

Assessment of Interns' Knowledge on Diagnosis of Emergencies in Hemodialysed Patients before and after Training

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ABSTRACT

Introduction: It is apparent that having a good inflammation in hemodialysis indications, methods of the procedure, recognition of the complications are common mistakes in emergency and internal medicine and they are life saving for patients most of the times. It is clear that our medical students have many problems in this field (hidden curriculum). Therefore, we decided to do a study on the subject. **Methods:** During 2011, forty interns of nephrology ward enrolled in this study. They filled a questionnaire containing questions about their general hemodialysis knowledge before passing the classes. After having six one-hour classes on HD essentials, complications and emergencies, they filled the questionnaire again. The data analyzed using paired t-test and the reported Mean \pm SD $P < 0.05$ considered significant. **Results:** The interns were satisfied in all the trained aspects like general hemodialysis knowledge ($P < 0.001$), dialysis essentials ($P < 0.001$), physical examination ($P < 0.001$), AVF examination ($P < 0.001$), volume reduction ($P < 0.001$), anticoagulation ($P < 0.001$), AVF failure management ($P < 0.001$), HD complications ($P < 0.001$), device setting ($P < 0.001$), cannulation ($P < 0.001$), dialysis efficacy ($P < 0.001$) and capability of patients education ($P < 0.001$). **Conclusion:** Medical students had many problems with HD so that teaching of most essential aspects of hemodialysis can improve their knowledge which can be life saving in emergency situations.

Introduction

After designing the postgraduate branches of medicine, many weak points have been noticed in medical education.¹ Medical students spend very short time (about 15 days) in each postgraduate ward and are exposed to a great amount of information and data which are confusing. On the other hand their capability of diagnosis, management and treatment is impaired. It seems that this essential point has been forgotten.²

As a medical student or in the future as a general practitioner they must know the HD essentials emergencies and indications. Being familiar with HD devices and instruments is very important.³ Up to now there was no suitable training of HD for interns (because of lag in educational curriculum). Medical students need to be trained and we tried to mix traditional training with student based,⁴ outcome based⁵ and even patient based⁶ training. Recently problem based⁷ medical education, especially in the field of HD is suggested because end stage

renal disease and renal replacement therapy have their own priority which can solve our traditional medical education problems clinically integrated training in a way.⁸ We have to choose the positive points of these training methods and avoid their weak points according to published data.

When the importance of the HD is emphasized during morning report or other classes, this will be stimulation for improving of knowledge (stimulated based learning).⁹

Methods

Forty interns introduced to nephrology ward were enrolled in our study. Before the designed classes, interns filled a questionnaire about their points of view on their HD knowledge.

In this questionnaire we asked questions about scientific and practical points, also questions about essential, indications, equipments, complications, physical examination, arteriovenous fistula and dialysis efficacy

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were asked. Afterward, during the six sessions, necessary points were taught. Finally, after finishing the classes, similar questions were asked (using questionnaire).

The practical ability of the interns were evaluated using chi square test and comparison of questionnaires. The reported means as the Mean±SD and P< 0.05 considered significant. We used SPSS 16.0 for our purpose.

Results

We studied 40 medicine students introduced for nephrology ward. First of all a questionnaire was filled which reflected their needs and requests from nephrology ward and hemodialysis. During six sessions lasted half an hour each, most of the important points were taught and

again a questionnaire filled and the results were compared. This study showed that students were satisfied with all predicted aspects of hemodialysis education and their knowledge level about HD was improved. The aspects were: General satisfaction with knowledge of HD (P<0.001), Knowledge of HD essentials (P< 0.001), Physical examination of Uremic patients (P< 0.001), examination of arteriovenous fistula (P< 0.001), ultrafiltration (P<0.001) , anticoagulation (P< 0.001), working up of catheter or fistula failure (P< 0.001), HD complications (P< 0.001), introduction of devices (P< 0.001), cannulation (P<0.001), dialysis efficacy (P<0.001) and the ability of patients' education (P< 0.001) (Table 1). It is clear that in all studied aspects of education we had a significant improvement.

Table 1. Results before and after education.

