Rad Path Case of the Month

Patient is a 44-year-old female presenting for surgical hysterectomy due to abnormal uterine bleeding

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Patient Presentation

- HPI: Patient is a pre-menopausal 44-year-old female with 4 month history of abnormal uterine bleeding. The bleeding first started as abnormally heavy menstrual periods which then quickly progressed to intermenstrual bleeding as well.
- PMHx: Type 2 Diabetes, Hypertension, Hyperlipidemia, Fatty Liver, Obesity, C-section
- Physical Exam: BP: 164/100, HR: 88, T: 98.3F. GU: Normal appearing external genitalia without lesion or mass. Uterus is mobile and consistent in size with 8 weeks gestation.
- Labs: Pap smear: Atypical endometrial cells

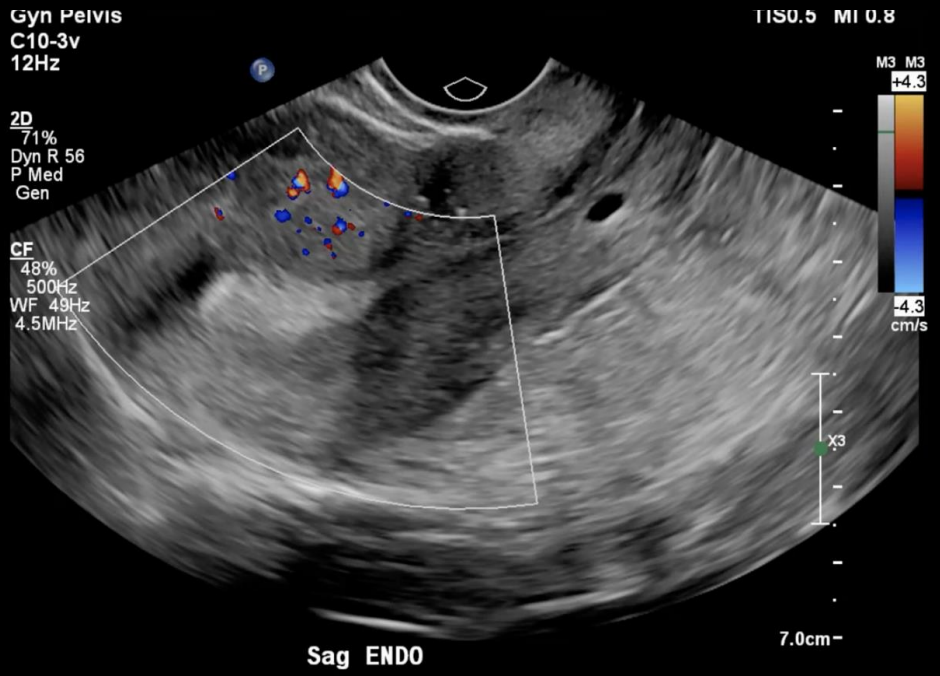
What Imaging Should We Order?

Select the applicable ACR Appropriateness Criteria

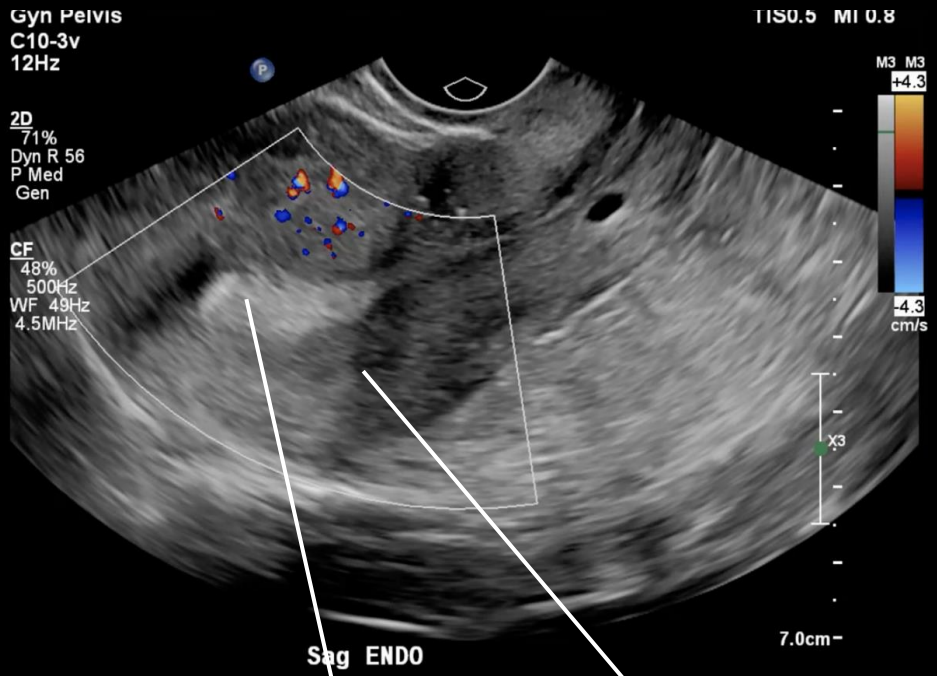
Procedure	Appropriateness Category	Relative Radiation Level
US duplex Doppler pelvis	Usually Appropriate	O
US pelvis transabdominal	Usually Appropriate	O
US pelvis transvaginal	Usually Appropriate	O
US sonohysterography	May Be Appropriate (Disagreement)	O
MRI pelvis without and with IV contrast	Usually Not Appropriate	O
MRI pelvis without IV contrast	Usually Not Appropriate	O
CT pelvis with IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis without IV contrast	Usually Not Appropriate	☢☢☢
CT pelvis without and with IV contrast	Usually Not Appropriate	☢☢☢☢

