

My First Medical Writing

SECTION EDITOR



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Editorial

In this issue, I have the pleasure to share an insightful article by Sibyl Bertrand. As a molecular biologist, Sibyl worked in numerous cancer research institutes in France before arriving in the UK where she pursued her PhD in clinical medicine at the University of Oxford,

studying mutagenesis mechanism in cancer predisposition and tumour development. After a quick post-doc, she realised she enjoyed sitting at her computer writing more than at the bench pipetting. So, she recently leapt into medical communications as an associate medical writer.

It was a great pleasure to work with Sibyl in

the creation of this piece, which I hope you enjoy as much as I did. And, if you're an aspiring medical writer eager to gain experience in this field, this space offers you an opportunity to publish your work and start creating your portfolio.

Evguenia

Endometriosis – The monthly workforce loss

Endometriosis is a disease estimated to impact about 10% of reproductive-age women,¹ the equivalent of 190 million women worldwide.² It impairs the physical, mental, sexual, and social well-being of affected women. On a broader scale, it translates into a societal burden including productivity loss, lower study activity and grades,³ and an estimated cost on the healthcare system equivalent to other chronic diseases such as type 2 diabetes or Crohn's disease.⁴ Given the features of such disease, one might think that by now, patients would be easily diagnosed, healthcare practitioners would know how to ease their patients' symptoms, and researchers would be close to finding its origin and a cure. Unfortunately, although endometriosis impacts numerous women, its aetiology is still unknown, its diagnosis is still difficult, and its treatment is still palliative, which all together renders this disease a complex challenge for patients, clinicians, and researchers.

But what is endometriosis? Taking its roots from the Greek *endos* (inside), *metra* (womb/uterus), and *-osis* (disease), endometriosis can be translated as a "disease of the uterus"; clinically, it is defined by the presence of endometrium-like tissue outside of the uterus.⁵ During each menstrual cycle, the endometrium (the uterus lining, made of epithelium and connective tissues) thickens and sheds under the influence of the two main female hormones: estrogen and

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progesterone. The latter scenario – when the endometrium sheds – is commonly known as a period. In patients suffering from endometriosis, endometrial cells are found in places other than the uterus, such as fallopian tubes or ovaries. Sometimes, endometrial cells even manage to escape the female reproductive system and attach to organs at vicinities such as the bladder or the colon. As mentioned earlier, when a period occurs, the endometrial cells answer the hormonal call and break down – even the endometrial cells located outside of the uterus. So, in endometriosis, the shedding of cells located outside of the uterus will ultimately cause lesions and/or alter the function of the colonised organs. And like any wound one gets, pain accompanies the process.

The origin of endometriosis is still unknown.

One hypothesis suggests that reflux of menstrual debris through the fallopian tubes – also called retrograde menstruation – could disseminate viable endometrial cells outside the uterus.⁶ Nevertheless, given that 90% of women experience retrograde menstruation,⁷ it is likely that other factors are involved in the development of the disease. Genetic predisposition, prenatal exposure to endocrine-disrupting chemicals, the intestinal and female track microbiome, the immune system, and sex

hormones are possible factors.⁸

The diagnosis of endometriosis is a complex challenge, both for patients and healthcare



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practitioners. Indeed, endometriosis is a spectrum disease which means it includes a wide range of signs and symptoms alongside a variety of subtypes and clinical presentations. A non-exhaustive list of most commonly observed symptoms experienced by patients includes:²

- painful periods
- pain occurring during and/or after intercourse
- painful bowel movement and/or urination
- fatigue
- infertility

Some women might show no sign or experience no symptoms of the disease; while others can experience painful symptoms and/or infertility,⁹ presenting endometrioma (endometrial tissue forming a cyst on the ovary) and/or extra-pelvic lesion.² Puzzled with the broad range of symptoms, biomarkers (detected via non-invasive methods such as a blood sample) could help clinicians quickly and easily detect or rule out the diagnosis of endometriosis. Unfortunately, the current gold standard procedure available to diagnose endometriosis combines surgical examination via laparoscopy (a surgical procedure to access the inside of the abdomen) and histological examination of specimens collected during laparoscopy⁹ – all together, an



invasive procedure that requires specialised materials, trained practitioners, and time. An additional component to the difficulty of diagnosing endometriosis is the lack of awareness of the disease, both by the patient and general practitioners.^{2,10} Indeed, it is strongly ingrained in our society to expect painful periods, stigmatisation preventing affected women from seeking help and delaying their diagnosis from 5 to 9 years.^{3,11} And a delayed diagnosis means further damage to the affected tissues/organs.

