



The Approaches of Physicians Working in the Field of Pathology Regarding Forensic Pathology Practice and the Training Process

Patoloji Alanında Çalışan Hekimlerin Adli Patoloji Pratiği ve Eğitim Sürecine Yaklaşımları

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ABSTRACT

Objective: Forensic autopsies are performed by the forensic medicine department and the microscopic examination processes by pathology specialists within the forensic medicine practice in Turkey. This disconnection in the process raises problems in the training of both branches. The aim of this study was to determine the awareness of pathology staff on forensic medicine practices and responsibilities and their opinion on the pathology training model in the forensic medicine specialty and to discuss the matter within the framework of the present situation and global applications.

Material and Method: A 15-item questionnaire form distributed to the participant physicians during registration at the 21st National Pathology Congress held in 2011 was evaluated.

Results: 94 participants responded. A negative opinion was expressed by 72% about the interest in the general post-mortem process. The view that pathology specialists should undergo a separate training to perform autopsies was predominant and there was a general lack of interest in all kinds of autopsy processes. The percentage who said they knew the legal responsibility of a pathology specialist regarding forensic autopsies correctly was 37%. The questions "what are the necessary factors to contribute to the pathology training in forensic medicine" and "if anything is required, which of them would take priority" were respectively answered as "for me to be interested (46%)" and "a system guaranteeing that training will always be given by pathology specialists (67%)". Despite the possibility of becoming a forensic medicine specialist in two years, the mean answer score of the participants to the phrase "I do not consider becoming a forensic medicine specialist" was 4.1 (out of 5).

ÖZ

Amaç: Türkiye'deki adli tıp pratiğinde otopsi adli tıp, mikroskopik inceleme süreçleri ise patoloji uzmanlarınca yapılır. Süreçteki bu kopukluk her iki branşın eğitiminde sorunlar oluşturmaktadır. Bu çalışmanın amacı, patoloji çalışanı hekimlerin adli tıp pratikleri ve sorumlulukları konusundaki farkındalıklarını ve adli tıp uzmanlığında patoloji eğitim modeli konusundaki görüşlerini saptamak; mevcut durum ve dünyadaki uygulamalar çerçevesinde tartışmaktır.

Gereç ve Yöntem: 2011'de düzenlenen 21. Ulusal Patoloji Kongresi'nde kayıt esnasında katılımcı hekimlere dağıtılan 15 soruluk bir sorgulama formu değerlendirilmiştir.

Bulgular: 94 katılımcı yanıt vermiştir. Genel otopsi sürecine olan ilgi hakkında %72 oranında olumsuz görüş belirtilmiştir. Patoloji uzmanının adli otopsi yapması için ayrı bir eğitimden geçmesi gerektiği görüşü hâkimdir ve otopsi süreçlerinin tüm çeşitlerine karşı genel bir ilgisizlik mevcuttur. Adli otopsielerde patoloji uzmanının yasal sorumluluğunu doğru olarak bildiğini ifade edenlerin oranı %37'dir. Adli Tıpta patoloji eğitimlerine katkı sağlamları için "gerekli faktörlerin ne olduğu" ve "şartlar öne sürmesi gerekse, hangisini öne süreceği?" sorularına sırasıyla, "ilgi duyuyor olmam (%46)" ve "eğitimin daima patoloji uzmanları tarafından verileceği bir sistem garanti edilmeli (%67)" cevapları verilmiştir. Katılımcıların iki yılda adli tıp uzmanı olabilme imkanına rağmen "adli tıp uzmanı olmayı düşünmem" seçeneğine verdikleri cevap puan ortalaması 4.1'dir (4.1/5).

Conclusion: A reluctance among the pathologists in our country was seen regarding forensic medicine specialists being able to perform post-mortem microscopic examination. However, despite their legal responsibilities, their interest in forensic pathology practice was low. There seems to be rational factor that would increase this interest in the near future. Cooperation is necessary to enable forensic medicine specialists to perform post-mortem pathology procedures. This cooperation should be based on improving the training of pathology research assistants.

