Évaluation d'une intervention pédagogique post-graduée sur la responsabilité médicale destinée aux pathologistes en formation

Evaluating a postgraduate teaching intervention among pathology trainees on medical liability

Mona Mlika[1], Mehdi Ben Khelil[2], Aschraf Chadli-Debbiche[3], Chadli Dziri[4], Faouzi Mezni[1]

1-Hôpital Abderrahmen Mami- Ariana/ Faculté de Médecine de Tunis
2- Hôpital Charles Nicolle de Tunis/ Faculté de Médecine de Tunis
3- Hôpital Habib Thameur/ Faculté de médecine de Tunis
4- Faculté de Médecine de Tunis

RÉSUMÉ

Introduction : La pratique de l'Anatomie Pathologique est une pratique à haut risque de faute sur le plan médicolégal. Pour cette raison, les auteurs ont programmé une session de formation des résidents en Anatomie Pathologique en assoçiant des méthodes d'apprentissage traditionnelles à des méthodes d'enseignement à partir d'un cas.

Objectifs : Améliorer les connaissances des résidents concernant le système judiciaire national et de les sensibiliser aux différentes fautes médico-légales possibles dans le cadre de leur pratique quotidienne.

Méthodes : les résidents ont complété un pré-test (3 QCM et 4 cas publiés sur des fautes médicolégales incluant des pathologistes), ont assisté à des conférences concernant les standards dans la pratique de la spécialité, la responsabilité médico-légale du pathologiste et la notion de faute médico-légale ainsi que des cas casse-têtes concernant différents cas de verdicts réels publiés (différents de ceux inclus dans le pré-test), ont participé à des conférences sur la télépathologie, la pathologie moléculaire digitale et ont rempli un post-test (similaire au pré-test). Les auteurs ont évalué l'impact de cette session d'apprentissage en utilisant un questionnaire qui a été rempli par différents résidents (incluant des résidents présents durant la session d'apprentissage et des résidents absents) et ce, un mois après la session d'apprentissage. Une analyse de variance (ANOVA) a été réalisée afin de déterminer une éventuelle différence statistique entre les scores des différents résidents en fonction de leur niveau.

Résultats : nous avons objectivé une différence significative entre les pré et post tests avec une amélioration significative des résultats dans 50% des cas. 38% des résidents avaient prédit des verdicts concordants avec les verdicts réels dans le pré-test et 54% des résidents avaient prédit les mêmes verdicts que ceux prononcés dans le post-test. 76.5% des résidents avaient estimé avoir un rôle actif dans le cadre de cette formation et avaient estimé avoir atteint leurs objectifs (94.1%).

Conclusion : l'association de différentes méthodes d'apprentissage est utile dans l'apprentissage de la responsabilité médicolégale des spécialistes en Anatomie Pathologique.

Mots-clés

Faute médicale, anatomie pathologique, responsabilité médicale, pédagogie médicale

SUMMARY

Background : Pathology is a specialty of high malpractice risk. For that reason, we programmed a training session of the residents in Pathology with an association of traditional methods of learning and case-based brainstorming sessions.

Objectives : We aimed to train them about our national tort law and to make them aware of the different medicolegal errors that they have to avoid in their routine practice.

Methods : Trainees completed a pre-test (3 multiple-choice questions (MCQ) and 4 medical malpractice cases involving pathologists), attended lectures covering standards in pathology, the legal responsibility of pathologists and the notion of medical malpractice error in pathology, brainstormed about legal cases (different than in the pre-test), participated in a conference covering telepathology, digital molecular pathology and social media and finally completed a post-test (same as the pre-test). We tried to assess the impact of the session using a questionnaire that different trainees (who were present or absent in the training session) fulfilled one month after the training session. Analysis of variance (ANOVA) was conducted to determine whether there were significant differences between the scores among pathologists according to their level of training in the speciality.

Results : The results indicated that performance on the post-test significantly improved on questions associated with 2 of the 4 cases. Trainees were concordant with actual case verdicts at a rate of 38% for pre-test and 54% for post-test. Most (76.5%) students felt they had an active role in the training and felt they achieved goals (94.1%).

