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Реферати

ОСОБЛИВОСТІ ВИКОРИСТАННЯ ИНДИВИДУАЛІЗОВАНИХ СТАНДАРТНИХ ЗНАЧЕНЬ ПОЛОЖЕНЬ РІЗЦІВ ЗА С. STAINER В УКРАЇНСЬКИХ ЮНАКІВ І ДІВЧАТ

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В роботі досліджено коректність використання рекомендованих показників положення центральних різців згідно даних, що отримані С. Stainer для українських юнаків і дівчат які мали фізіологічний прикус, максимально наближений до ортогнатичного. Цефалометричний аналіз проводився за допомогою програми ОпухСерh 3D pro, статистичний аналіз, побудова поліноміальної і регресійних моделей проводилося в MS Excell і "Statistica 6.0". Аналіз розподілу кутових та лінійних показників положення центральних різців у українських юнаків та дівчат виявив значну варіабельність по відношенню до кута ANB. Тому для проведення більш точної діагностики та планування лікування із врахування індивідуальних особливостей людини для українських юнаків та дівчат в діагностичній цефалометричній методиці С. Stainer рекомендовано використовувати розроблені прогностичні моделі визначення лінійних та кутових показників положення центральних різців верхньої та нижньої щелепи.

Ключові слова: центрльні різці, цефалометричний аналіз С. Stainer, українські юнаки та дівчата.

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ОСОБЕННОСТИ ИСПОЛЬЗОВАНИЯ ИНДИВИДУАЛИЗИРОВАННЫХ СТАНДАРТНЫХ ЗНАЧЕНИЙ ПОЛОЖЕНИЙ РЕЗЦОВ ПО С. STAINER У УКРАИНСКИХ ЮНОШЕЙ И ДЕВУШЕК

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В работе исследовано корректность использования рекомендованных показателей положения центральных резцов согласно данным, полученных С. Stainer для украинских юношей и девушек которые имели физиологический прикус, максимально приближенный к ортогнатическому. Цефалометрический анализ проводился с помощью программы ОпухСерh 3D pro, статистический анализ, построение полиномиальной и регрессионных моделей проводилось в MS Excell и "Statistica 6.0". Анализ распределения угловых и линейных показателей положения центральных резцов в украинских юношей и девушек обнаружил значительную вариабельность по отношению к углу ANB. Поэтому для проведения более точной диагностики и планирования лечения с учетом индивидуальных особенностей человека для украинских юношей и девушек в диагностической цефалометрической методике С. Stainer рекомендуется использовать разработанные прогностические модели определения линейных и угловых показателей положения центральных резцов верхней и нижней челюсти.

Ключевые слова: центральные резцы, цефалометрический анализ С. Stainer, украинские юноши и девушки.

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NEWEST APPROACHES TO THE DIAGNOSIS OF HYPERPLASTIC PROCESSES IN GYNECOLOGY

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The efficacy of elastography as an additional diagnostic method in the ultrasound examination of the pelvic organs in patients with hyperplastic processes of the uterus and endometrium was studied. 75 women of reproductive age from 24 to 40 years with hyperplastic processes of the uterus and endometrium were examined. Of these, 20 women had diffuse-nodal, diffuse or nodal forms of uterine fibroids, 15 – endometrial hyperplasia, 17 – uterine polyps, 23 –adenomyosis. General clinical studies, ultrasound of the pelvic organs with elastography using General Electric Voluson E8 ultrasound apparatus were performed. At suspicion of an atypical etiology of processes, the histopathological study was carried out. It was shown that ultrasound elastography was an additional method of examination and allowed to differentiate hyperplastic processes of the endometrium from oncologic processes and to estimate the depth of invasion process, clarified the diagnosis of the myometrium condition in adenomyosis with clear verification of invasion sites. Verified the morphological etiology of uterine polyps. Diagnosed the condition of nodal diffuse proliferation in uterine leiomyoma to monitor conservative management and treatment.

Key words: elastography, proliferative processes, adenomyosis, leiomyoma, polyp.

The work is a fragment of the research project "Improving the monitoring of obstetric care in idiopathic miscarriage", state registration No. 0117U001080.