Key Words: Forensic medicine, Pathology, Autopsy, Education

INTRODUCTION

Forensic medicine services in our country are largely carried out by forensic medicine specialists and general practitioners. The ratio of forensic autopsies being carried out by forensic medicine specialists has increased. In accordance with 87th article of the Criminal Procedure Code, pathology specialists are also clearly responsible within this regard. However, this possibility is not used often in practice by the judicial authorities. Prosecutors and Judges see pathology specialists distant to routine forensic medicine practice and employ them infrequently. On the other hand, forensic medicine specialists do not have valid training in microscopic pathology investigations.

This process leads to the microscopic examination being performed separately from the autopsy in forensic autopsies in Turkey. Autopsy is carried out by the forensic medicine specialist and the microscopic examination by a pathology specialist (who is not present at the autopsy).

Occasional attempts by the forensic medicine community to strengthen pathology training have not led to effective results. The causes stem from both the forensic medicine and pathology communities. The aim of this study was to determine the perspectives of physicians working in the field of pathology on forensic medicine practice and pathology training, and related concepts.

MATERIAL and METHOD

A survey form of 15 questions was prepared by the Turkish Pathology Society Forensic Pathology Study Group. Demographic and social data were not requested in the questionnaire form. The form was prepared to investigate the interest, knowledge of the pathology specialist and research assistants on forensic pathology and the autopsy process, and their views on the forensic pathology training process. The questions are given in the results section together with the answers.

Questions 4, 9, and 10 of the survey form are Likert-type questions and scoring options were given as “1: I disagree,

Sonuç: Adli Tıp uzmanlarının post mortem mikroskopik incelemeleri yapabilmesi konusunda ülkemizdeki patoloğlar arasında bir gönülsüzlük izlenmektedir. Oysaki yasal sorumlulukları olmasına rağmen kendilerinin adli patoloji pratiklerine ilgileri düşüktür. Yakın gelecekte bu ilgiyi arttıracak rasyonel bir sebep gözükmemektedir. Adli tıp uzmanlarının postmortem patoloji pratiklerinde yetkinleştirilmesi için işbirliği yapılmalıdır. İşbirliği, patoloji araştırma görevlilerinin eğitiminde de yarar sağlama üzerine kurulmalıdır.

Anahtar Sözcükler: Adli tıp, Patoloji, Otopsi, Eğitim

2: I mostly disagree, 3: I both agree and disagree, 4: I mostly agree, 5: I completely agree”

Question no. 8 is also a Likert-type question, but the scoring options were given as “1: Completely inadequate, 2: Mostly inadequate, 3: Neither adequate or inadequate, 4: Mostly adequate, 5: Completely adequate”

The survey forms were distributed to 640 participating physicians during the registration of the 21st National Congress of Pathology organized in İzmir on November 2011, and they were asked to give the form back after completing it. The survey was completed by 94 (14.6%) of the physicians attending the congress. The descriptive method frequency analysis was used for the statistical evaluation of the answers. Participants were asked how they perceive regulation about the law regarding who should perform the forensic autopsy (sixth question) and their opinions (seventh question) and the Wilcoxon matched two sample test was used for the comparison of their answers to these two questions.

RESULTS

Interest in and Perception on Forensic Pathology

Questions 1-7, 10 and 11 of the survey form queried this concept. The participants were given available graphics templates in the first question and were asked which template symbolized the relationship between the Forensic Sciences, Forensic Medicine and Forensic Pathology. Most participants saw an intersecting or complementary relationship between these 3 disciplines (Figure 1). Sixteen of the 22 subjects that answered “inclusive relationship” and “hierarchical relationship” to this question identified forensic science as a field above forensic medicine and forensic pathology, in the second question.

We saw that 72% of the participants had negative opinions such as “I’m not interested in autopsy “ and/or “I cannot spare time for an autopsy” in the third question that asked the general view on autopsy without separating forensic autopsy and medical autopsy (Figure 2).

Subjects were asked to what extent they agreed with the expressions on “whether pathologists can practice forensic autopsy” in the fourth question. Most of them agreed with the statement “Pathology specialist must undergo separate training to perform forensic autopsy” with a score 4.68 ± 0.6 (Table I).

