Histopathology Services to a District Hospital: A Collaborative System

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Abstract

Background: In developing countries, few hospitals have direct access to histopathology services for the management of patients. With the advent of the internet, however, such services can be extended even to remote areas.

Design: A histopathology services collaborative system.

Setting: The histopathology laboratory of the University of Maiduguri Teaching Hospital extends services to the Kolofata District Hospital in Cameroon.

Materials and Methods: Once a week, preserved surgical biopsy specimens are sent by courier from Kolofata to our laboratory in Maiduguri. Complementary information such as x-ray films and photographs of gross specimens are sent to us by e-mail.

Results: In 91.9% of cases, results of histopathology analysis are communicated by e-mail and received by the requesting physician within 48 hours.

Conclusion: We encourage clinicians, especially those in remote areas where histopathology services are not available, to consider embracing this collaborative system.

Keywords: *Histopathology; Surgical biopsy; District Hospital; Services; Collaborative System*

Introduction

Specialised laboratory services are rarely available to hospitals in developing countries, and even where they do exist, they are usually only found in large hospitals.[1,2] For at least half a century, many hospitals in developing countries have relied on laboratories in Europe and North America for histopathology analysis of surgical biopsy specimens.[3] This system is expensive and entails waiting periods of weeks or months for results.

In Nigeria, histopathology services are present in most of the Teaching Hospitals, in a few of the Federal Medical Centres, and very rarely in the General Hospitals, all located in major cities. The paucity of trained pathologists and medical laboratory scientists and the scarcity

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of laboratory equipment both contribute to the lack of adequate histopathology services. The demand for surgical biopsies and cytological diagnoses is growing and increasingly exceeds the infrastructure available to respond to it. With the spread of advanced telecommunications, including internet services, to more and more cities and towns throughout Africa, we have a new opportunity to improve access to histopathology services in our hospitals and clinics. Such improved access could benefit not only Nigerians but also patients in hospitals along the vast border areas of neighbouring countries (Cameroon, Chad, Niger and Benin).

This article focuses on a collaborative system of histopathology services offered by one of Nigeria's tertiary care hospitals to the surgical service of a district hospital in a remote corner of Cameroon.

