

Full Length Research Paper

A survey study of military medical students to autopsy in modern medical education

Miao-Xia He¹, Jian-Jun Wang¹, Zhi Zhu¹, Yang Wang¹, Li Li², Pei Zhang² and Jian-Ming Zheng^{1*}

¹Department of Pathology, Changhai Hospital, Second Military Medical University, Shanghai 200433, China.

²Second Military Medical University, Shanghai 200433, China.

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Military medical students will serve emergency in wars or natural disasters, so the autopsy teaching is an important value for their future career. To observe the military medical students' attitudes to autopsy in the modern medical education, a survey study was undertaken to observe the military medical students' attitudes to autopsy in a teaching hospital affiliated to military medical university. Qualitative data were obtained by analyzing results of interviews of 40 military medical students. Although, unpleasant and frightening sensation influenced students' feelings in the autopsies, it did not affect their appreciation of the learning value of the autopsy experience for their future career. Students identified the better understanding of anatomy and pathology and good skills for wound rescue, as a main learning benefit from the autopsy. The results support the fact that military medical students think autopsy as an essential event in the context of military medical learning, which greatly benefits their medical learning and future profession.

Key words: Autopsy, military medical student, modern medical education.

INTRODUCTION

Medical education has undergone dramatic changes over the past decade. There has been a gradual neglect of autopsy education during a progressive adaptation of modern medical curricula (Charlton, 1994; Marshall et al., 2004; Domizio and Wilkinson, 2006). Meanwhile, the overall decline in hospital autopsy rates and prevailing strict legislation in medical practice have contributed to the declining use of the autopsy as a teaching tool (Start et al., 1993; Hill and Anderson, 1996). In China, autopsy has been nearly squeezed out of the regular medical education curricula in order to accommodate increasing amount of modern medicine education during the teaching technique reform. This tendency has drawn much attention and is worrisome for both medical educators and medical students (Monkhouse and Farrell, 1999; Burge, 2003).

In literature, autopsy is a significant element in medical

education (Harris et al., 1993; Verma, 1999; Horowitz et al., 2007). It is considered to be very important in conveying appropriate knowledge and attitudes to medical students. Previous studies suggested a variety of roles of the autopsy in the medical school curriculum. These allow some insight into why the autopsy is perceived to be of value (Tazelaar et al., 1987; Conran et al., 1996; Hill and Anderson, 1991; Burton, 2003; Lempp, 2005; De Villiers and Ruhaya, 2005; McNamee et al., 2009). Military medical students (undergraduate students) will work for the military and serve emergency in war or natural disaster such as earthquake and tsunami. The autopsy teaching is a more important value for their future work. There is little observation about military medical students towards autopsy. To explore the military medical students' cognition of autopsy associated with learning in modern education in China, the present study was undertaken and observations to determine how military medical students felt in their experiences in autopsy practice, which has been used as one of the teaching strategies in pathology education within the context of the modern medical curriculum in Changhai Hospital, which is

*Corresponding author. E-mail: zzli1976@gmail.com. Tel: 86-21-81873689. Fax: 86-21-81873689.

Table 1. Groups of autopsy observation.

Group	Total student	Male	Female	Age in years	Numbers of autopsy	Questionnaire of students
Experimental						
Group 1	28	16	12	18-21	4	10
Group 2	28	13	15	18-21	4	10
Control						
Group 3	28	18	10	18-21	0	10
Group 4	28	16	12	18-21	0	10

Table 2. Questions on autopsy learning.

Advantages	Disadvantages
Did the autopsy benefit your learning? In which aspects and what ways?	How did you feel about attending autopsy?
Does the autopsy education have a role in teaching military medical students?	What did you feel about at factors influence your feelings in attending autopsy?
	Do you have any recommendations?

a teaching hospital affiliated to the second military medical university (Shanghai China),

MATERIALS AND METHODS

Autopsies in 2008 to 2009 performed by pathologists in Changhai hospital were brought into the present study. The autopsies in this context applied to all the autopsied subjects whose deaths are deemed unnatural. The practice strictly followed national and city regulations as well as, legal requirements. Military medical students from the Second Military Medical University took the pathology course in their second year of the school. In their pathology study, students began with the autopsy demonstrations followed by step-by-step learning of basic and modern pathological knowledge. Methods of delivery included lectures and case-based teaching, which covered most of the course contents of pathology. The practical application of concepts was consolidated at the autopsy demonstrations, central to this study.