Hyperplastic processes account for a significant percentage of the pelvic organ pathology, the prevalence and frequency of which depends on many factors: neuroendocrine, immune, genetic, age-related, and adaptive [1, 2, 3, 4, 7, 8, 10, 11, 12]. In particular, it depends on: apoptosis processes, molecular genetic disorders, endodermal tissue growth factor, angiopoietin, cytokines [9, 12]. They are one of the causes of loss of reproductive function and reduced efficiency of women aged 34– 45 years [1, 2]. The urgency of the problem of hyperplastic process diagnosis is undeniable, as it is due to the high risk of malignancy. Diagnosis of these processes always has a comprehensive approach, taking into account

clinical, laboratory and instrumental research methods [1, 2, 5]. Today, ultrasound elastography is one of the most modern areas of ultrasound diagnostics, which is developing both in the technological direction and in application in daily medical practice [5]. Unfortunately, there are currently no international protocols for the use of elastography in gynecological practice, unlike such already available protocols for elastography of the liver and mammary glands.

The purpose of the study was to investigate the effectiveness of elastography as an additional diagnostic method in the ultrasound examination of the pelvic organs in patients with hyperplastic processes of the uterus and endometrium.

Materials and methods. 75 women of reproductive age from 24 to 40 years with hyperplastic processes of the uterus and endometrium were examined. Of these, 20 women had diffuse-nodal, nodal forms of uterine fibroids, 15 – endometrial hyperplasia, 17 – uterine polyps, 23 –adenomyosis. The study was carried out in accordance with the basic standards of the GCP (1996), the European Convention on Human Rights and Biomedicine of 04.04.1997, the Declaration of Helsinki of the World Medical Association on the Ethical Principles for Medical Research Involving Human Subjects (1964-2008), Order of the Ministry of Health of Ukraine No. 690 of 23.09.2009. General clinical studies, ultrasound of the pelvic organs with elastography using General Electric Voluson E8 ultrasound apparatus were performed on the basis of the "DV" medical center. At suspicion of an atypical etiology of processes, the histopathological study was carried out. Ultrasound elastography is an additional diagnostic method to B2 mode, which evaluates the mechanical properties of tissues [5]. Therefore, it is possible to visually and virtually additionally palpate the examined organ.

It is impossible to carry out the examination without knowing its physical basis. Elasticity is the ability to resist tissue deformation. Accordingly, at the force impact, the tissue tries to return to the previous position, so the elasticity of the tissues is directly proportional to the force impulse and inversely proportional to the pressure difference [5, 6]. It is quantitatively determined by the elongated method, which describes the mechanical tissue according to the formula of the English scientist Robert Hooke, proposed in 1676. $E \text{ (kPa)} = \sigma / \varepsilon = (F/S) / (\Delta l / l_0)$. The main principle of elastography is mechanical irritation of the tissue, after which the device monitors the tissue response and the constructs the image (Fig. 1).

In gynecology, strain elastography is used as a non-invasive method of qualitative assessment of elasticity [3, 4]. Advantages of strain elastography: real-time visualization, availability of computing capabilities during the procedure. In order to quantify the qualitative method, elastography indices from 0-4 and a color mapping scale were used, which represented the nature of rigidity on a 5-scores system (fig. 1).