Even if a patient makes it to the diagnosis there is, unfortunately, currently no cure for this disease. There are however palliative treatments to ease the symptoms and limit the spread of the disease. The first line of treatment is to relieve the pain during the period with analgesics such as ibuprofen or paracetamol. To tackle endometriosis lesions and limit their spread, two options are currently available: hormonal treatment and surgery. Given that endometriosis is an estrogen-dominant condition,⁸ controlling the secretion and circulation of estrogen could limit the development of the disease. The most widely used hormonal treatment for endometriosis is the contraceptive pill. In addition to limiting the disease, the pill will also limit dysmenorrhea (severe and frequent menstrual cramps and pain during the period) or

Although the painted landscape seems pretty dark, there are specks of hope for the treatment of endometriosis.

chronic pelvic pain. Other hormonal treatments such as gonadotropin-releasing hormone (GnRH) agonists and aromatase inhibitors have a similar mechanism of action,⁹ although their effectiveness holds limited evidence.¹² In the case of hormone-resistant endometriosis, surgery can be considered to remove lesions and endometriotic adhesions.⁹ Unfortunately, lesions reappear post-surgery and progress in approximately 30% of cases.¹³

Although the painted landscape seems pretty dark, there are specks of hope for the treatment of endometriosis. First, in tackling the challenge of non-invasive, accurate, and sensitive diagnosis of endometriosis, promising biomarker candidates emerged. For instance, patients with endometriosis displayed higher VEGF-A (an angiogenic factor promoting vascularisation) and lower mir-135a (a small single-stranded non-coding RNA molecule) levels compared to patients without endometriosis.¹⁴⁻¹⁶ Both biomarkers could be analysed from a simple blood sample – a cheaper, faster, and less invasive procedure than surgery. Second, there are currently 15 clinical trials testing non-hormonal therapies as alternatives to analgesics and hormonal treatments for endometriosis-related pain.² Finally, the microbiota (the population of bacteria and other

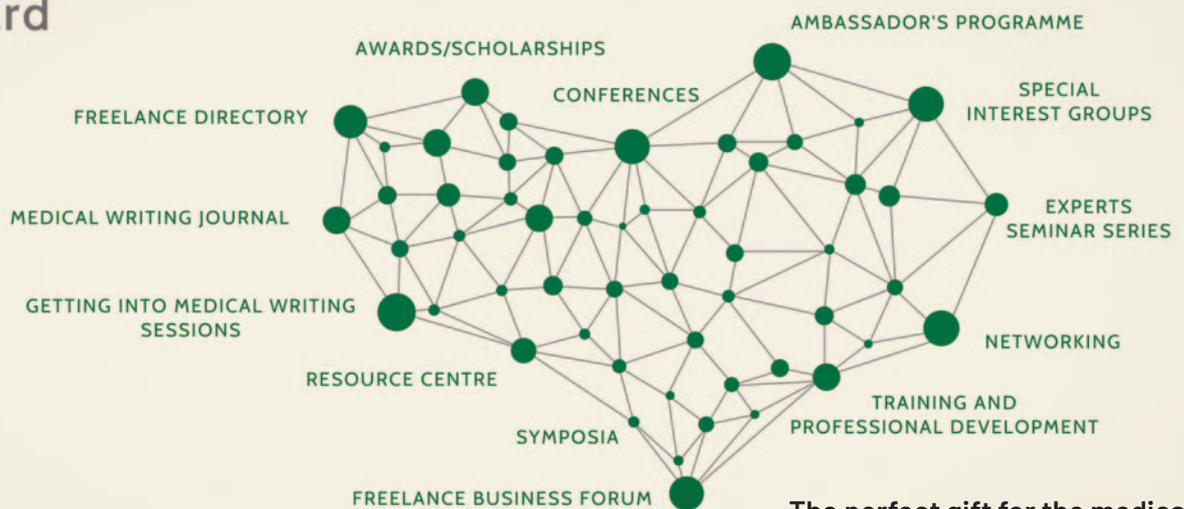
microorganisms we host in our body) of the gut and of the female genital tract are emerging topics in both the diagnosis and treatment of endometriosis. Indeed, it was observed that the genital microbiome (the genetic characterisation of the microbiota) of women with endometriosis is different compared to controls and could be associated with the severity of the disease.¹⁷ Besides, women with endometriosis displayed a reduced microbiome diversity and an increased proportion of potentially pathogenic microbes in both gut and genital systems compared to healthy women.¹⁸ Harvesting the power of the microbiota, two clinical trials showed a decrease in endometriosis-related pain after oral administration of a pool of *Lactobacillus* strains.^{19,20} These encouraging studies call for further analysis of the relationship between microbiome and endometriosis, which altogether would allow diagnosis options and potential treatments and/or prevention using pre- and/or probiotics.

Despite being a common condition, endometriosis remains nowadays a challenge for millions of women worldwide, with a diagnosis like an obstacle course and limited treatment options. There is however at least one thing that everyone can do to fight the disease even if you are not directly affected – raising awareness. Fighting the stigmatisation of painful periods will help ensure an early diagnosis, improve the management of the disease, and promote research and clinical trials, which is key to providing new therapeutic options.

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