Subjects were provided the 87th article of “the Criminal Procedure Code (CPC),” regulating who performs the autopsy and then three relevant questions were asked:

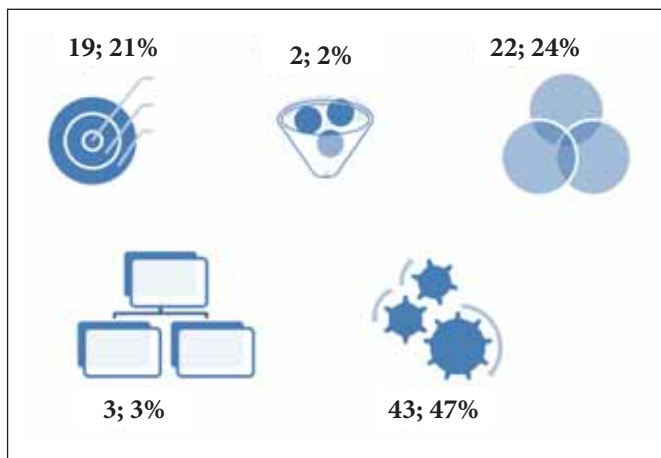


Figure 1: Options and responses about how a relationship can be established between the Forensic Sciences, Forensic Medicine and Forensic Pathology disciplines. From the left upper corner, clockwise: “Inclusive relationship (One includes the other)”, “They melt in the same pot”, “Partial interacting relationship”, “Complementary relationship”, “Hierarchical relationship (one is above the other)”. An empty space has been left for those who want to give an answer except these and to draw their own approaches. The percentages are rounded to the nearest integer.

The fifth question was about the level of knowledge regarding that article of law. The numbers of those who expressed “know it correctly”, “know it partially”, “do not know it at all” and “did not know it was referring to the pathology specialist” was 33 (37%), 36 (40%), 5 (6%) and 15 (17%) respectively for the question that 89 subjects answered.

The question “Who should do the autopsies” in connection with the issue was asked in two different ways in the six and seventh questions:

- “According to our legal regulations (Code of Criminal Procedure, Article 87) who should perform the forensic autopsy?”
- “According to your opinion, who should perform the forensic autopsy?”

A total of 88 subjects responded to the questions, and answers are presented in the table (Table II). A significant difference was not found between the participants’ responses regarding their opinions and their perceptions on the legal regulation in the previous question.

After reminding the forensic medicine specialization duration is 2 years for pathology specialists, they were asked to grade the statements regarding becoming involved in the field of forensic medicine in the tenth question. The option “I would not consider becoming a forensic medicine specialist” was the answer with the highest score with a mean of 4.1 ± 1.3 (Table III).

The reasons for the opinions of those who gave 4 or 5 points to the option “I would not consider becoming a forensic

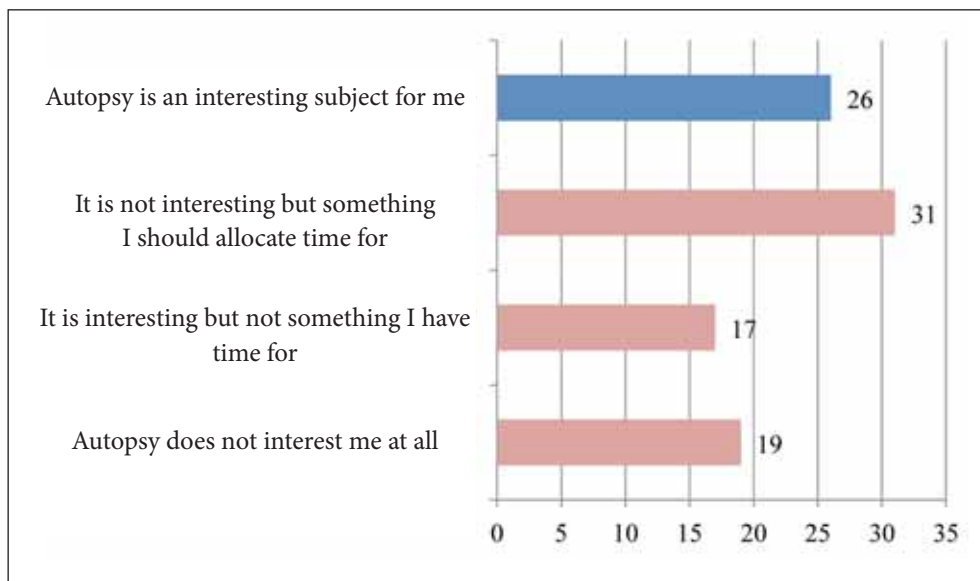


Figure 2: The answers of the subject about their views on autopsy.