These imaging modalities were ordered by the Ob/Gyn

Imaging Findings (unlabeled)

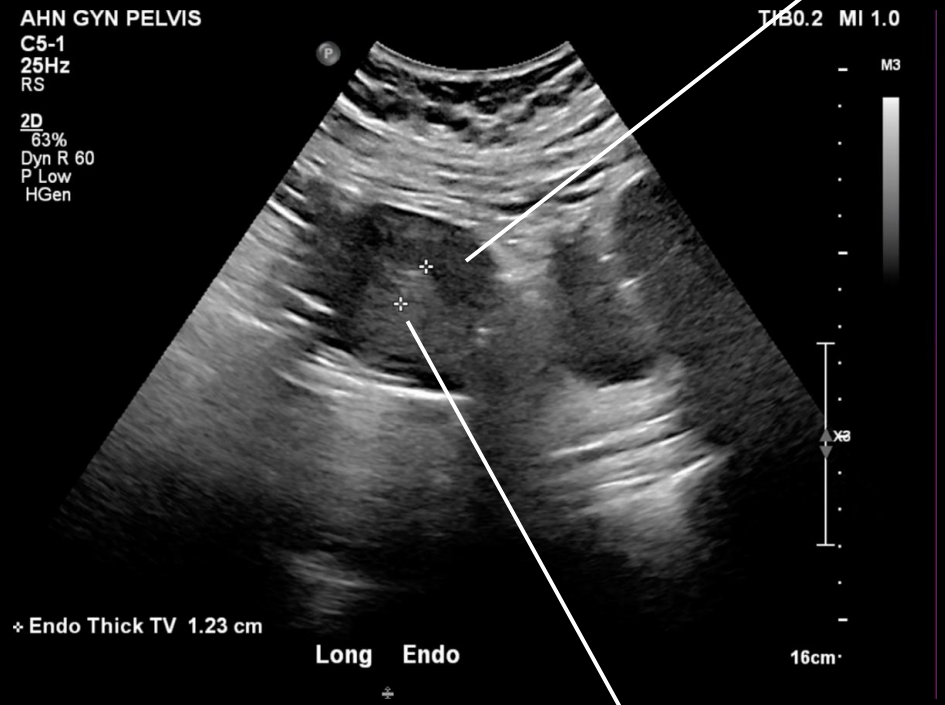


Imaging Findings: (labeled)



Endometrium without increased doppler flow

Myometrium



Myometrium

Endometrium measuring 1.2 cm

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Differential Based on Imaging

Clinical scenario: Pre-menopausal female with abnormal uterine bleeding

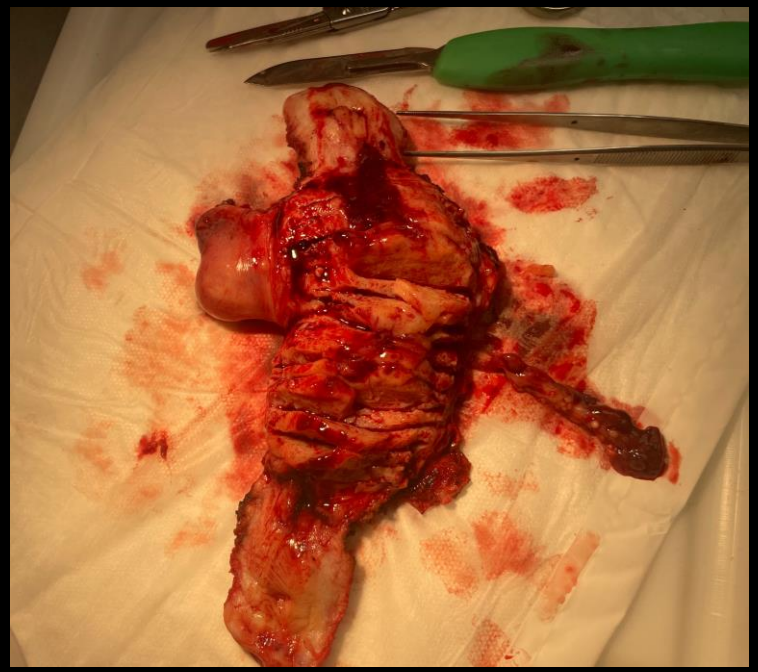
- DDX:
  - Hyperplasia
  - Adenocarcinoma
  - Polyp
  - Fibroids
  - Ovulatory Disorder

