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Objective:

Endometrial cancer is the most common gynecological malignancy in high-income countries and most cases arise from a precursor lesion endometrial hyperplasia. During the COVID-19 pandemic, many professional bodies advised a suspension in gynecological services, with the exception of urgent care\(^1,2\), to reduce COVID-19 transmission and optimise limited human and physical resources. In the UK, remote management of abnormal uterine bleeding, the major presenting symptom of endometrial cancer and endometrial hyperplasia, was recommended, with referral to secondary care only in urgent cases\(^2\). This contradicts the established Royal College of Obstetricians and Gynaecologists guidelines which advise hysteroscopy and/or endometrial biopsy within four weeks for diagnosis of suspected endometrial hyperplasia/cancer\(^3\). We describe the impact of the COVID-19 pandemic on pathologic diagnosis of endometrial cancer and endometrial hyperplasia within population-based databases in Northern Ireland.

Methods:

The Northern Ireland Cancer Registry (NICR) is a population-based register covering 1.9 million inhabitants\(^4\). Electronic pathology reports were used to identify unique patients diagnosed with endometrial cancer or endometrial hyperplasia between March 1, 2020, and December 31, 2020 (the initial stages of the COVID-19 pandemic when “lockdown” was introduced at various times). Data were compared with the average number of histopathologically confirmed cases during the same periods between 2017-2019. Further information is available in the Supplementary Methods.

Results:
The number of endometrial cancer diagnoses declined by 19.1% between March-December 2020 compared with the equivalent period in 2017-2019 (Figure 1). There was some evidence of recovery in winter months, with diagnoses in October/November returning to expected levels (Supplementary Figure 1). In total, 70 fewer endometrial cancer cases than expected were diagnosed in March-December 2020.

The number of atypical hyperplasia and hyperplasia without atypia diagnoses declined by 35.2% and 43.5%, respectively, compared with 2017-2019 (Figure 1). Data were too limited to indicate recovery in winter months (Supplementary Figure 1). There were 40 and 20 fewer cases of hyperplasia without atypia and atypical hyperplasia respectively than expected between March-December 2020.

**Conclusion:**

We demonstrate a marked reduction in pathologic diagnoses of endometrial cancer and endometrial hyperplasia during the first 10 months of the COVID-19 pandemic. Although endometrial cancer diagnoses showed signs of recovery, endometrial hyperplasia diagnosis continued to lag behind expected rates, likely due to the reprioritisation of gynecologic services.

Similar to our study, a Northern California investigation observed a 35% reduction in pathologic diagnoses of endometrial cancer during the first 12 weeks of the pandemic compared with 2019 levels. Our study is the first to quantify the impact of the COVID-19 pandemic on population-based pathological endometrial hyperplasia diagnoses. However, some caution is required over identification of unique patients and data stability due to the
use of pathological Systemized Nomenclature of Medicine (SNOMED) code diagnoses. It is therefore possible that we are underestimating absolute case numbers but the proportional decline in diagnoses likely remains the same.

As the COVID-19 pandemic transitions, innovative organisation of gynecological investigative and surgical services are necessary to ensure timely diagnoses of cancer and premalignant conditions. This will be especially relevant in future potential “lockdowns”.

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References (max 5):


**Figure legend:**

**Figure 1.** Percentage decline in endometrial cancer, atypical endometrial hyperplasia and endometrial hyperplasia without atypia diagnoses for the period of March to December 2020 compared to the 3-year average during the same time period between 2017 and 2019.
Supplementary Methods

The Northern Ireland Cancer Registry

The Northern Ireland Cancer Registry (NICR) is a population-based register covering approximately 1.9 million inhabitants and is the officially recognized provider of cancer statistics for Northern Ireland. The NICR has demonstrated robust validity against key performance indicators of high-quality cancer registration\(^1\). The NICR has collected information on all patients diagnosed with cancer and certain premalignant conditions in Northern Ireland since 1993. Ethical approval for the NICR databases, including the waiving of requirement for individual patient consent, was granted by the Office for Research Ethics Committees of Northern Ireland (ORECNI reference 20/NI/0132).

Endometrial Cancer Diagnoses

Electronic pathology reports were received by the NICR and used to identify all unique patients diagnosed with endometrial cancer (EC) (corresponding to International Classification of Disease, 10th Revision, codes C54 and C55), and histopathologically confirmed between March 1, 2020, and December 31, 2020, in Northern Ireland. These data were compared with the 3-year average number of patients with a pathologic diagnosis of EC cancer during the same time period between 2017 and 2019.

Endometrial Hyperplasia Diagnoses

Systemized Nomenclature of Medicine (SNOMED) codes were used to identify patients with endometrial hyperplasia diagnoses in Northern Ireland between March 1, 2020, and December 31, 2020, and the same time period for the years 2017 to 2019. Location codes T83000 (Uterus, NOS), T83200 (Cervix uteri, NOS), T83240 (Endocervix), T83400
(Endometrium) or T83600 (Myometrium) were used in combination with morphology codes M72000 (Hyperplasia, NOS) or M72005 (Atypical hyperplasia, NOS), as advised by an expert gynecological histopathologist (W.G.McC). Endometrial hyperplasia was classified as either hyperplasia without atypia or atypical hyperplasia according to the 2014 WHO classification of endometrial hyperplasia based on criteria suggested by Kurman et al.\textsuperscript{2}.

**Data Analysis**

Descriptive statistics (frequencies and proportions over time) are presented for the number of patients diagnosed with endometrial cancer, atypical hyperplasia and hyperplasia without atypia in Northern Ireland between March and December 2020, respectively. Comparisons were made to the same monthly range for 2017 to 2019, for which a 3-year average was estimated.

**Supplementary References:**


**Supplementary Figure legend:**

Frequency of (A) endometrial cancer, (B) atypical endometrial hyperplasia and (C) endometrial hyperplasia without atypia diagnoses per month in 2020 compared with the monthly average for 2017 to 2019.