medicine specialist” were asked on the eleventh question. The most common answers were “being drawn away from surgical pathology” and “Having no interest in autopsy” (34 and 29 subjects respectively). These are followed by

subjects who did not consider it due to “finding the forensic medicine environment political” and “low income” (16 and 5 subjects). 10 subjects gave other answers. These were as follows: “There is a risk of transmission of infectious

Table I: The views of the participants about the forensic autopsy practice and their opinions on who should perform this practice

Question 4; The scores of the participants for statements on forensic autopsy practice and who should perform this practice	
	Mean ± SD
The pathology specialist should have separate training to carry out a forensic autopsy.	4.68±0.6
The autopsies we perform in pathology practice are different from forensic autopsies.	4.20±1
Forensic autopsy should only be performed by the Forensic Medicine specialist.	3.27±1.5
Pathology specialists can perform forensic autopsies.	2.45±1.3
I do not know what forensic autopsy means.	2.13±1.3
Autopsy should be performed only by Pathology specialists even if it is a forensic autopsy.	1.83±1.2

SD: Standard deviation.

Table II: The answers of the pathologists given to the questions on who should perform forensic autopsies “According to the Law” and “According to the subject”. The distribution of the various branches according to the order of preference is provided. The rates are given according to the total number of subjects that responded (88 subjects)

Order of preference	Branch	Sixth question: Who should perform forensic autopsies according to the legal regulation? N (%)	Seventh question; Who should perform the forensic autopsies in your opinion? N (%)
First option	Forensic Medicine specialist	86 (98)	82 (93)
Second option	Pathology specialist	72 (82)	58 (66)
	General practitioner	31 (35)	29 (33)
	Other branch specialists	31 (35)	24 (27)
Third option	Other branch specialists	27 (31)	22 (25)
Fourth option	General practitioner	23 (26)	14 (16)
Number of Subjects that Responded		88 (100)	88 (100)

(Z and p values respectively; for the Forensic Medicine Specialist: -1.000 and .317; for the Pathology Specialist: -.302 and .763; For other branch specialists: .000 and 1.000; for the general practitioner: -.626 and .531).

Table III: The mean scores pathology specialists on the advantages provided to them for forensic medicine specialization

Question 10; The mean scores regarding the views and information of pathology specialists on the legal regulation that enables them to become a forensic medicine specialist with a training of two years	
	Mean ± SD
I did not know this fact.	3.16 ± 1.8
It could be among my future alternatives.	2.15 ± 1.3
Forensic pathology cannot be learned with a training of two years.	2.45 ± 1.2
I would not consider becoming a forensic medicine specialist.	4.1 ± 1.3

diseases”, “I’m doing fine”, “because it is difficult”, “I have a PhD in forensic science”, “I’m old”, “although it has common points with pathology, it is a different field of interest and I’m not interested,” “I was in forensics medicine practice during compulsory service and was not interested “; “I love my work “; “I love my field of work- I am not looking for anything else”,” “I’m not interested at all “.

Forensics Pathology Knowledge and Training

The 8th, 9th, and 12-15th questions of the survey form were about the knowledge of pathologists on forensic pathology and their approaches to pathology in forensic medicine. Some of the routine processes of forensic pathology were listed on the eighth question and the pathologists were asked to score how self-sufficient they felt in these procedures. Their perception scores about their qualifications were seen to be high for macroscopic and microscopic examination processes and low for the other procedures of the forensic autopsy (Table IV).

Statements regarding microscopic examinations in forensic autopsies being performed by forensic medicine specialists and the training duration required were provided and the subjects were asked how much they agree with these in the ninth question. The statement “1.5-2 years of training may be sufficient for pathologies other than tumors” received the highest mean score with 3.1 ± 1.34. The participation scores for the options “1.5 - 2 years of microscopy training

is sufficient for forensic medicine specialists“ and “ forensic medicine specialist should perform microscopic organ examinations of autopsies themselves” were found to be 2.79 ± 1.33 and 2.65 ± 1.45.

