





# A World of Difference

In the United States, a greater percentage of common pathologies and rare pathologies are seen by CT and MRI examinations than in Turkey. I had the opportunity to discover this during my stay in the United States as a research fellow at the University of Washington in Seattle in 1993. I became acquainted in practical terms with the American health care system, and I have been able to comparatively evaluate its characteristics with that of my home country's health care system.

The main issues discussed here are based on the following observations:

- A greater percentage of diseases (pathology/normal examination) are seen in CT and MRI examinations in the United States compared with the ones I had a chance to observe while conducting the same types of examinations in Turkey.
- While dealing with relatively few examinations in the United States, I experienced a very high incidence of detection of rare pathology cases. In contrast, it has been very hard for me to see these rare pathologies in Turkey, even though my radiologic experience there has been quite extensive. These rare pathologies were not related to factors such as race or social life.
- All the considered examinations conducted in the radiology department at the University of Washington, whether with CT or MRI, had a sufficient number of roentgenograms and biochemical analysis. However, in Turkey, CT examinations and even MRI examinations are sometimes done without having roentgenograms and biochemical analysis taken. This is especially true in private medical institutions.

#### Causes

These observations indicate that patients' needs are not being met adequately in Turkey. Even though advanced imaging devices are much more expensive than X-ray examination equipment and the cost of biochemical analysis, and many times are not necessary, they are favored by Turkish clinicians.

The main cause of this situation is that clinicians do not know when they need to use ►

## A COMPARATIVE STUDY OF DIAGNOSTIC IMAGING IN THE UNITED STATES AND TURKEY



advanced technologies such as CT and MRI. I am not in a position to assess the level of competitiveness of medical doctors in Turkey and in the United States, but I can say that in the United States, after a residency period, most doctors are trained as a fellow in one subspecialization. After that educational and training period, they work in their fields, and therefore are highly qualified to make decisions regarding the use of advanced technologies.

Additionally, there is a great emphasis in the United States and in other advanced countries on attending educational workshops and fellowship programs. This happens to a lesser extent in Turkey, where educational offerings have been neglected. Fortunately, there are national congress meetings offered to Turkish clinicians that can alleviate the situation and help increase knowledge.

Moreover, the situation in Turkey indicates that there are no limitations for the use of advanced technologies. In order to support this statement, it is necessary to dis-

cuss the relationship between the Turkish people and the Turkish health care system, including medical insurance (see TABLE 1).

In Turkey, people usually have state medical insurance. Only a small percentage of people are insured by private agencies. For those who are not insured at all, there are public hospitals available, where the medical care costs are low, and private hospitals that, of course, are more expensive.



For people with state insurance, advanced technology examinations are conducted either in public hospitals (if there is an availability of advanced technology equipment) or in private clinics or imaging centers. In the latter case, patients are taken to private hospitals or imaging centers and the medical bills are covered by state insurance. However, all these procedures (whether the equipment is available in public or private hospitals) are done without serious control at any point. In fact, some state hospitals have medical committees that are in charge of verifying the requirements for taking CT

## EXECUTIVE SUMMARY

*Primary Thought: In the United States, a greater percentage of common pathologies and rare pathologies are seen by CT and MRI examinations than in Turkey. Reasons seem to be lack of adequate continuing education, an inefficient health care system and substandard equipment in Turkey.*

- Even though advanced imaging devices are much more expensive than X-ray examination equipment, and many times are not necessary, they are favored by Turkish clinicians. Clinicians do not know when they need to use CT and MRI, and there are no limitations for the use of advanced technologies in the Turkish health care system. In sum, advanced technologies are used more than necessary.

- For privately insured patients who do not need treatment for one year, clinicians often request CT or MRI exams at the end of the year as a check-up so clinicians don't lose the chance to earn money (insurance agencies are paying without hesitation).

