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New Methods of Teaching Ultrasound Diagnosis

ABSTRACT

At the present time new methods of teaching ultrasound diagnosis using a virtual simulator are needed to be applied. The ultrasonic simulator has many advantages in developing practical skills and thus increasing training of doctors.

Keywords: ultrasound diagnosis, virtual simulator, obstetrics, gynecology.

INTRODUCTION

Each prospective or practicing obstetrician gynecologist and hospital physician should possess practical skills of ultrasound (ultrasound). The ability to conduct independently ultrasound and interpret its data are necessary activities for any obstetrician gynecologist. It is also necessary to carry out high-quality diagnostic ultrasound in pregnancy, it is very important because in the structure of infant mortality congenital malformations of a fetus in the Russian Federation and the Republic of Sakha (Yakutia) take the second place. This means that fetal malformations are not detected or detected in the later stages of pregnancy. One of the main measures to reduce infant mortality is to improve the quality of prenatal diagnosis. Therefore, the training of doctors in obstetrics ultrasound diagnosis is becoming the most important issue in reducing the infant mortality rate in the region.

Teaching of ultrasound (ultrasound diagnostics) in the clinic has a number of difficulties:

depending on a patient and a clinic;

depending on availability of affordable pathology;

lack of rare options of ultrasound picture in gynecological pathology;

time limit;

observance of ethic principles

On the basis of the abovementioned data, there is need for new methods of teaching ultrasound diagnosis, what are the simulation technologies in obstetrics and gynecology. To implement such teaching methods the ultrasound simulator is applied that allows training and professional development in ultrasound diagnostics in realistic conditions.

The main purpose of the use of virtual simulation is to develop and enrich the skills of scanning and interpretation of ultrasound images without the participation of patients. Advantages of practical training in ultrasound using simulation technologies:

realistic training without any patient;

a variety of patients and pathologies;

independence on a clinic working hours;

no constant teacher required;
objective method of assessing skills and abilities;
students' mistakes do not lead to adverse clinical consequences.

To achieve this goal in December 2014 the ultrasound simulator "Shelli" (Germany) was obtained and has been used in the training of interns, residents and practicing physicians (Photo 1).

Ultrasound simulator "Shelli" has two torsovyyh dummy and four ultrasonic sensors Photo 2 (Convex - for study of the abdominal cavity and retroperitoneal, pelvic organs and fetal linear - for studies of surface structures, such as the study of the thyroid gland, blood vessels, a sector - used in cardiology and transvaginal gynecological research and studies of the fetus), provides a realistic B-scan image of the investigated organs and tissues of high quality resolution that accurately reflect the fact that we get during the ultrasound examination in patients in real-time. Full database ultrasound simulator "Shelli" distributed thematic modules adapted to the level of "novice" to "with experience" physician ultrasound diagnosis. Each module 12 comprises a documented clinical example of patients. The system can be upgraded with additional modules from a constantly updated library databases provided by the leading clinics of Europe. The data library supplied with the extended completion ultrasound simulator, contains more than 200 different clinical observations of patients and more than 500 reference photos.

From December 2014 till January 2015 42 students got thematic improvement on prenatal diagnosis in obstetrics (Photo 3,4)

Forms of learning:

- Lectures with presenting own videos;
- Development of practical skills in the modern ultrasound simulation training device "Shell" (transvaginal and transabdominal technique);
- Participation in the study with a physician performing a real ultrasound diagnosis;
- Review of archives of the Department with analysis of the most interesting cases of diagnostic;
- Teaching of writing a protocol and conclusions in ultrasound diagnosis;
- Analysis and discussion of the most interesting cases of diagnostic clinical cases.
- Step by step control of theoretical and practical knowledge in the learning process.

Considering the fact that in the database of this device there are various thematic modules and other specialties, training opportunities are available for doctors of various profiles, which will undoubtedly improve the quality of ultrasound diagnostics in general.

Reference:

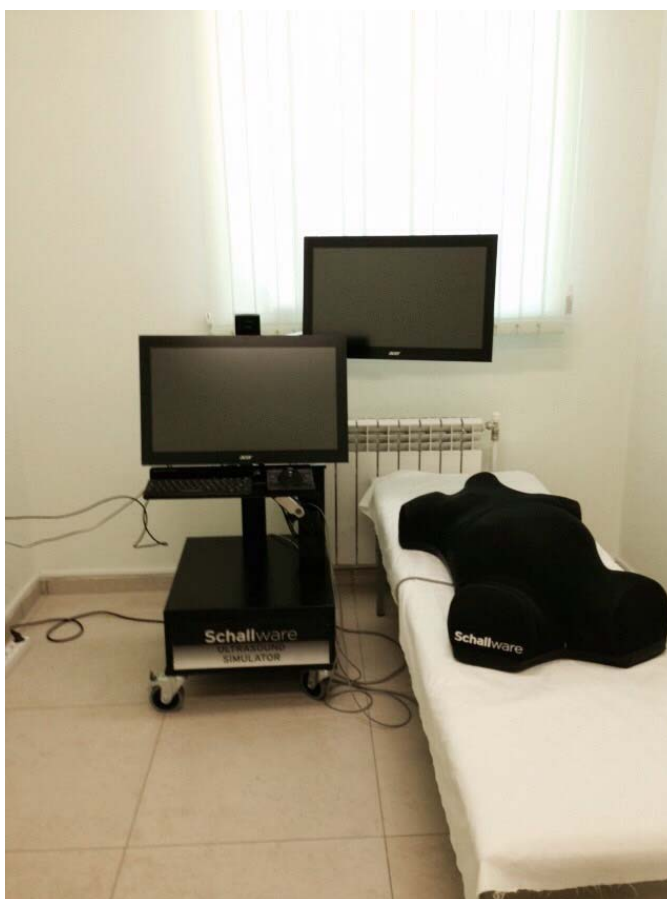
1. Materials II Congress of the Russian Society of a simulation training in medicine ROSOMED 2013

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Picture 1. The ultrasound simulator “Shell”



Picture 2. Ultrasound sensing devices



Picture 3. A training course of Douglas N.I.



Picture 4. The students during the lecture of thematic improvement “Issues of prenatal diagnostic in obstetrics