 to allow immunohistochemistry research and assessment of possible bone metastases for e.g. in prostate carcinoma.

DISCUSSION:

Tissue-based diagnosis is considered to be the most accurate and, in addition, inexpensive diagnostic technique in medicine. It is subject to considerable changes in respect to implementation of newly developed technologies. These comprise two main fields, namely molecular biology tools including molecular genetics, as well as digital information acquisition and distribution [7]. Only recently fast-placed developments in computer technology allowed for the digitization of complete histologic slides. The resulting virtual slides may be viewed via webbrowser by any number of pathologists or students independent of time and location [8] .Content-based visual information retrieval (CBVIR) or content-based image retrieval (CBIR) has been one on the most vivid research areas in the field of computer vision over the last 10 years [9]. The rapid technology advances in the computer

software and systems used to store, transmit, and retrieve the medical data dictate a careful plan implementing such techniques to improve the quality of the pathological archive. This may also be reflected in further improvement in the quality of diagnostic pathology itself as in telepathology (diagnostic work of a pathologist at a distance).

Automated storing of the specific and diagnosis-associated images of the case will permit an open diagnostic system which will itself adjust to the micro-environment of the department of pathology [10].

The development of surgical pathology archive in Iraq was greatly affected by the events of wars and sanctions which Iraq was suffering from during the last three decades, with all their consequences on the infrastructure of the medical system. To achieve a qualified surgical pathology archive in Iraq, three basic features have to be considered; legal, medical and technological.

Legal regulations and laws will control and protect the archive procedure of written pathological data as well as pathological materials such as slides and specimens. Such laws will ensure the financial institutional support (within the available resources) to maintain the archiving procedure. Unfortunately in Iraq, there are no specific laws regulating the pathology archive. This poses an obstacle against any future plan to implement new international standards and techniques in this field. As there is no universally accepted legal law(s) to regulate the pathology archive, it may be prudent to study the available laws of the recognized surgical institutions in the world such as the above mentioned centers, with a trial to select the laws that suit our local circumstances.

The medical staffs involved in the pathology archive have to be educated of the extreme importance of such procedure and should be supplemented with the necessary tools and techniques to maintain the optimum quality of such archive.

It is strongly recommended to make use of the international systems and experience of preserving the surgical pathology archive and the introduction of medical computer systems to facilitate the retrieval of any kind of information for the research purposes. Initially I would recommend that all manually written or printed reports in the past should enter a new computer system program (package). This system should operate on the present and future records.

This requires an adequate economic funding as well as training the personnel, starting first in the teaching hospitals to build a strong and efficient surgical system of care and research.

Figure (1): Sumerian Medical text

REFERENCES

1- MSN Encarta. Online Encyclopedia. Sumerian Medical Text. [Updated 2008; cited 2008,23. Available from http://www.encarta.org/

2- Wikipedia, the free encyclopedia. Ebers Papyrus. [Updated 2008 November 11; cited 2008 ,23. Available from http://en.wikipedia.org/wiki/

3- Italian Government Official Bulletin. 1963,285.

4- Italian Government Official Bulletin. 1974, 306.

5- Italian Government Official Bulletin. 1984,55.

6- (Muster-) Berufsordnung für die deutschen Ärztinnen und Ärzte. Dtsch Ärztebl 1997;94, A-2354 – A- 2363.

7- Kayser K, Görtler J, Goldmann T, Vollmer E, Hufnagl P, Kayser G. Image standards in Tissue-Based Diagnosis (Diagnostic Surgical Pathology). *Diagn Pathol.* 2008; 3, 17.

8- Glatz-Krieger K, Glatz D, Mihatsch MJ. Virtual microscopy: first applications. *Pathologe.* 2006; 6, 469-76.

9- Müller H, Michoux N, Bandon D, Geissbuhler A. A review of content-based image retrieval systems in medical applications-clinical benefits and future directions. *Int J Med Inform.* 2004; 73,1-23

10- Kayser K, Beyer M, Blum S, Kayser G. Telecommunication – a new tool for quality assurance and control in diagnostic pathology. *Folia Neuropathol*. 2000; 38,79 – 83.