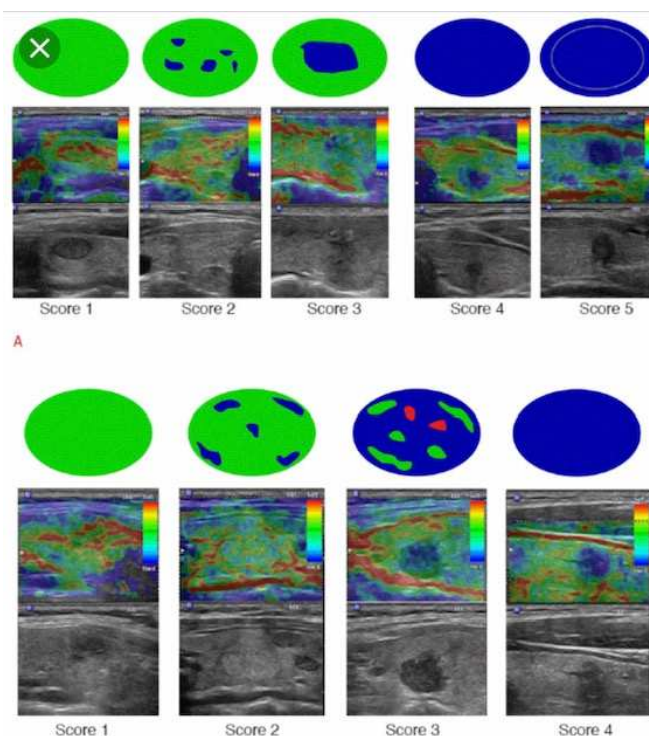


Fig. 1. An example of elastography indices on a 5-scores system (top row) and colour flow imaging scale (bottom row).

clearly contoured (fig. 2 c, d). The elastography index of fibromatous nodes is 1, while in patients without changes in the myometrium this index is 2.

Regardless of the process localization, malignancy is characterized by a high accumulation of tissue rigidity with a high coefficient of deformation, and the color image is in the range of intense blue.

Results of the study and their discussion.

In 20 women with diffuse, nodal and diffuse-nodal uterine fibroids, we performed ultrasound diagnosis of the pelvic organs using elastography. In this study, it was found that diffuse, nodal and diffuse-nodal leiomyomas are characterized by a blue-green-red type of imaging, which indicated benign etiology of the process. The myometrium density in leiomyomas was higher than in the unchanged myometrium (fig. 2 a, b). It should be noted that the benign process of the myometrium was characterized by a blue-green-red type of imaging, and the elastography index is 2, while in patients with leiomyomas the elastography index was fixed as 1. Fibromatous nodes are elastographically harder than a normal myometrium and are