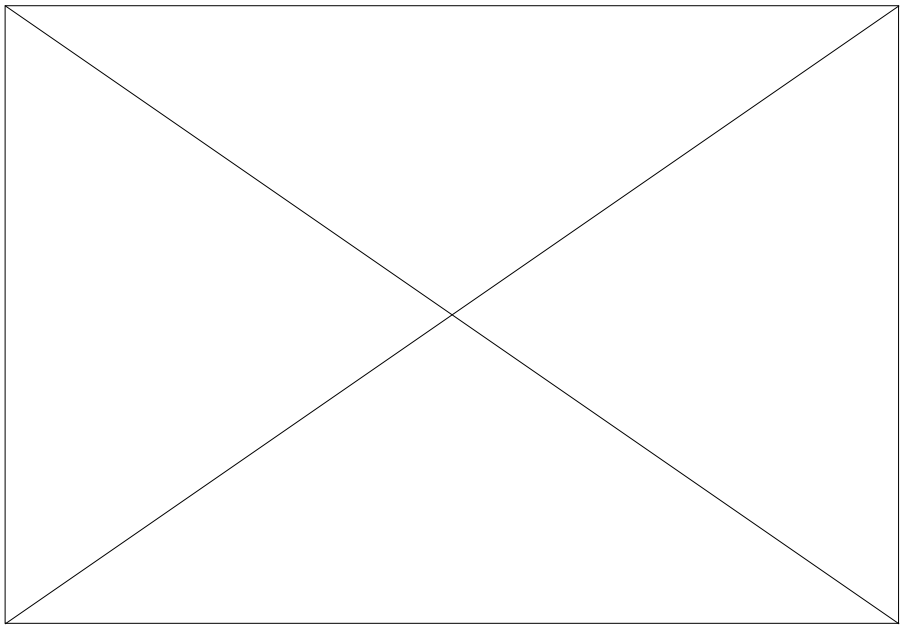

Fig. 1. Labelled specimens and clinical data

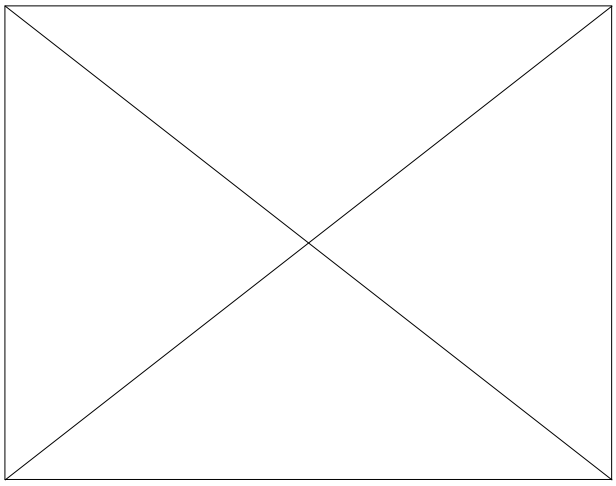

Fig. 2. Soft tissue tumour in a 10 year old boy

Fig.3. X-ray of the same leg in fig. 2

Materials and Method

The University of Maiduguri Teaching Hospital is a tertiary care 500-bed hospital in the North East sub-region of Nigeria. It has consultants in most of the specialities. Equipped with modern facilities, the hospital is one of Nigeria's centres of excellence and provides medical services to most of the neighbouring states and countries.

The Kolofata District Hospital is in a remote area of the Far North Province of Cameroon. It is about 200km from Maiduguri, Borno State, Nigeria. The hospital has 80 beds and is the referral hospital for six peripheral health centres serving a district population of 112,000 inhabitants. It also receives many patients from surrounding countries, including Nigeria, Chad, and Niger. The hospital, which has access to the internet through a local area network, performs about 25,000 patient consultations and 250 major surgeries annually.

Surgical cases in particular commonly require histopathology analysis of tissue samples. When such an analysis is considered desirable, the surgeon performs a biopsy and prepares the specimen by placing it in a small and large glass container filled with 10% buffered formalin. The bottle is closed tightly, labelled, and packed in a padded box which is then sealed with adhesive tape. About four to five specimens are sent once a week and accompanied by a report of the patients' demographic and clinical data, as shown in Fig. 1. Additional documents such as x-rays and photographs are sent by e-mail (Fig. 2 and 3). Since Wednesday is market day at the main border town between Nigeria and Cameroon, specimens are sent via courier each Wednesday, collected the same day by the pathologists and processed the next day. Results are returned by e-mail and can be accessed by the treating physician in Cameroon each Friday. Hard copies of the results are delivered to Cameroon by courier the following Wednesday.

Results

During the first half year of this collaborative effort, 124 biopsy specimens were sent by the Kolofata District Hospital to the histopathology laboratory of Maiduguri Teaching Hospital. There were 124 small and large biopsies received and analysed. A report of results was sent by e-mail within 48 hours in 119 (95.9%) of cases. The remaining 5 specimens includes 3 bony tissues that required decalcification; one case of Ewing's sarcoma that required Periodic Acid Schiff (PAS) stain and a breast cancer for immunohistochemistry (Ostrogen, Progesterone and Her-2 receptors) studies. The communication of results in these cases was therefore delayed by several days. Hard copy reports of results were sent on day 7 for all 124 cases.

Discussion

Due to the scarcity of human, material, and financial resources required to establish and maintain a histopathology service, few practising clinicians in developing countries have direct access to histopathology services. There is little in the medical literature that offers a solution to the problem of lack of access to histopathology services in rural hospitals. Gyasi and Debra cited the example of Ghana, where the delay between biopsy and reception of results for ophthalmic specimens was up to three months.[1] In consequence, histopathology analysis was rarely performed. To respond to this problem, a new collaboration, enhanced by e-mail communication, was established between the Ghanian hospital and a benefactor hospital in the United Kingdom. Hoenecke and Lee described efforts to develop, in collaboration with USAID, a pathology training program for physicians in Madagascar.[4]

The importance to clinical care is enormous.[5] Access to such analysis for a clinical case constitutes a form of quality control, as it provides data to support or refute the treating physician's diagnostic impression. It can contribute to clinical problem-solving and influence treatment decisions. It can aid in the

assessment of a patient's prognosis. As an added benefit, a collaborative effort such as the one described here also provides doctors in isolated areas with much appreciated communication with specialists and other medical professionals elsewhere. In our collaborative system, the turnaround time is 95.9% of all the surgical specimens while the remaining reports were delayed because some specimens were bone tissues that required longer time for decalcifications and further processing. The turnaround time which is defined as the period from the time of specimen accession (Day-0) to the day the report is signed by the Pathologist[6].

There are opportunities within Africa for clinicians in hospitals without access to histopathology services to benefit from services available in other hospitals, and these should be developed.

The launching in China of the Nigeria Communication Satellite-1 (**NIGCOMSAT-1**) on the 13th May 2007 should further enhance the communication services in Nigeria and the rest of Africa. This, in turn, should allow for more affordable internet services and further expansion of the kind of collaboration we described.

In conclusion, we encourage all clinicians, both those practising in remote areas where histopathology services are not available and those practising in tertiary care facilities that house such services, to consider forging a similar link. The resulting collaboration is sure to be of mutual benefit to patients, doctors, and hospitals alike.

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