Do you know anything about pathological diagnoses?

The work of pathologists who make diagnoses and determine your medical treatment.

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An easy-to-understand explanation of pathological diagnoses

Well, there's a small tumor. I think it will be fine, but you should have it checked again...

Oh, no!! What can I do?

What should I do? What should I do? I must be seriously ill. Waah! I'm so young, I haven't got my career sorted out. I'm not yet married. So many books to read, so many places to visit, so many dreams and wishes...

Just slow down a bit. You may not need to worry about this tumor.

But a tumor means cancer, doesn't it?

No, that's not the case. You need to have a pathological diagnosis to know about your tumor.

Pathological diagnosis? What's that?

In short, it is a examination of a small part of your tumor tissue whether it is benign or malignant.

Doctors ask patients about their condition, examine them, and then diagnose their illnesses. But sometimes doing this isn't enough to determine the disease.

This is particularly true when the cause of patient's disease could be the tumor deep inside the body.

But I thought you could do that with an understanding of the scan?

The types and nature of tumors can't be determined just by looking at images. To fully understand them, a small part of a tumor has to be taken and the cells examined under a microscope.
That is a pathological diagnosis and the specialist doctors who do it are called pathologists. Only pathologists can determine whether a tumor is nothing to worry about or is composed of malignant cancerous cells.

Hmm, I see. So, these doctors of pathology make their diagnoses even though we don’t see them, right? Somehow, it’s a pity that we don’t get to meet them.

Err, I overheard your conversation, so I’ve called in. I’m a pathologist.

Well, just pure chance, I’d say. Pathologists often come to see us.

Wow! I’m so happy about that, but the timing—it’s too good to be just fortuitous.

So, you are explaining about pathological diagnoses, aren’t you?

Yes, and this is good timing. So, would you please continue with the explanation?

OK, briefly

There are various types of pathological diagnoses, depending upon the purpose.

Roughly categorizing the pathological diagnoses produces the following:

- cytological diagnoses
- histological diagnoses (biopsies)
- intraoperative rapid diagnoses
- pathological autopsies

Aren’t cells examined in pathological diagnoses? Why aren’t all pathological diagnoses cytological diagnoses?

Ah, good point. When we say "cell", this means individual cells, one by one. A large group of cells with the same characteristics is called a tissue.

For example, a diagnosis called sputum cytological diagnosis is a microscopical examination of patient’s sputum to look for the presence of cancerous cells.
In this diagnosis, we search for any cancerous cells in the sample, so...

Cytological diagnosis?

Yes. In cytological diagnoses, we examine human secretions and other discharges to search for malignant cells that may have fallen away from a tissue.

On the other hand, a part of a tumor removed from a patient is a tissue. So, when tissues are examined, the process is called a histological diagnosis.

That reminds me about my uncle. He had a polyp removed from his stomach using an endoscope.

Right. In that case, the tissue removed during the gastric endoscopy was examined a histological diagnosis. This would reveal whether or not the tumor is cancerous, and the type and nature of the tumor.

Sometimes pathological diagnoses are carried out during operations: these are called intraoperative rapid diagnoses. Although the examination procedure is completed in only about ten minutes, these diagnoses are extremely important because the results may change the planned surgery.

In pathological autopsies, deceased patients are examined by dissection to understand the progression of illnesses and the effectiveness of treatments. Information obtained from pathological autopsies is used to improve treatments.

Now, I understand. Thank you for telling me all sorts of things. I can see that pathological diagnoses are very closely related with medical treatment.

That’s right. A pathological diagnosis is related with a definitive diagnosis for you, as well.

Oh. (I’ve forgotten about that.)

Now, you know that reliable treatment cannot be provided without a pathological diagnosis, don’t you? Do you agree to have an examination?

Yes. Thank you very much.

The result of the pathological diagnosis revealed that my tumor did not require surgery.
Until the results of the diagnoses are known

1. Removing a tissue
A clinician removes part or all of the tissue of a tumor that has formed on the skin or in an internal organ of the patient that is needed to make a diagnosis by using an endoscope or a scalpel.

2. Pathological diagnosis
The tissue that has been removed by a clinician specialized in surgery, internal medicine, gynecology, etc., is sent for a pathological diagnosis.

3. Preparing specimens for the pathological diagnosis
A clinical laboratory technician prepares specimens that enable examination of the tissue by using a microscope. The quality of the specimens may affect the accuracy of the diagnosis, so this process is important.

4. Diagnosis using a microscope
A pathologist examines the prepared specimens by using a microscope and determines the types and nature of the cells, whether they are malignant or benign, and so on. The results of the diagnosis are written in a report that is sent to the clinician.

5. Informing the patient
The clinician informs the patient of the results of the diagnosis. Based on the results, the clinician discusses and determines the method of treatment with the patient.

Clinicians examine patients and remove problematic tissue. Laboratory technologists prepare specimens of tissue samples removed from the body, and pathologists make diagnoses. Collaboration between clinicians, pathologists and laboratory technologists is vital for accurate diagnoses. All of the medical staff who participate in pathological diagnoses are linked to the patients through specimens, although their chance to meet the patients is rather limited.

This brochure was prepared by referring to a publication by The Japanese Society of Pathology.
Intraoperative rapid diagnosis with telepathology

1. Equipment required.
Telepathology allows the making of pathological diagnoses by observing pathological specimens at a distance through communication network. To carry out telepathology, the requirements are a cryostat, a pathological specimen digitalizing system, a teleconference system, an Internet protocol camera and other equipment.

2. A hospital requests another hospital to make a pathological diagnosis.
A request to make a pathological diagnosis is made by the day before the day of the relevant operation, in general. However, sometimes, an intraoperative rapid diagnosis is urgently required and, in which case, a request for an immediate diagnosis is made.

3. A pathology technician at the requesting hospital prepares frozen specimens.
A technician at the hospital making the request uses a cryostat to prepare frozen specimens from specimens removed during surgery, then scans the specimens with a pathological specimen digitalizing system.

4. Contacting a pathologist at the requested hospital.
While preparing specimens, the pathology technician at the hospital making the request checks the matters required for a diagnosis with a pathologist at the hospital receiving the request by using a teleconference system and others.

5. The pathologist at the requested hospital makes a pathological diagnosis.
The pathologist at the hospital receiving the request makes a pathological diagnosis based on the images of the specimens that have been transferred.

6. Informing a diagnosis.
The pathologist at the hospital receiving the request informs an operating surgeon at the hospital making the request of his/her diagnosis by using the teleconference system and others. After receiving the diagnosis, the operating surgeon asks whether the pathologist is continuing with the operation.