Conclusion : The association of different methods of learning is helpful in training pathologists about medicolegal malpractice.

Key-words

Medical malpractice, pathology, medical liability, medical Pedagogy

BACKGROUND

Since a decade, many countries have been facing many changes in their political, social and economic situation. In this context, the needs of the patients have been changing necessitating an adaptation of doctors' behaviorism. Besides, patients are more aware of their rights and are looking for any kind of medical malpractice error for financial indemnities. On the other hand, there is a huge in our tort law. In fact, there are no policies about the practice of medicine and medical malpractice in general and about pathology in particular. As a consequence, pathologists aren't aware of their responsibilities and their rights and they aren't protected enough, especially in such a context. In order, to improve the knowledge of the Pathologists about the tort law, we performed one session of training based on conferences and case-based brainstorming session.

METHODS

Sample size

Eighteen residents were enrolled in this study performed during 2017. They were all contacted through their pathology Department chairs.

Concerning the impact test, 16 residents were randomly contacted independently from their presence to the training session.

Organization of the training session

We performed a session of training about the medical responsibility of pathologists. At the onset, all the participants fulfilled a pre-test.

We presented to the trainees conferences about the standards in pathology, the legal responsibility of pathologists, the notion of medical malpractice error in pathology and a session of brainstorming about cases with jury verdicts that were published in the lexis-Nexis database. These cases were different from those mentioned in the pre-test. After the session of brainstorming, we presented a conference about the new challenges of the pathologists including telepathology, digital molecular pathology and social media. The program of the session of training is mentioned in table 1.

After the session, the trainees were asked to fulfill a post test.

The post test contained the same questions as the pre-test and a feed-back concerning the evaluation of the pedagogical methods of training used, the global atmosphere of learning, the participation of the trainees and the degree of achievement of the trainees' goals.

Table 1: training session of the medico-legal responsibility of the pathologist

Coordination : Pr Faouzi Mezni, Pr Achraf Chadli-Debbiche, Pr Ag Mouna Mlika, Dr Mehdi Ben Khelil

14h00-14h10 : Introduction and pre-test	**Pr A Chadli- Debbiche**
14h10-14h30 : Standards of care in pathology	**Dr M Ben Khelil**
14h40-15h20 : Medico-legal responsibility of the pathologist	**Pr Ag M Mlika**
15h20-15h40 : The medico-legal error in pathology	**Pr Ag M Mlika**
Break	
16h - 16h50 : Brainstorming : Discussion of cases with jury verdicts	**Pr Ag M Mlika, Dr M Ben Khelil**
16h50 - 17h00 : New challenges : Telepathology, digital pathology, social media	**Pr F Mezni, Pr Ag M Mlika**
Feed-back and post-test	

Evaluation of the impact of the training session

In order to evaluate the impact of the session of training, we contacted, randomly 15 residents after one month. Nine trainees attended the session of training and 6 residents didn't attend the session. All the residents were asked to fulfill a questionnaire and we tried to compare the scores of the different trainees

Questionnaires

Pre-test and post-test :

The pre-test contained 3 multiple-choice questions (MCQ) and 4 medical malpractice cases involving pathologists. Two cases were gleaned form the legal literature (lexis-nexis, www.lexis.com, New York : accessed 2012). We used the key-words : medical malpractice and pathologist. One case was published by an attorney's organization and the last case was published by the Verdict report Volume 24, issue 6. These cases were chosen because

they seemed to us as the best public source of detailed medical malpractice cases that are accessible and represent the most reliable tort law signal to physicians. Besides, no similar database exists in our country. The pre-test was available through this link : https://goo.gl/forms/PBzfzXFXyenu38iB2.

The questionnaire assessing the impact of the training session

The test contained 1 yes/no question, 1 MCQ and 3 judged cases. Two cases were different from those mentionned in the pre-test and the brainstorming session and one case was discussed during the brainstorming session.