Whether some part of forensic medicine training should be taken into account if a forensic medicine specialist wants to specialize in pathology was the twelfth question. 47 (57%) of 83 responses given to this question were negative. 20 subjects (24%) were positive and said it should be counted for up to six months, while 10 (12%) said up to 18 months and 5 (6%) said up to 2 years.

The next three questions were about “in what kind of system” they can provide the maximum contribution regarding pathology training in education of forensic medicine specialists:

They were asked for their opinions about the place and type of the training, by giving options on the thirteenth question. Of 79 subjects who responded, 42 (53%) expressed the opinion “forensic pathology residents should be required to be trained at pathology departments, but to have a special program”. The options “They should come to our department for a long-term rotation and should work like the other research assistants” and “This training should be given in autopsy centers of forensic medicine. Pathology specialists should go there and provide training” were marked by 23 (29.1%), and 14 (17.7%) people respectively.

Table IV: The answers given to the question “Some of the stages of a forensic autopsy are listed below. Grade your possible adequacy in each of these stages currently as someone working in pathology” (1: Completely inadequate, 5: Completely adequate). High scores refer to the participant perceiving his/her adequacy for the related process to be high

Question 8; The scores of the participants about their perceptions regarding their adequacy for the various stages of a forensic autopsy	
The microscopic examination of the organs	4.39±0.79
The evaluation of the pathology report belonging to the microscopic examination	4.35±0.96
The macroscopic examination of the organs	4.29±0.78
The dissection of the body cavities and organs	3.96±0.94
The outer examination of the deceased	3.52±1.05
Evaluation of the medical information belonging to the event before the autopsy	3.45±1.11
Classification of the outer traumatic wounds	3.07±1.17
Determination of the medical identity of the deceased	2.83±1.22
Collecting the outer physical and biological evidence	2,54±1.27
Estimating the approximate time of death	2.34±1.16
The evaluation of the forensic information belonging to the event before the autopsy	2.23±1.17
The analysis of the wound patterns and the weapon/methods used	2.12±1.06
Evaluation of the forensic toxicological examination results	2.00±1.13
Evaluation of the ballistic examination results	1.53±0.91

80% of the participants responded to fourteenth question where the necessary factors for their contribution in such training were asked and the most commonly chosen response was “to be interested”(Figure 3).

74 participants responded to the fifteenth question as “If you have to suggest prior conditions for the pathology training in forensic medicine, which one would you suggest?” 50 (67%) of those who responded marked the option “Training should always be given by the pathology specialists” (Figure 4).