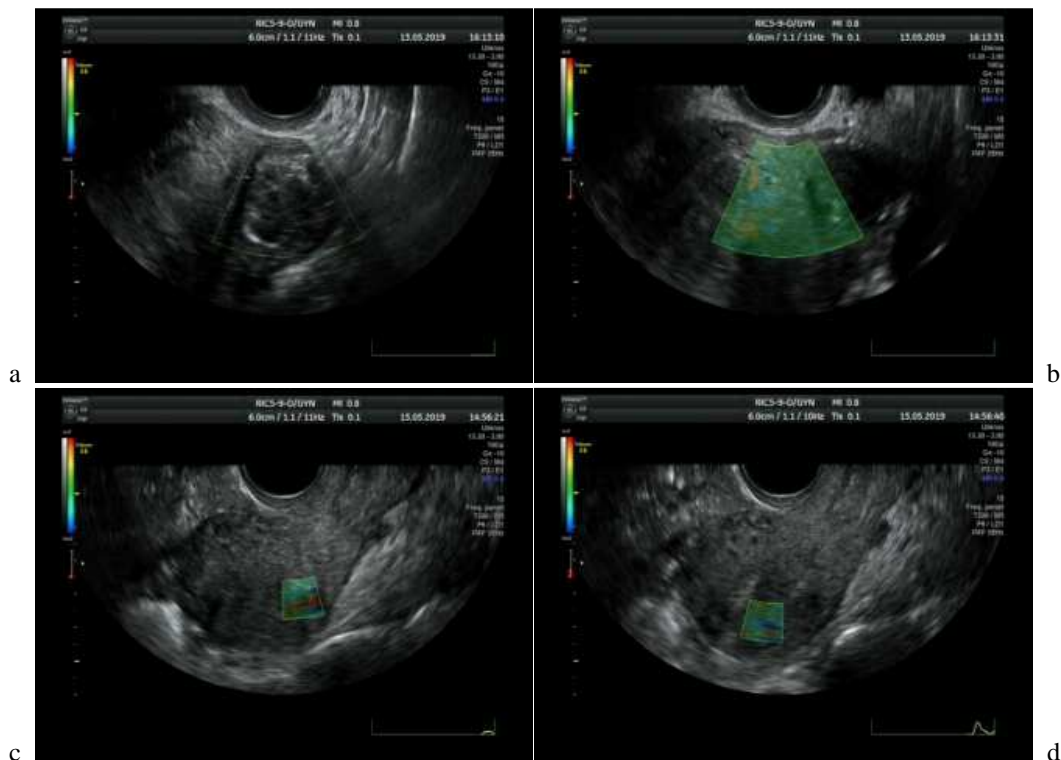


Fig. 2. a, b – elastography of patient K. with leiomyoma, a – changes in density, b – characteristic blue-green-red type of imaging; c, d – elastography index of fibromatous nodes in patient M., c – changes in density, d – changes in color.

Ultrasound examination of the pelvic organs with elastography in 23 patients with adenomyosis showed that the myometrium structure in adenomyosis is less dense than the structure of the normal myometrium. Thus, in adenomyosis, the elastography index was in the range of 3-5, which indicates a decrease in the myometrium density. Whereas an unchanged myometrium is characterized by an index of 2. For all 23 examined women with adenomyosis, a blue-red-green type of imaging was diagnosed, which indicates the absence of a tendency to degeneration (fig. 3 a, b).

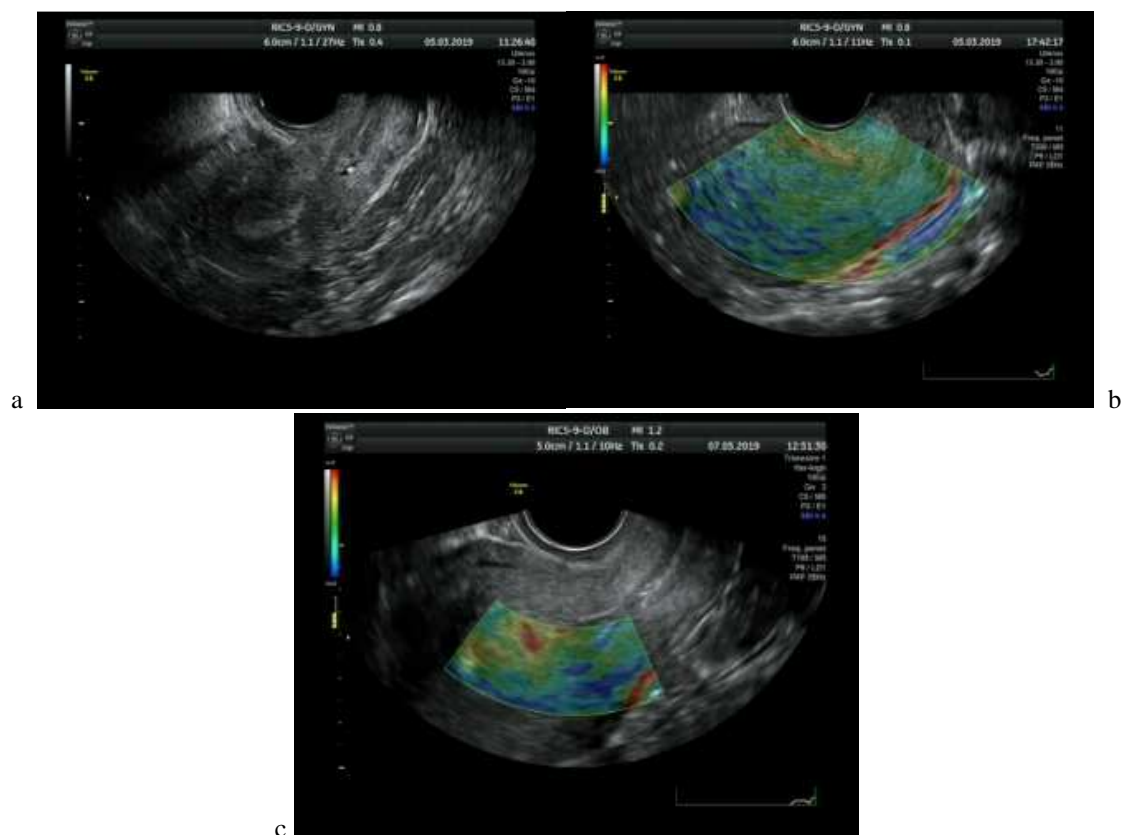


Fig.3. a, b – elastography of the endometrium of patient A. with adenomyosis without a tendency to atypical degeneration; c – elastography of the endometrium of patient H. with atypical hyperplasia.

