THREE NEW RESEARCH AVENUES COULD CHANGE OUR APPROACH TO ENDOMETRIOSIS CARE

It's disheartening to see patients leave your gynecology office feeling hopeless and frustrated by limited diagnostic and treatment options. However, now that three emerging research avenues are aiming to change how we understand, diagnose, and treat endometriosis, it's offering new hope to both clinicians and patients.

Lab-grown organs could reveal how endometriosis emerges

Many theories have tried to explain how endometriotic lesions first appear. Proposed causes include:

- genetic factors,[1-2]
- menstrual blood or cells from the womb that enter the pelvic cavity,[3]
- inflammatory bacteria called Fusobacterium,[4]
- altered metabolism,[5–6]
- hormonal issues,[7-8] and
- changes in the immune system.[7-8]

Yet, even though endometriosis affects 190 million people assigned female at birth worldwide, the true origin remains a mystery, making it challenging to find a cure.[9] As a clinician, this also means you're left managing your patients' symptoms instead of truly treating their condition.

This knowledge gap stems at least partly from the fact that scientists historically studied surgically removed lesions from patients with late-stage endometriosis. By the time the disease has worsened to this extent, lesions have already progressed and no longer reflect the condition's early origins, so they can't be used to reveal the initial cause.[7]

In contrast, the newest advances will allow researchers to use biopsies of healthy wombs and all types and stages of endometriotic lesions—even from menstrual blood—to grow mini-organs in the lab. Using biobanks of such lab-grown organs, called organoids, scientists can study how the condition arises in its early stages.[10,11] The results of these studies could be a key step that finally allows clinicians to treat the root cause of endometriosis.

The benefits of organoids may be even more far-reaching. In addition to revealing a cause, they could increase the likelihood that scientists find a cure, as a recent study on brain tumor organoids suggests they can accurately predict therapy responses.[12] A similar approach may help scientists identify non-toxic therapeutics to treat endometriosis. In fact, Professor Hugo Vankelecom's group from KU Leuven has already established a biobank of organoids from patients' endometriotic lesions, which will allow scientists to screen for more targeted treatments.

Lab-grown endometriotic lesions may reveal early origins of the condition.

Easy-to-use tests could make endometriosis diagnosis timely, painless, and more accessible

While pelvic exams, ultrasounds, and MRI imaging may point to endometriosis, laparoscopic surgery remains the only definitive diagnostic tool you're able to offer. Yet, as is the case with any surgery, laparoscopy is accompanied by additional bodily stress,

including the effects of general anesthesia and a fair amount of recovery time. After recognizing how tiring this can be for patients and providers, researchers are incessantly working to find reliable endometriosis markers that could become simple diagnostic tests.

A few years ago, French biotechnology company, Ziwig, released Endotest, one of the first easy-to-use tests for suspected endometriosis. Endotest uses 'endometriosis signature' molecules from saliva to diagnose the condition in accredited laboratories within seven days.[13] While Ziwig claims its test is highly specific, it remains to be independently tested.[7] Another test, EndoTect, is currently being developed at the University of Hull in the United Kingdom. If approved, EndoTect will use protein markers in urine to detect endometriosis and estimate the severity of the condition.

More recently, Australian biotechnology company, Proteomics International, collaborated with academic researchers to develop PromarkerEndo: a blood test that detects endometriosis based on a panel of 10 plasma protein biomarkers, including those involved in the coagulation cascade and the complement system. Impressively, PromarkerEndo can distinguish between healthy people and those with endometriosis, even when their endometriosis is still in early developmental stages.[14]

If independent testing proves them successful, these diagnostic tools will likely revolutionize the field, once providers are able to use them in-clinic. In the meantime, some tests, such as EndoTest, are already commercially available and may help clinicians make a presumptive diagnosis before exploring more invasive diagnostic options.

Easy-to-use tests may soon replace surgery as a primary diagnostic option.

A non-hormonal drug could allow for endometriosis treatment without contraceptive effects

Once diagnosed, many patients rely on hormonal drugs to alleviate endometriosis symptoms. However, hormonal therapies are unsuitable for those who wish to treat endometriosis in order to have children. Even when pregnancy is not a primary consideration, patients taking contraceptive medication for endometriosis often suffer from a myriad of side effects, which can reduce their quality of life.

These patients then rely on painkillers, which offer some pain relief but do not remove their lesions.[7] As such, if the pain is unbearable, the only thing that can help is surgery; yet, the lesions often return. Simply put, all currently available treatment options can address patients' symptoms at best, while also having the potential to introduce more discomfort.

Early trials in the United Kingdom now show that a non-hormonal drug called dichloroacetate—already registered to treat metabolic disorders and compatible with pregnancy—might provide a solution to both lesions and pain.[15] Since endometriosis patients have a notable increase in lactate levels, leading to the growth of endometriotic lesions, the drug works by reducing lactate levels to within normal ranges.[5-6,15] After successfully reducing the size of endometriotic lesions in the lab, the drug also showed promising early results in patients who had previously experienced many failed treatments and operations.[15]

How will these new developments affect the future of endometriosis care?

Despite disproportionately limited funding, the research avenues outlined above are gaining momentum in countries like Australia and the United Kingdom, where many academic scientists and biotech companies tirelessly work to understand endometriosis. These new scientific developments are also strongly supported by numerous societies and individuals with endometriosis, including public figures such as Dolly Parton, who openly share their stories and advocate for increased awareness, research, and support.

All of this may lead to endometriosis finally being widely recognized as a serious, systemic condition rather than simply a reproductive health issue. Yet, the future of endometriosis care most heavily depends on the continued commitment of healthcare providers, like yourself, to integrate the latest research into clinical practice. With the emergence of non-invasive diagnostic tools and advanced treatments, clinicians must strive to stay informed, challenge outdated treatment paradigms, and advocate for individualized patient-centered approaches to care.

By prioritizing education, early intervention, and collaborative treatment strategies in endometriosis, you can help bridge the gap between research advancements and real-world patient outcomes, ultimately improving the quality of life for millions affected by this condition.

To stay informed, read about the latest events and news in endometriosis care on the websites of professional organizations, such as the Endometriosis UK and the Endometriosis Foundation of America.

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