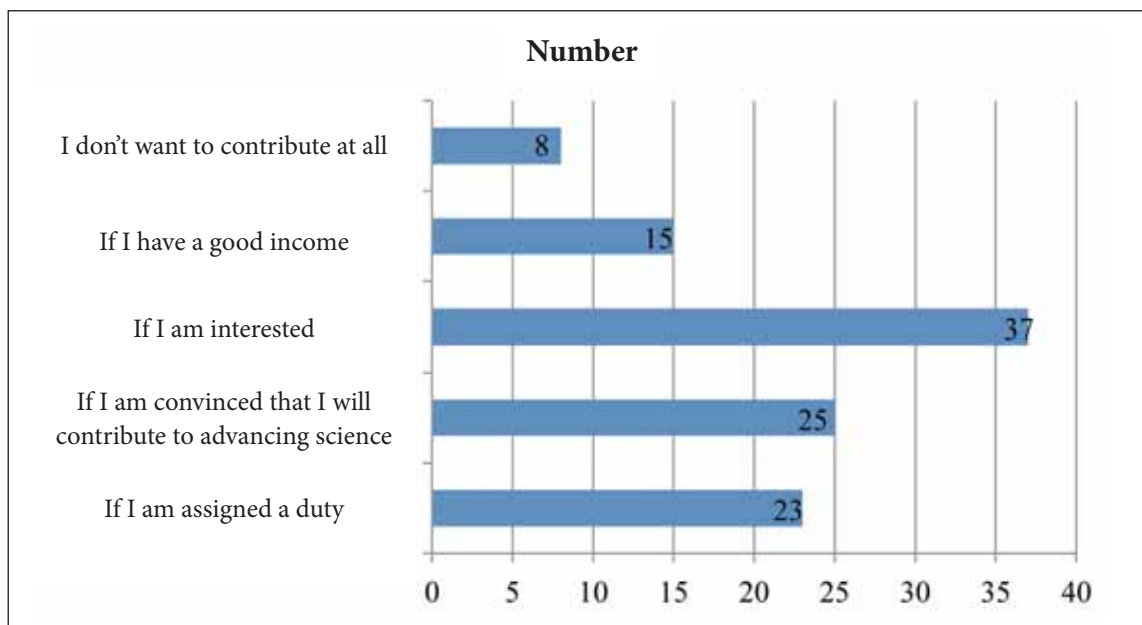


Figure 3: The answers of the participants given to the question “Which requirements must be met for you to contribute to such training?”

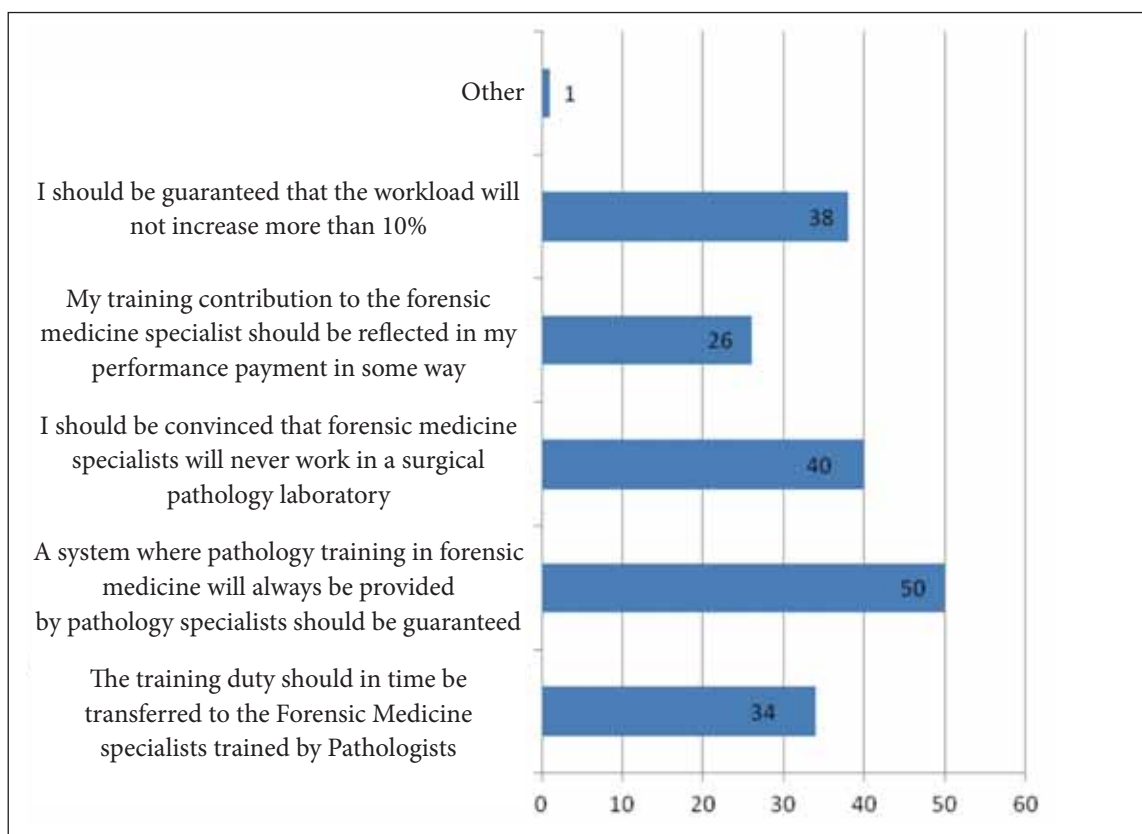


Figure 4: The answers of the participants given to the question “If you had to suggest conditions for pathology training in forensic medicine, what would you suggest?” The numbers show the number of people checking the relevant option (N).