In addition to the studies described above, we also examined 15 women with endometrial hyperplasia. It is shown that in normal endometrial hyperplasia without a tendency to atypical degeneration, the elastography index is 3-5 and has a blue-green-red type of imaging. In atypical endometrial hyperplasia, the elastography index decreases to 1-2, as well as the characteristic blue type of imaging (fig. 3 c).

After the diagnostic measures, patients with elastography index 1-2 were referred for histopathological examination of the endometrium, the results of which confirmed the process atypia.

When examining 15 women with endometrial polyps, it was found that uterine polyps are characterized by a blue-green-red type of imaging (fig. 4 a, b). The elastography index of polyps was 3-5. When diagnosing high density polyps with an elastography index of 1-2, a blue type of imaging was recorded. Such patients were referred for histopathological examination, which confirmed the atypia of morphological changes. Benign changes are softer than the structure of the normal endometrium. Polyps of benign origin are characterized by a blue-red-green type of imaging, elastography index is 3-5.

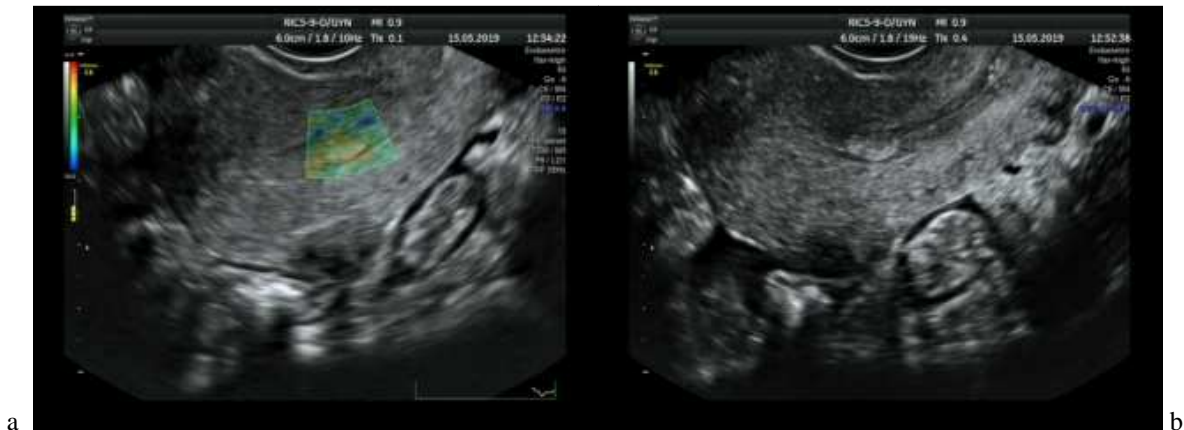


Fig. 4. a, b – elastography of patient A. with endometrial polyps, a – characteristic blue type of imaging, b – increased density of polyps.

The relevance of the diagnosis of endometrial pathology, in particular hyperproliferative processes, is primarily due to the high risk of their degeneration into malignant neoplasms and a steady tendency to increase in the incidence of this pathology, which according to [3, 4, 13] is 10-12% among women of perimenopausal age.

Our comparative studies in various pathological processes such as leiomyoma, adenomyosis, endometrial hyperplasia, endometrial polyps have shown that endometrial tissues have different elastography index and different color. For example, patients in whom the density of endometrial polyps was associated with an index of 1-2 had a characteristic blue type of imaging. In patients with normal endometrial hyperplasia, the elasticity index was in the range of 3-5, whereas in atypical hyperplasia, the elasticity index varied and was 1-2. According to [1, 2], early diagnosis of endometrial hyperplastic processes is important both for the choice of treatment therapy and for the prevention of cancer. Sonoelastographic studies of patients with breast cancer performed [10] before treatment and after chemotherapy showed a significant reduction in the coefficient of deformation of breast tissue. Studies carried by the authors [8,10] also confirm our results and suggest that elastography can potentially be used as an early prognosis for the diagnosis and treatment of pathological processes.

