

ENDOMETRIOSIS RESEARCH

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Abstract:

Endometriosis is an estrogen-dependent chronic disease characterised by ectopic implantation of functional tissue lining the uterus (endometrial glands and stroma) outside the uterine cavity. Endometriosis, a word derived from the Greek endo 'inside', metra 'uterus' and osis 'disease', remains somewhat nebulous, with pelvic pain and infertility being the most common clinical symptoms. Endometrial tissue is most commonly found in the ovaries with the formation of chocolate cysts, but it can also be found in the fallopian tubes, uterosacral ligaments, gastrointestinal tract, and less commonly in the pleura, pericardium, or central nervous system [6]. Endometriosis is a disease of adolescents and women of reproductive age characterised by the presence of endometrial tissue outside the uterine cavity and often accompanied by chronic pelvic pain and infertility. In this article, we review the epidemiology of endometriosis as well as potential biomarkers for the detection and identification of risk factors that can be used in combination with biomarkers for early detection and treatment of women with endometriosis [7].

Keywords: Endometriosis, fertility, screening, biomarkers.

Relevance:

Endometriosis affects 10-15% of all women of reproductive age [1] and 70% of women with chronic pelvic pain [2]. Unfortunately, many of these women often have a delay in diagnosis of endometriosis, resulting in unnecessary suffering and reduced quality of life. In patients aged 18-45 years, the average delay is 6.7 years [3]. Since most women with endometriosis report the onset of symptoms during adolescence, early medical attention, diagnosis, disease detection, and treatment can reduce pain,



prevent disease progression, and thus preserve fertility [4-5]. Barriers to early diagnosis include the high cost of diagnosis and treatment in adolescents and the presence of mixed symptoms such as cyclic and acyclic pain. Thus, a non-invasive tool for diagnosis of endometriosis may facilitate earlier diagnosis and intervention, which may ultimately improve quality of life and preserve fertility [7].

MATERIALS AND METHODS:

Despite recent advances in the identification of risk factors for endometriosis, the field remains limited by the need for surgical diagnosis of the disease, often performed laparoscopically to validate affected cases and matched controls (those taken from the same baseline population as the cases). Validation is needed in large cohorts of women with laparoscopically confirmed endometriosis and matched controls. In addition, as reproductive and lifestyle factors change, such as changes in contraceptive medications and patterns of contraceptive use, and delayed childbearing, new cohorts of young women are needed to understand how changes in established factors may affect the incidence of endometriosis and to aid in the discovery of new risk factors. Ultimately, the establishment of a defined set of risk factors for endometriosis may lead to the identification of a group of women and girls with a sufficiently high risk profile to warrant screening. In addition, these risk factors may also provide new insights into the etiology of the disease, which could lead to important advances in identifying potential biomarkers for screening and treatment targets [7].

Results:

Unfortunately, the evaluation of fallopian tube ligation, parity and oral contraceptive use in relation to the risk of endometriosis has been difficult due to methodological problems. It has been suggested that fallopian tube ligation reduces the risk of endometriosis by blocking retrograde menstruation from entering the pelvic cavity. However, the association between fallopian tube ligation and endometriosis is difficult to interpret because endometriosis is characterised by infertility, and women who require fallopian tube ligation are more likely to be women who have given birth than the general population. The association between oral contraceptive use and risk of endometriosis is mixed: most, but not all, show reduced risk for current users but increased risk for past users. However, oral contraceptives are used to treat pain associated with endometriosis, and therefore this association may reflect suppression of endometriosis symptoms while taking oral contraceptives that occur



after discontinuation of oral contraceptives. The association between smoking and endometriosis is unclear. Although smoking is harmful to many other aspects of health, smoking has been associated with a reduced risk of endometriosis in some, but not all, studies. Interestingly, exposure to cigarette smoke during intrauterine development is associated with an 80% reduction in endometriosis risk, but exposure to secondhand smoke during childhood increases the risk. Although the mechanism is unknown, it is known that circulating estrogens are lower in women who smoke and may inhibit the growth and persistence of endometrioid tissue. The association between alcohol and caffeine intake is also equivocal and may depend on fertility status. Among infertile women, several studies have reported an increased risk with higher alcohol or caffeine intake. Increased bioavailable estrogen levels in women who consume moderate amounts of alcohol support the biological plausibility of this association. However, studies beyond infertile women have not found an association. Other lifestyle and dietary factors that influence endometriosis risk may be related to their ability to reduce inflammation. Physical activity and dietary omega-3 fatty acids may reduce levels of tumour necrosis factor alpha (TNF α), interleukin 6 (IL6) and other inflammatory markers. Although the association between physical activity and endometriosis is unclear, higher intake of long chain omega-3 fatty acids is associated with a reduced risk of endometriosis.

CONCLUSION:

Despite a number of symptoms, the diagnosis of endometriosis is often delayed due to the lack of non-invasive, definitive and consistent biomarkers to diagnose the disease. Hormonal therapy and analgesics are used to treat symptomatic endometriosis. However, the efficacy of these treatments is limited because the disease often recurs. Thus, endometriosis is a debilitating disease that affects the quality of life of adults and adolescents. Delayed diagnosis is common and can lead to reduced reproductive potential and fertility. A semi-/non-invasive diagnostic biomarker would be a useful tool to identify patients in the early stages of the disease and thus improve outcomes including less pain and better fertility. Many biomarkers have been associated with endometriosis; however, they lack sensitivity and specificity for use in screening. These potential biomarkers would reduce the cost of surgery by early diagnosis of cases and thus improve clinical management of the disease. Therefore, more research in this area of medicine is needed.