Coding

Pre and post-tests : The MCQ were coded as true or false. Cases 2 and 3 contained one particular MCQ. In fact, respondents were asked to evaluate the defendant pathologist's care on a Likert scale (A = Correct; B = Most likely correct; C = Can't tell; D = Not correct; E = Most likely not correct). "Correct" and "Most likely correct" were merged together. "Most likely not correct" and "Not correct" were also combined. The number of "Can't tell" responses was always coded as the wrong answer.

The last questions of the four cases were related to the concordance with the jury verdicts. Respondents were asked to predict actual jury verdict, and responses were coded to indicate the respondent's concordance with actual jury verdicts.

Impact test : The MCQ were coded as true or false. The three cases contained only MCQ and were coded also as true or false. In order to assess the reproducibility of the coding of the impact tests, two different collaborators corrected blindly and separately the tests

METHODOLOGY

Analysis of variance (ANOVA) was conducted to determine whether there were significant differences between the scores among pathologists according to their level of training in the specialty.

Non parametric tests were used to compare the means of the students in the pre-tests and the post-tests. Besides, non-parametric tests were used to compare the means of the students who assisted to the training session and those who didn't. A significant difference was assessed for $p<0.05$.

The concordance coefficient kappa was calculated to evaluate the reproducibility of the scores of impact questionnaires by both collaborators. The concordance was interpreted according to table 2. The PSPP 0.8.1 software version was used.

Institutional Review Board approval: The authors obtained the approval of their institution board review

Table 2 : Concordance Kappa coefficient

Reproducibility	Kappa
Very good	>0.81
Good	0.61-0.80
Medium	0.41-0.60
Bad	0.21-0.40
Very bad	0.0-0.20
Too bad	<0

RESULTS

From twenty-five trainees doing their internship in the different departments of Pathology in Tunis, eighteen were present and enrolled in this study. The response rate was estimated to 72%. Six trainees were in their fourth year of training. Three trainees were in the third year of training. Three trainees were in the second year of training. Six trainees were in the first year of training. All the residents improved their percentage of good answers in all questions except in the 2 first casess. The first question of the first case was about the nature of the liability engaged by the pathologist (civil, criminal or disciplinary). The second question concerned their appreciation of the pathologist's behavior in the second case. The improvement in the percentage of good answers is represented in table 3.

The concodance with the verdicts was observed in 38% of the cases in the pre-tests and in 54% of the cases in the post test.

The mean scores of the pre-tests and post-tests were estimated respectively to 7.1 and 9.556. There was a significant difference between the scores of the pre and post tests of the students ($p<0.01$) (Table 4). There was no impact of the training level on the pre-test scores ($p<0.42$) (Table 5).

Concerning the impact of the training at one month, 6 residents were absent in our session of training and 9 residents were present. The concordance with the verdicts was observed in 42% in the group of the residents who were absent and 53% in the group of residents who were present in the training session.

Table 3 : The percentages of good answers in the pre-test and post-test

Questions	Pre-test	Post-test
1	95%	100%
2	60%	94.1%
3	100%	94%
	60%	64.7%
	Case 1	
1	45%	35.3%
2	25%	58.8%
3	40%	76.5%
4	50%	100%
5	50%	76.5%
	Case 2	
1	75%	58.8%
2	55%	64.7%
	Case 3	
1	10%	17.6%
2	35%	41.2%
	Case 4	
1	25%	35.3%
2	30%	41.2%

Table 4 : Comparison of the pre-test and post-test scores :

Post-test- pre-test	Number
Negative difference	3
Positive difference	14
P	<0.01

Table 5 : The interaction between the residents' training level and their pre-test scores

Level	**Number**	**Mean**	**95% Confidence interval**
1	5	6.4	[4.73-8.07]
2	4	6	[3.75-8.25]
3	3	8.67	[7.23-10.1]
4	8	7.5	[4.82-10.18]
	P<0.42		

There was a significant difference between the scores of the residents who were present in the training session and those who were absent ($p<0.05$). The mean score was estimated to 4.33/10 among the residents who weren't present versus 6.25/10 in the group of residents who were present in the training session. Table 6 illustrates the different means and the 95% confidence intervals. The Kappa was estimated to 0.9 and highlighted the very good reproducibility of the scoring system.