Thus, our studies using ultrasound diagnostics with elastography have shown the prospects for the use of this method in gynecology, especially in hyperplastic processes.

Conclusion

Ultrasound elastography is an additional method of examination and allows to differentiate hyperplastic processes of the endometrium from oncological processes and to assess the depth of invasion. It estimates the depth of invasion process, clarified the diagnosis of the myometrium condition in adenomyosis with clear verification of invasion sites. Verified the morphological etiology of uterine polyps. Diagnosed the condition of nodal diffuse proliferation in uterine leiomyoma to monitor conservative management and treatment.

Prospects for further research. In order to improve diagnostics, it is planned to perform elastography of female genital organs with other pathological processes in the future.

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Реферати

НОВІ ПІДХОДИ ДО ДІАГНОСТИКИ ГІПЕРПЛАСТИЧНИХ ПРОЦЕСІВ У ГІНЕКОЛОГІЇ

Дорошенко-Кравчук М.В.

Вивчали ефективність застосування еластографії в якості додаткового методу діагностики при проведенні УЗД дослідження органів малого таза у пацієнок з гіперпластичними процесами матки і ендометрія. Обстежено 75 жінок репродуктивного віку від 24 до 40 років з гіперпластичними процесами матки і ендометрія. З них 20 жінок з дифузно-вузловий, дифузійної та вузловою формою міоми матки, 15-з гіперплазією ендометрія, 17-з поліпами ендометрія, 23 з аденоміозом. Проведено загальні клінічні дослідження, УЗД органів малого таза з використанням еластографії за допомогою УЗД апарату General Electric Voluson E8. При підозрі на атипичну етіологію процесів проводилися патогістологічне дослідження. Показано, що ультразвукова еластографія є додатковим методом обстеження і дозволяє диференціювати гіперпластичні процеси ендометрія від онкопроцесу і дає можливість оцінити глибину інвазії процесу, уточнює діагностику стану міометрія при аденоміозе з чіткою верифікацією ділянок проростання. Верифікує морфологічну етіологію поліпів ендометрія. Діагностує стан вузлових і дифузних розростань при лейомиомі матки для моніторингу консервативного ведення і лікування.

Ключові слова: еластографія, проліферативні процеси, ендометріоз, лейомиома, поліп.

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НОВЫЕ ПОДХОДЫ К ДИАГНОСТИКЕ ГИПЕРПЛАСТИЧЕСКИХ ПРОЦЕССОВ В ГИНЕКОЛОГИИ

Дорошенко-Кравчук М.В.

Изучали эффективность применения эластографии в качестве дополнительного метода диагностики при проведении УЗИ исследования органов малого таза у пациенток с гиперпластическими процессами матки и эндометрия. Обследовано 75 женщин репродуктивного возраста от 24 до 40 лет с гиперпластическими процессами матки и эндометрия. Из них 20 женщин с диффузно-узловой, диффузной и узловой формой миомы матки, 15-с гиперплазией эндометрия, 17-с полипами эндометрия, 23 с аденомиозом. Проведено общие клинические исследования, УЗИ органов малого таза с использованием эластографии с помощью УЗИ аппарата General Electric Voluson E8. При подозрении на атипичную этиологию процессов проводились патогистологическое исследования. Показано, что ультразвуковая эластография является дополнительным методом обследования и позволяет дифференцировать гиперпластические процессы эндометрия от онкопроцессов и дает возможность оценить глубину инвазии процесса, уточняет диагностику состояния миометрия при аденомиозе с четкой верификацией участков прорастания. Верифицирует морфологическую этиологию полипов эндометрия. Диагностирует состояние узловых и диффузных разрастаний при лейомиоме матки для мониторинга консервативного ведения и лечения.

Ключевые слова: эластография, пролиферативные процессы, эндометриоз, лейомиома, полип.

Рецензент Ліхачов В.К.