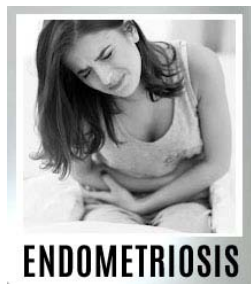


ULTRASOUND DIAGNOSTICS OF ENDOMETRIOMA

ENDOMETRIOSIS REVIEW 2023: FROM ESSENTIALS TO DIAGNOSTIC ADVANCEMENTS

By: Dr. Robert L. Bard | © November, 2023

According to the World Health Organization, Endometriosis affects roughly 10% (190 million) of reproductive age women and girls globally. It is a chronic disorder that can result in life-disrupting pain during menstrual periods, sexual activity and urination. Currently, there remains no known cure for endometriosis, whereby treatment is usually aimed at managing its known symptoms. One objective of the medical community is to conduct early diagnosis and research continues to pursue effective treatments. [1]

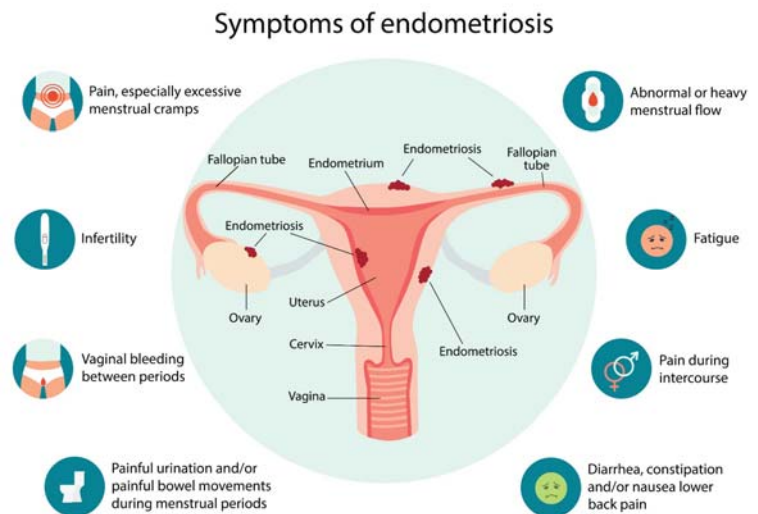


Endometriosis starts in the endometrium with abnormal cellular proliferation. Through the use of 3D Ultrasound, this disorder can be measured through the monitoring of the widening or the increased tissue in the endometrium. Another form of quantitative measure is by the study of blood flow in the endometrium. Its ability to spread can be recognized by the number of vessels in the active tissue. The big problem with staging endometriosis (or endometriomas) are the cysts that follow it. Because of its capacity to spread in most areas of the body, a strategic protocol for clinical management is to conduct IMAGE GUIDED treatments, whereby use of real-time scanning of or during therapeutic process helps navigate the focus the treatment area. Imaging solutions include CT (which has radiation), MRI, or the 3D Doppler ultrasound.

METASTASIS IN CASE REVIEWS

I recently acquired a case where the endometriosis had spread under the arm. This is reminiscent to pathology reports of metastasis in areas such as post-op scars as well as endometrial tissue blocking the ureter- hence, blocking the kidneys and destroying the kidney function. While it is not officially categorized as malignant, it certainly can be deadly (as well as a seriously painful and debilitating disease). Women (especially those in advanced age groups) have expressed being completely incapacitated for three out of four days during their menstrual cycle. A vast majority of them also claimed experiencing mental health issues because of the pain and discomfort.

Use of the modern image guided treatment technologies offer non-invasive blood flow technology, which quantifies the aggression, either the aggressiveness of an inflammatory process like endometriosis or the invasive and metastatic potential of cancers such as endometrial cancer & cervical cancer.