Variable	Before Education			After Education			P
	More	Moderate	Less	More	Moderate	Less	
Satisfaction with information	16	4	0	0	22	8	<0.001
Friendly with HD essentials	14	6	0	0	23	7	<0.001
Physical exam	11	9	0	0	10	10	<0.001
AVF exam	14	6	0	0	11	9	<0.001
Information of volume reduction	14	6	0	0	11	9	<0.001
Information of anticoagulation	14	6	0	0	13	7	<0.001
Management of AVF failure	16	4	0	0	13	7	<0.001
Information of HD complications	16	4	0	0	10	10	<0.001
Information of device setting	18	2	0	0	12	8	<0.001
Information of cannulation	15	5	0	0	12	8	<0.001
Information of dialysis efficacy	19	1	0	0	13	7	<0.001
Patients education	14	6	0	0	11	9	<0.001

Discussion

Some changes have been seen in medical education since 1980. One of them is focusing on hidden educational curriculum which was not considered for a long period of time.¹⁰ Development of post graduate branches of medicine and appearance of subspecialties aggravated the problem. As a result, medical students are sometimes a bystander and cannot involve in the treatment process of the patients (especially HD patients).¹

This problem is introduced in the United States, Canada and some of the Asian countries.^{11,12}

Postgraduate branches of internal medicine like nephrology, gastroenterology, rheumatology, hematology, pulmonology and cardiology are developed in most of the countries. Unfortunately, most of the physicians are involved in their own branch and sometimes their knowledge on other fields of internal medicine is regressed.¹³

This will lead to some problems in diagnosis and treatment

and also medical education because medical students and residents who are out of the field are not involved in diagnosis and treatment process most of the time.

Procedures like endoscopy, bronchoscopy, echocardiography and hemodialysis are not medical students' or even residents' responsibility. The lag of the knowledge in these procedures, especially HD is not acceptable and sometimes it is harmful for the patients.

It is clear that HD is a life saving procedure.¹⁴

If the medical students and residents are aware of HD indications and complication more effectively, it will be better for all patients, and diagnosis or treatment process will be more suitable, especially in our country that all medical students after graduation will be sent to the faraway cities or towns for their job duty.

These physicians must work without any observation and must make essential decisions. This may lead to some problems, especially when educational programs are not suitable. The goal of this education was not the increasing

of stored memory and we tried to improve the knowledge and reduce the HD complications (Due to failure in diagnosis and treatment). During a pilot study we found that our students did not know the essentials of HD and sometimes it would be life threatening for the patients. The obtained data clarified that all interns wanted to have more information on HD process and its equipments. They mentioned that it was very interesting and existing but the information was not enough. As a result, medical students are afraid of HD and most of the time they escape from it and do not want to involve in HD process.

Every medical student must know the clinical and laboratory criteria of dialysis. They must have enough information about AV-Fistula and must know the complications relatively.¹⁵

Since our physicians are supposed to work in the hospitals that are so far away the central hospitals, the residents and medical students must know the routine drugs of HD and adjustment of the drugs dose because without this essential information, complications may be so horrible,¹⁶ especially when we have not any observation on their activities mentioned previously. In emergency conditions medical students have to recognize the essentials (hypokalemia, bleeding, uremia, fever and....) because they are essential for life saving. They must resuscitate the patients before referring them to central hospitals.¹⁷

When a medical student does not have any information and insight about HD devices, AV lines, catheters and fistulas, how can they manage the patients?

Most of the time, they are scared because of science lag which is seen more frequently in our clinics.

General practitioners, specialists and postgraduate specialist must have the ability of the patients' learning.¹⁸

Without learning of the patients we cannot achieve desirable results. Learning of the patients is possible when the students have a good pool of information.

Without learning of the patients, certainly our centers will be full of uremic patients with untreatable complications.

Conclusion

Medical students must know the essentials and principals of HD and must use their knowledge in diagnosis and treatments of emergency conditions. Because of the limitation of time, after resuscitations, referring of the patients will be safer. After the planned educations, medical student had more essential information about HD; on the other hand they were more satisfied with this education. Before education, Medical students had many remarkable faults in diagnose, management and therapy of HD patients. It is clear that in all of the planned aspects (diagnosis of the emergencies, treatment and learning of the patients), significant improvement is seen.

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