DISCUSSION

There are two systems commonly used in the world in the conduction of the forensic autopsy services: The Anglo-Saxon system where the forensic autopsy service is conducted by pathologists and the clinical forensic medicine service is conducted by other industry professionals or by experienced physicians (1,2), and the Continental Europe system where all services including microscopy are carried out by forensic medicine specialists.

Training is shaped accordingly as part of the systems, and the forensic medicine specialization process in Continental Europe usually includes microscopy training. Forensic medicine in France is a separate area of specialization and includes 2 years of pathology, 1 year of clinical forensic medicine and 1 year of forensic psychiatry. Although it resembles our forensic medicine training with this status, it differs by including microscopy training. Similar systems are present in Continental Europe countries such as Italy, Spain and Finland (3). Pathologists perform the forensic pathology examinations in Russia and they do not go through a separate specialization process. The Russian system is somewhat similar to the Anglo Saxon system in this way. Pathology specialization in this country is through a two-year "ordinatura" or a three-year "aspirantura" model including scientific research authority (4). The training is 4 years in Sri Lanka and Tunisia; and includes pathology and clinical forensic medicine training together (5,6).

There is a fair amount of interest in forensic pathology by pathologists in the United States of America. Pathology training is desired as higher specialization by 76% of pathology research assistants and forensic pathology ranks sixth among the preferred subdisciplines with 5%. This rate is for example twice the rate of neuropathology and pediatric pathology; and six times the rate of breast pathology and gynecopathology (7). However, according to 2009 data, only 59% of the job positions in the field of forensic pathology are filled (7). Currently, the number of forensic pathologists employed in this country is not adequate (8).

The time allocated to pathology in forensic medicine specialization in our country is 6 months. No forensic medicine rotation is foreseen during pathology specialization (9). Forensic pathology is perceived as a separate area of the general pathology discipline by pathologists. This deficiency in training was directly reflected in the views of the participants. Our participants believed that a separate training was required for forensic pathology practice and their response scores for expressions

stating pathology specialists can provide this service are low. Forensic pathology being carried out by pathology specialists is the essence of the Anglo-Saxon system but has not found much support (3). The number of pathologists with forensic medicine expertise (or PhD) in our country is 12 and most of them are unable to work in this field. More importantly, the percentage of pathologists who said they had no interest in legal or medical autopsies was 72%. Given the increase in the number of forensic medicine specialists in the field together with this indifference in pathologists, the continuation of the current system of forensic autopsy services being carried out by forensic medicine specialists can be predicted. In this case, developing pathology qualifications within forensic medicine specialization to at least bring the system closer to the Continental European system can be considered one of the solutions. The steps taken in this direction from time to time were unable to ensure the desired results. The practice of demonstrating important cases to forensic medicine residents with multi-headed microscopes in the Forensic Morgue Specialization Department currently continues.

Forensic autopsies have a different form of implementation than medical autopsies and no microscopic examination is performed in a significant number of trauma autopsies. Molina et al. reported that the result of histopathological examination changed the result only in one of 189 forensic autopsy cases. No change was made in the decision of 'natural death' that had been reported as the manner of death in this single case, either (10). Most of the pathology problems encountered in forensic autopsy where microscopic examination is conducted are degenerative processes, inflammatory reactions or related to wound healing. A significant number of deaths are due to cardiovascular insufficiency (11). In fact, it is discussed whether the microscopic examination in forensic autopsies is essential or a just increases cost and effort in vain (10). Indeed, most forensic autopsy cases have mild and insignificant findings on microscopic examination. In this respect, perhaps, the disadvantage of this system where the forensic medicine specialist is kept separate from the pathology specialist may not be as large as expected during the execution of the service. Microscopy training being integrated in the forensic medicine specialization training, similar to the system in 'Continental Europe', and the possibility of a training module where the basic lesions can be identified in 1.5-2 years should be discussed in the pathology community.