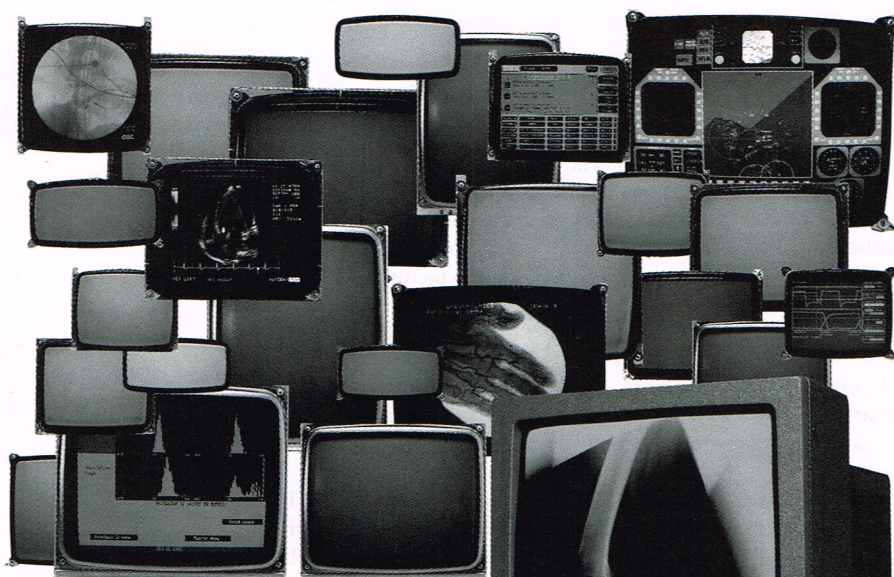
- Residents in Turkey without insurance create a disadvantage in the financial arrangement among clinicians and private imaging centers or hospitals. Most private imaging centers share between 10 percent and 50 percent of their income. Therefore, clinicians require advanced technology exams frequently in order to make more money.

- Even though many patients genuinely need advanced technology exams in Turkey, there are a limited number of available systems and qualified personnel. In Istanbul, there are 10 MRI units, only two of which are higher than 1 Tesla, and only three of which have MR angiography software.

- In Turkey, time allowed for exams tends to get shortened in order to solve the high demand problem. This causes exams to be lower quality than expected.

- Because of high demand for advanced technologies in Turkey, many reports are written hastily, and the accompanied images are not of optimal quality most of the time. This creates a tendency to overlook rare pathologies.

- Although there is a limitation in Turkey regarding the age of imported systems, many investors find it possible to avoid these regulations easily. ■



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and MRI examinations. The members of a committee are selected randomly, however, and are not always qualified for this job and are changed quite often. Because of that, this control step is not working effectively. For instance, in the case of a patient with a headache, a physician has the choice of direct paranasal sinus X-ray or CT, or even an MRI examination. If the type of examination depends solely on what clinicians want, it is very common for them to choose advanced medical technology. The outcome is that clinicians do not bear responsibility for medical fees, do not want to waste their time and are not interested in meeting patient needs, and in turn the requirements for advanced technology exams are very common. In sum, advanced technologies are used more than necessary.

In the case of a person carrying private insurance, he or she can select any private hospital for treatment, with only minor limitations applied (there is only a fee limitation on a yearly basis that depends on how much he or she pays regularly to medical insurance agencies). So far, private medical insurance agencies in Turkey have not applied limitations for use of advanced technology exams. Limitations do exist in Western countries. For example, when a pa-

| TABLE 1                                |  |            |
|--|--|------------|
| TURKS CARRYING STATE MEDICAL COVERAGE* |  |            |
| <b>SSK</b>                             |  | 19,911,000 |
| persons/labor force                    |  | 5,766,000  |
| family coverage                        |  | 14,145,000 |
| <b>EMEKLİ SAND</b>                     |  | 9,944,206  |
| persons/labor force                    |  | 2,266,885  |
| family coverage                        |  | 7,677,321  |
| <b>BAG-KUR</b>                         |  | 9,424,162  |
| persons/labor force                    |  | 2,049,801  |
| family coverage                        |  | 7,374,361  |
| <b>TOTAL</b>                           |  | 39,279,368 |

\*According to the State Health Report, 1990.  
Total population is 56,000,000.  
SSK, EMEKLİ SAND and BAG-KUR are state insurance plan types in Turkey.

tient with private insurance does not need treatment for one year, clinicians often request CT or MRI exams at the end of the year as a check-up so clinicians don't lose

the chance to earn money (insurance agencies are paying without hesitation). Turkish private insurance agencies are aware of this unfavorable situation and are interested in

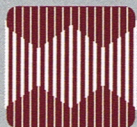
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making changes; however, they are also interested in remaining attractive and increasing the number of policy holders. There are more than 50 private insurance companies in Turkey, 20 of which specialize in health insurance.

Turkish residents without insurance create a disadvantage in the financial arrangement among clinicians and private imaging centers or hospitals. Most private imaging centers share a percentage of their income (usually between 10 percent and 50 percent), therefore, clinicians require advanced technology exams frequently in order to make more money. Unfortunately, this economic re-

tem, their shifts ended at 6 p.m. instead of extending into night. This sometimes causes American patients to wait for appointments at least a few days longer than is necessary.

• In Turkey, time allowed for exams tends to get shortened in order to solve the high demand problem. This causes exams to be lower quality than expected, and makes the system not as effective as it could be. For instance, it is common to see exams made in one-plane without using contrast media, or with direct contrast media, or perhaps thicker-than-normal slice thickness.