Concerning the feedback of the students, all the students appreciated the general organization. 76.5% estimated that they had an active role during the learning process. 94.1% estimated that they achieved their goals. Some students appreciated this session because of the interesting topic, the pedagogical means used and the interactivity. Some students estimated that they needed more than one afternoon to deal with all the aspects of their responsibilities and asked for more cases judged in the countries in order to be aware of their context.

The detailed results of the trainees are represented in appendix 1.

Table 6 : Comparison of the impact scores between the students who assisted to the training session and those who were absent

Presence in the session	**Number**	**Mean**	**95% confidence interval**
Present	8	6.25	[5.51-6.99]
Absent	6	4.33	[3.48-5.19]
	P<0.00		

DISCUSSION

This manuscript presents a description and assessment of a medicolegal educational intervention for residents in the Pathology Department at a medical school. We describe an approach that uses a combination of didactic lectures and brainstorming discussion sessions to improve residents' knowledge of national tort law. The study uses pre- and post-testing to demonstrate the effectiveness of the program. In fact, we noticed a significant statistical difference between the pre-tests and the post-tests with better scores in post-tests. We evaluated the impact of this training session one month after the training. The major limitation of this study was the sample size. Besides, we should have contacted the residents after a longer period but we were compelled to do so because of the disponibilties of the trainees. We also tried to assess the objectivity of the coding of each students using a blind double correction with a very good reproducibility. The coefficient of reproducibility Kappa reflected a very good reproducibility between the 2 collaborators.

Students highlighted their interest in this kind of training session. In fact, the pathologists suffer from a misknowledge of the tort law. In a questionnaire-based study, Allen TC et, al interviewed 281 pathologists about the tort law. 5.7% participants have been engaged in

medicolegal issues and 2.8% were included in a jury. Less than 50% of the pathologists had a judgement concordant with the jury verdicts (1).

Our training session was centered on the definition of the medicolegal error in pathology. In fact, this definition remains unclear because it is different from the diagnostic error. According to Frable, it is difficult to distinguish an error form a diagnostic variation in pathology (2). In the majority of the cases, pathologists are judged for negligence errors which necessitate 4 major elements : a duty, a breach, a proximal cause and a damage (3). A neglecting pathologist is responsible of a medico-legal malpractice error in case of non-respect the standards of care. The latter are determined by wondering if the pathologist practiced his art with a reasonable precaution like a reasonable other pathologist who would practice in the same circumstances (4). This non respect of standards can be assessed by the experts (5). A pathologist can be pursued for a diagnostic error and experts can establish that he respected the standards. In other words, the experts can establish that a minority of pathologists were able the make the same diagnosis. According to Allen and coworkers, courts don't determine the proportion of this minority (4). Besides, the standards are difficult to establish because of the complexity of the specialty. The better knowledge of standards can protect the patients without leading the pathologists to the practice of defensive medicine (1).

The major errors pointed out in the different cases with jury verdicts. In fact, errors of patients' identification at reception are incriminated in 17% of the cases of medical malpractice (6). Among 218 cases, Troxel reported a problem of identification of the patients in 4 cases, identification of the samples in 13 cases and identification of the slides in 2 cases (7). In 2001, Epstein reported that the most frequent medical malpractice errors were recorded on breast biopsies, cutaneous biopsies, lymph node biopsies or cervical smear. The most challenging lesions in breast biopsies were in situ carcinoma versus atypical hyperplasia, melanoma in cutaneous biopsy, subtyping of lymphomas or lesions of cervical dysplasia (8, 9). According to insurance organisms, the pathology is a high risk error specialty (10). According to some professional liability insurer, the average indemnity payment for pathologists was estimated to 383,509 dollars in the USA versus 274,887 dollars for medical specialists (10). This fact induced the practice of a defensive medicine consisting in asking for more complementary special stains and immunohistochemical studies. In a study about 252 pathologists specialized in breast pathology, 60% of the participants reported that they asked for more immunohistochemical studies, 56% recommended more surgical biopsies, 84% declared that they asked for a second opinion and 15% overestimated the lesions in order to avoid facing the tort law (10).