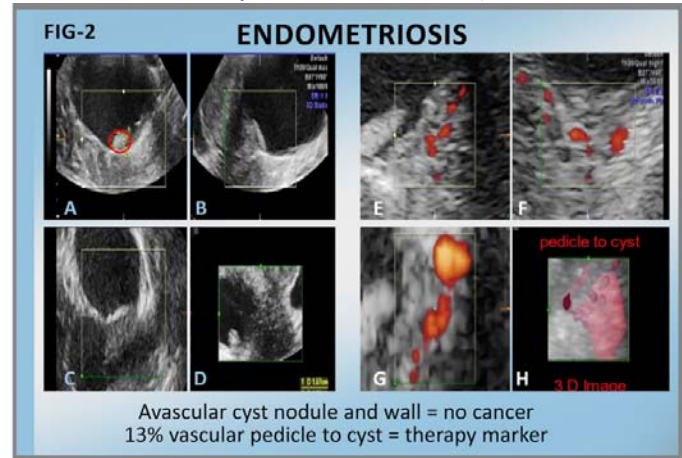
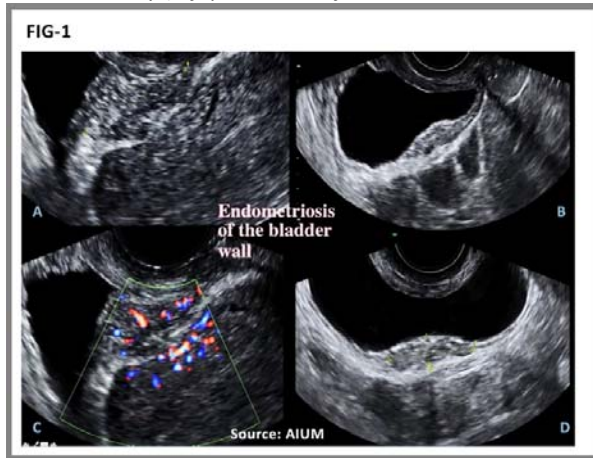


FIG-1: Upon observation, this it is not a primary bladder cancer. This is an inflammatory mass because the vessels are smooth (cancer vessels are wrinkly)- and there is a visible difference between the two. This is a three dimensional pelvic floor doppler study of the pelvis. If we start with scan A, we see the uterus on the bottom half and the bladder on the top, which is black, and within the black fluid is a mass. By looking below that, we see the (scan C and D) the abnormal blood vessels of the endometriosis. Hence, inflamed tissue is vascular and the same pattern of blood vessels from the abnormal endometrium is also in the bladder, indicating that the endometrial tissue has either invaded or metastasized into the base of the bladder. The two scans (B & D) show the bladder wall is intact. Hence, these are endometriosis that has metastasized or spread to the base of the bladder.

FIG-2: In this image set, we have an endometrioma, which is (again) a large black area where the fluid is black, and within it, there's another nodule with the circle indicated by the red highlight. We see that there's no blood flow in this- hence, it's not a primary cancer of the bladder. In addition, it is not particularly active inside the bladder, however, there is a stalk that is feeding blood vessels to the cystic area. With the 3D Doppler, we can quantify the cyst in seconds, because 3D takes a dataset in 15, 20 seconds of a hundred, 150 pictures of the whole area, including the blood flow.

Notice the 3D images on the left with the red circle (Scan A) is the endometrial cyst, which is black, and the circle shows a small nodule within the cyst. What's important with this as contrasted to the previous study is this is NOT VASCULAR, which means this is inactive or subclinical at this time. On the right (E,F,G,H), we see that the pedicle that's going to the cyst and feeding the cyst, the area has multiple blood vessels in it. Because we're using 3D volumetric technology, we are able to quantify the number of vessels in the pedicle. The more blood vessels in the pedicle, the more aggressive the disease is. So back to the cyst. The cyst, there were no vesicles, but the pedicle feeding the cyst had a 13% ratio of blood vessels to assisted tissue.

EPILOGUE

Traditional medicine has not assisted with the mental depression, the anguish of the certainty that the pain will be monthly and the possible side effects including infertility. Since we've been using targeted therapies with lasers and focused ultrasound energies years ago, we are now globally using bioenergy treatments that is the near infrared laser and the pulse electromagnetic fields to calm down the, the inflammatory process of this inflammatory disorder.



Robert L. Bard, MD, DABR, FAIUM, FASLMS is internationally recognized as a leader in the field of 21st Century 3-D ULTRASONOGRAPHIC VOLUMETRIC DOPPLER IMAGING. Dr. Bard specializes in advanced 3-D sonography to detect cancers in numerous organs including the breast, prostate, skin, thyroid, melanoma and other areas. Dr. Bard's images are used to accurately guide biopsies, target therapy and provide focused follow-up after treatment. Dr. Bard's medical career began as a diagnostic radiologist and evolved into the practice of non-invasive 3D imaging with ultrasound, MRI and laser technologies. Holding medical licenses in several states, he holds Board certification from the American Board of Radiology (1974) and Fellowship in the American Society of Lasers in Medicine and Surgery (2014)

REFERENCES

- 1) "Rey Facts on Endometriosis"- source: World Health Organization: <https://www.who.int/news-room/fact-sheets/detail/endometriosis>