In the study, no attempt was made to obtain a representative or comprehensive sample of military medical students. 108 military medical students of 2007 grade from the second military medical university were randomly assigned to the 4 groups attending 4 autopsy demonstrations in Changhai hospital mortuary. The other 4 groups military medical students of 2008 grade of the second military medical university did not attend autopsy demonstrations as control groups. All groups were divided randomly and the students entered the experiment voluntarily. In the groups participating in the autopsies, students behind a glass partition next to the autopsy room as the regulations required, observed autopsies through several television monitors linked to cameras strategically

positioned around the autopsy table. Pathologists conducting the autopsies constantly communicated with students by microphones. During the whole experiment, there was at least one of four autopsy demonstrations in each groups, students stood in the autopsy room, just next to the dissecting table and watched the entire autopsy procedure at a close distance. Occupational health and safety considerations are paramount during the autopsies. The precautions measures were taken in the autopsy room in order to protect pathologists, staff and students from infectious diseases, such as human immunodeficiency virus (HIV), tuberculosis (TB) and hepatitis B virus (HBV). After the autopsies, five students were randomly selected from each experimental group and five students were randomly selected from each of the control group to discuss with the teacher. Individuals from the selected 40 students (Table 1) were contacted from the office of the Department of Pathology of Changhai hospital and were asked to schedule an appointment for interview with a pathologist in the department. The interviews were completed within one month after the last autopsy class. The purpose of interviewing students by a pathological educator was gathering data (Table 2).

RESULTS

In this study, students were clearly motivated with the belief of benefits for their future practice as military doctors from the autopsies. All 40 students had a high expectation of autopsies whether he or she attended the autopsy classes or not. There were three aspects of

Table 3. Main answers of students about autopsy.

Advantages	Disadvantages
It is a grossly understand tool for anatomy teaching.	The autopsy is physically unpleasant and frightening.
The autopsy is a valuable adjunct to clinical practice and analysis wound condition and wound rescue in their future work.	An autopsy in human terms is a horrendous thing to do and the mortuary room is a dangerous place.
The autopsy is the epitome of problem-based learning. The autopsy teaches about the fallibility of medicine.	
It is a good way of teaching students how to correlate information from a variety of sources.	
The visual and emotive nature of the autopsy makes for a memorable learning experience.	
It's very useful to give students an idea of death generally: death and what happens to people after they die.	

students' views about autopsies (Table 3).

Advantages

Firstly, many students took the autopsies as one of the very important aspects for continuing study of anatomy, which was grossly understood as a way of anatomy teaching. They felt very interested because, when they took the anatomy course they never did the head dissection and never saw what the organs actually look-like in a cadaver. They felt that the autopsy could be used as a tool in teaching anatomy and revising some previous conceptions in anatomy. Secondly, in the autopsy class, students learn the gross appearances of diseases in pathology. They can get a more better understanding of diseases in this way than they can, just trying to learn it through a sort of theoretical exercise. The course taught students how to correlate information from a variety of sources, to look at the whole picture of a patient. Additionally, students felt that the autopsies had helped them in distinguishing between non-natural and natural causes of death and better understanding of various mechanisms of death. Moreso, students thought autopsies would help them analyze the wound condition and would be the groundwork for wound rescue in their future work.

Thirdly, students reported that the knowledge of the actual autopsy procedure and the various pathologists gave them insight into why things were done in a certain manner. The visual and emotive nature of the autopsy makes for a memorable learning. There were so many unexplained things in the medical field. They would be able to know what wrongs had been done after an autopsy and recognize the way to improve them in future as a military doctor. The puzzle-solving nature of autopsy teaching seemed to reinforce problem-based thinking and

then to think of or to postulate what causes it.

Disadvantages

The autopsy is physically unpleasant, even frightening when a human body was ripped open and organs were hanging out. Students felt uncomfortable to certain degree with the dissection process. In following autopsies, most students felt calm and began taking notes and concentrating without emotional involvement. Most students felt that all medical practitioners should attend at least one autopsy in order to appreciate the procedure.

General comments

Apparently, all 40 military medical students had a definite sense of 'looking forward' to autopsies, especially the first 20 students who did not attend the autopsy in control groups. The students were excited to see what it really looked like in the real autopsy process. Most of the students generally thought that the autopsy is a good way of teaching students how to correlate information from a variety of sources and very useful in giving students an idea of death generally. Observing the process and handling the bodies helped students dispel misconceptions about passed Also, the autopsy provides the students an opportunity to discussing medical ethics. They preferred to focus discussions about medical law and the coronial system such as the authorizations for doing this particular autopsy. Thinking about mortality, social links and circumstances surrounding the deceased person, students learnt about the processes of death that happened to people after they died. They also learnt to respect the dead and to have compassion on their relatives. In general, most students pointed out that they

realized the importance of the autopsy curriculum, especially benefiting for their future military medical task.