The necessity of associating different methods of learning has been reported by some authors (11). In the training session, combining traditional methods of learning to highlight the new challenges faced by pathologists, which are the social media, the telepathology and the digital pathology, and the brainstorming session helped us to contextualize the recent knowledge (12-15).

CONCLUSION

Our study puts emphasis on the necessity of associating traditional methods of learning and case-based brainstorming session in order to improve the pathologists' knowledge about the tort law. These session have to be multiplied in order to reinforce the effect of learning and to make pathologists aware of their responsibilities in every single moment of their carreer.

-Ethics approval and consent to participate: A local ethics committee ruled that no formal ethics approval was required in this particular case. All the participants gave their verbal consent to participate to this study.

-Competing interests: The authors declare that they have no conflict of interests.

REFERENCES

1. Allen TC, Stafford M, Liang BA. Academic and trainee empirical review of cases by state of Texas physicians. Am J Clin Pathol. 2014;141(4):501–9.
2. Frable WJ. Surgical pathology - Second reviews, institutional reviews, audits, and correlations: What's out there? Error or diagnostic variation? Arch Pathol Lab Med. 2006;130(5):620–5.
3. Crowson a N. Medicolegal aspects of neoplastic dermatology. Mod Pathol. 2006;19 Suppl 2(September 2005):S148–54.
4. Allen TC. Medicolegal issues in pathology. Arch Pathol Lab Med. 2008;132(2):186–91.
5. Foucar E. The pathologist in Tortland: When is ignorance about "Med-Mal" rational, when is it unavoidable, and when is it a problem to be corrected? Am J Clin Pathol. 2014;141(4):455–8.
6. D'Angelo R, Mejabi O. Getting it right for patient safety: Specimen collection process improvement from operating room

to pathology. Am J Clin Pathol. 2016;146(1):8–17.
7. Troxel DB. Diagnostic errors in surgical pathology uncovered by a review of malpractice claims: part VI--urinary bladder and branchial cleft cyst. Int J Surg Pathol. 2001;9(3):227–9.
8. Kornstein MJ, Byrne SP. The medicolegal aspect of error in pathology: A search of jury verdicts and settlements. Arch Pathol Lab Med. 2007;131(4):615–8.
9. Epstein JI. Pathologists and the judicial process: how to avoid it. Am J Surg Pathol [Internet]. 2001;25(4):527–37. Available from: http://www.ncbi.nlm.nih.gov/pubmed/11257629
10. Reisch LM, Carney PA, Oster N V., Weaver DL, Nelson HD, Frederick PD, et al. Medical malpractice concerns and defensive medicine: A nationwide survey of breast pathologists. Am J Clin Pathol. 2015;144(6):916–22.
11. Mlika M, Hassine L Ben, Braham E, Mrabet A, Mezni F. About the association of different methods of learning in the training of medical students in a Pathology Lab. 2015;3:1149–53.
12. Roy S, Pfeifer JD, LaFramboise WA, Pantanowitz L. Molecular digital pathology: progress and potential of exchanging molecular data. Expert Rev Mol Diagn [Internet]. 2016;7159(August):1–7. Available from: http://www.ncbi.nlm.nih.gov/pubmed/27471996
13. Misialek MJ, Allen TC. You're On Social Media! So Now What? Arch Pathol Lab Med [Internet]. 2016;140(5):393–393. Available from: http://www.archivesofpathology.org/doi/10.5858/arpa.2015-0493-ED
14. Fuller MY, Allen TC. Let's have a tweetup: The case for using twitter professionally. Arch Pathol Lab Med. 2016;140(9):956–7.
15. Allen TC. Social media: Pathologists' force multiplier. Arch Pathol Lab Med. 2014;138(8):1000–1.