• These advanced technologies are more expensive than X-ray

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lation is very common in Turkey.  
**Complications**

When advanced technologies like CT and MRI are used unnecessarily as explained above, the number of examinations obviously increases. As a result, the country is facing the following problems:

• Even though many patients genuinely need advanced technology exams, there are a limited number of available systems and qualified personnel. Therefore, many of these examinations have to be performed on a delayed time basis. In many institutes, especially state hospitals, appointments for patients are scheduled weeks, even months, later.

During my stay in Seattle, I could not understand that even though there were two or three technologists assigned at the same time to work with one sys-

systems and the fact that these advanced technologies are used at a high rate contributes to the economic deficiency in Turkey. The reasons are as follows:

a) When exam time gets shortened and exams are of suboptimal quality, clinicians are not exposed to high-standard examinations. Also, the investors (mostly private hospitals and imaging centers) are interested in buying and using outdated, low quality systems. A typical example of this is low-field MR units. In Istanbul, there are 10 MRI units, only two of which are higher than 1 Tesla, and only three of which have MR angiography software. These low quality systems are the second cause of suboptimal exams. With time, hopefully, Turkish clinicians will realize the importance of using high quality systems, but until that



time the present situation will persist. On the other hand, low quality systems and old technologies are not used in advanced countries—they get sold to developing countries like Turkey.

b) The demanding use of these technologies is wearing them out rapidly, and they are often in need of repair. That, in turn, contributes to the economic deficiency of the country.

- Some types of exams, like CT, expose patients to radiation hazards.

- Because of high demand for advanced technologies, many reports are written hastily, and the accompanying images are not of optimal quality most of the time. This creates a tendency to overlook rare pathologies.

Especially in developing countries like Turkey, the use of advanced medical systems with optimal efficiency—to serve people well who really need them—is very important. There is a great need for finding solutions to these problems to help improve the Turkish health care system.

#### Solutions

Clinicians must learn which imaging exams give them the best diagnostic information for each case. Generally speaking, clinicians who work with medical technologies effectively were likely exposed to these technologies during residency periods, and they are able to provide high quality service. If they completed residency periods many years ago, however, they probably do not know how to work with new technologies. Many clinicians perceive MRI as a newer technology than CT and think that MRI can show everything. They request MRI examination instead of CT, even though many times CT would be a better choice. One of the ways to improve this situation is for clinicians who completed residency periods years ago to be offered educational programs regarding new technologies.

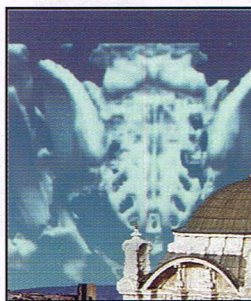
There should be common fellowship programs available to Turkish clinicians who require the use of these advanced technologies. On the other hand, in radiology, when any new technology becomes available in a country, radiologists tend to provide the new service without having enough knowledge. Consequently, fellowship programs should be made available to radiologists who work with advanced technologies.

Also, state and private insurance agencies have to put restrictions on radiologic requirements. In the case of a patient skipping radiologic steps without going through basic techniques, for example, insurance agencies should not cover fees for exams. A patient having only a headache should not be prescribed CT or MRI examinations without X-ray first, otherwise he or she has to pay the fee.

Insurance policies, however, should cover most of the people (all people if possible) in order to provide advanced technologies to people who do indeed need them.

And finally, there should be stricter regulations related to importing secondhand systems. Although there is a limitation on the age of imported systems in Turkey (if a system is older than 5 years, the Turkish government does not permit importation), many investors can avoid these regulations easily. ■

*Orhan Konez, MD, grew up and was educated in Bursa, Turkey. He is a graduate of the University of Uludag Medical School and began his career as a resident at the Sisli Etfal Hospital in Istanbul. In 1993, Dr. Konez worked as a research fellow at the MRI Research Center at the University of Washington, Seattle. Upon his return to Turkey, he worked for the Turkish military as a radiologist to meet his obligation to the Turkish Army. In January 1995, he published the first book about MRI written in Turkish. He has subsequently returned to the University of Washington.*



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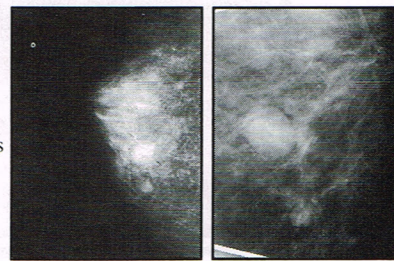
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