Whatever the system to be implemented and the authorization is, microscopy training should be a part of the training

of a forensic medicine resident. Pathology training provides an integrated logic regarding pathogenesis. It should be taken into account that microscopy training will also guide macroscopic examination. This also paves the way for more satisfactory scientific studies. This will continue until technological advances in medicine (virtual autopsy, molecular medicine, etc.), create a comprehensive alternative. According to King, although traditional gross necropsy can still provide an effective routine service, it is a preliminary phase with limited research capacity that stimulates knowledge rather than being a fundamental methodology (12). The approaches of the participants to the pathology training in forensic medicine specialization training will be examined after this point of the article.

The mean scores regarding the statements about forensic medicine specialists performing the microscopic examination on their own and the necessary training for this being 1.5 to 2 years were not very high and the highest mean score was 3.1 ± 1.34 . There was also a low percentage of subjects that said they might consider providing support for pathology training in forensic medicine. Of the subjects who answered the relevant question, 78% said they might consider providing such support if they had an interest in the subject or they could contribute to scientific development. The rate of those who suggest the training should always be provided by pathologists was higher than those who reported that this duty might be transferred to forensic medicine specialists (67% and 46% respectively, Figure 4). "Gradual transfer" can be considered as a more appropriate solution due to the general lack of interest reflected in our survey results.

Another issue that should be discussed is that 82.3% of the participants felt their own department should be the one to provide pathology training during forensic medicine specialization. A short-term program implemented in the surgical pathology section may ensure enrichment of training but it is impossible to give the whole service in pathology departments of today as they almost never perform a hospital autopsy and focus on surgical pathology or cytology materials. To establish a system in which post-mortem pathology training can be given in departments where forensic autopsy is performed would be more effective.

The fear of forensic medicine specialists opening a surgical pathology laboratory was frequently stated and this interesting result was important source of the negative views of pathologists. This concern is not very compatible with the reality in terms of the authorization derived from the diploma as well as the intention of the forensic medicine com-

munity. It is not possible for forensic medicine specialists who will not recognize any of the tumors and will not even be able to perform routine services such as vaginal smears to provide clinical pathology services.

The remaining two questions of the survey are mostly about an argument discussed in the forensic medicine community. Accordingly, "pathology specialists receiving the title of forensic medicine specialist with two-year training according to the current medical specialization regulations both leads to an injustice and is not appropriate in terms of the adequacy of the training". The answers given to the two related questions show that the pathology specialists and research assistants are not interested in forensic medicine specialization even after receiving this information. Even if we do not consider the answers of the physicians who reported not previously knowing this issue, all answers given to the question seem to be consistent with the lack of interest in forensic medicine practice. When we take into account that only one year was sufficient for many years and that this right was still not used by any of the pathology specialists, the lack of interest in forensic medicine can be seen more clearly. In this regard, it is foreseeable that the mentioned regulation will not lead to a change in the number of the pathology specialists applying for forensic medicine specialization in the medium term. On the other hand, physicians working in the field of pathology either totally reject forensic medicine specialists specializing in pathology by having a similar duration considered in this way, or suggest a short time such as 6 months. Even this 6-month period will not be meaningful without an adequate pathology rotation and qualification integrated into forensic medicine specialization.

A limitation of our study is receiving answers only from 14% of the physicians that received the survey forms. The response rate declined further after the ninth question that required reading a long text. On the other hand, we believe that the response rate is sufficient to provide initial data in a subject in which pathologists are not interested as we demonstrated with our findings.

Our study group* recommends the professional organizations related to forensic medicine and pathology to meet more frequently. Forensic pathology section to be opened in the National Pathology Congresses will be useful because it will help in the medium term, as well as create awareness towards forensics medicine within the pathologists. Pathologists seeing and recognizing the pathology except tumors should be provided through short courses with the support of the Ministry of Justice Institute of Forensic Medicine which currently carries out the most of the

autopsies performed in Turkey. Pathology specialists who are interested in carrying out the forensic autopsy and pathology services should be guided to this field and, more importantly, training modules should be developed at forensic autopsy units to enable forensic medicine specialists perform post-mortem microscopy. These modules should allow the training of the pathology research assistants as well. Developing a system where macroscopic and microscopic examination can be performed by the same physician group is not as difficult and far away as it may seem.

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