DISCUSSION

The autopsy has been an important part of medical education for centuries (Charlton, 1994; Marshall et al., 2004; Burge, 2003; Harris et al., 1993; Verma, 1999; Horowitz et al., 2007). However, in recent years, there has been a marked reduction in the number of hospital autopsies (Start et al., 1993; Hill and Anderson, 1996). This decline not only draws a debate on the need for medical students to learn from autopsies, but also reduces their opportunities to do so. Many medical students now graduate without ever having witnessed an autopsy (Monkhouse and Farrell, 1999). The hospital autopsy continues to decline nowadays. At the same time, histopathology in China faces serious staff shortages and increasing workload. Thus, the decreased number of autopsies and a lack of enough teaching staff makes autopsy education program nearly impractical (Oluwasola et al., 2009; Ayoub and Chow, 2008). Military medical education is to train doctors who will serve the military and emergency in war or natural disaster such as earthquake and tsunami. The autopsy teaching is a more important value for their future work. What about the autopsy of military medical education in modern education? There is little survey about military medical student to autopsy education. The present study explored military medical students' experience of their reality in autopsy curriculum.

Changhai hospital, which is a teaching hospital of the second military medical university, is in charge of part of autopsy program at Shanghai area. This exploratory study would try to provide a comprehensive summary of student thoughts on the autopsy education in military medical curriculum. The data showed those military medical students' desires and support for the inclusion of this teaching strategy in current military medical curriculum. As a teaching tool, the autopsy is a double-edged sword which benefits both student pathology learning and future professional career. This qualitative method identified similar overt uses for the autopsy in the curriculum as the previous quantitative studies (Tazelaar et al., 1987; Conran et al., 1996; Lempp, 2005; De Villiers and Ruhaya, 2005; McNamee et al., 2009). Notably, the present study reveals that medical students indeed, need autopsy programs in modern medical education, especially in military medical education. Although, unpleasant and frightening sensation influenced students' feelings in the autopsies, it did not affect their appreciation of the learning value of the autopsy. Autopsy could be used to teach students anatomy, gross anatomical pathology, clinical-pathological correlation, the fallibility of medicine, a holistic approach to medicine, medical ethics, and the death process, handling the deceased, invasive surgical procedures, wound rescue and medical law. The autopsy

fulfills these functions because of its visual nature and the system-based approach adopted by many pathologists during its execution. Specially, this study compared the military medical students attending 4 autopsies with those not attending (in the control group). The students in the control group had more motivation by autopsies; they were looking forward to the opportunity to see real autopsies and were eager to see what it really looks like in real autopsy process. They even envied their classmates who had already seen the real autopsy. In other aspects, they also thought that autopsies would be useful for their learning. Though, their statements were not specified, these 2 groups of students' perceptions for autopsies did not have a significant deviation. Through this perception, they think they will expect the next autopsy curriculum in their pathology learning.

Although, the primary aim of the autopsy education was to teach pathology, most students found it also helpful for learning anatomy. This was not unexpected, as the study cohort had not dissected a cadaver during anatomy training (Lempp, 2005; Benbow, 1991). It therefore, suggests that anatomy teaching could be incorporated at the first demonstration when students' concentration was restricted mainly to the dissection. Learning anatomy was a very important aspect for many students from autopsy. More importantly, the autopsy teaches students about pathology and the macroscopic appearances of diseases. Regarding intended learning outcomes, students felt that they had understood more about disease pathology and associated mechanisms of death through autopsies. The correlation of theory with practical application and familiarization with pathology were significant inferring learning processes. Students recognized that the autopsy had a variety of implications for their future military medical career practice such as wound rescue in emergency. Most students thought that the bodies and their relatives should be respected in the autopsy process, which was very useful for training professional ethics. Beyond overt cognitive benefits, autopsies delivered a considerable hidden thought, regarding the development of professionalism and attitudes of respect, empathy and compassion for medical career. The latent learning aspects being more 'caught than taught' were found interspersed throughout the data such as the development of resilience for future encounters with wounded and dying patients in their military medical career (Tazelaar et al., 1987; Conran et al., 1996; Lempp, 2005; De Villiers and Ruhaya, 2005; McNamee et al., 2009).

Conclusion

All military medical students involved in this study held positive attitudes towards learning of autopsies, regardless of any discomfort. Most students expressly felt the autopsy education program benefited their learning in anatomy and pathology as well as their future military

medical career. They think the autopsy have a multifactor role in providing the appropriate knowledge and attitudes needed for the practice of military medicine (Oluwasola et al., 2009; Burton and Underwood, 2007).

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