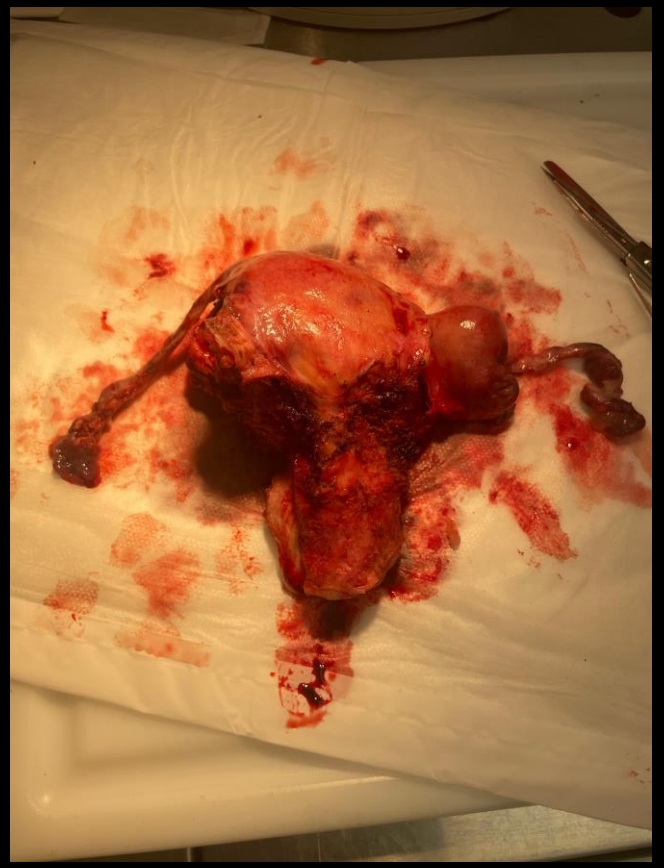
Patient was taken for endometrial biopsy then subsequent D&C which revealed FIGO Grade 1 endometroid endometrial adenocarcinoma.

Patient then taken for hysterectomy.

Gross Pathology Images

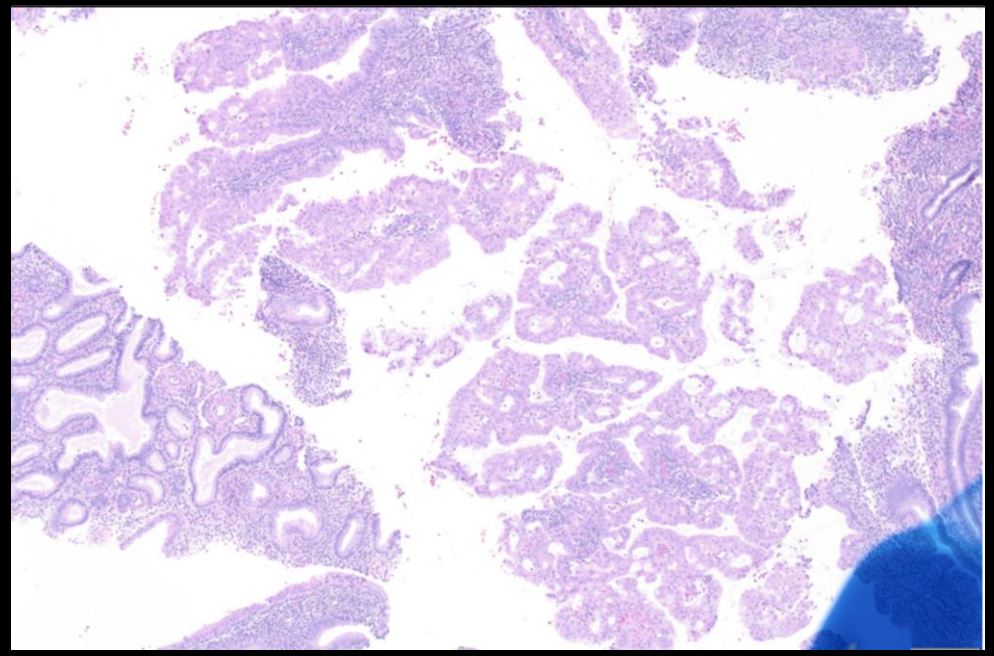
Cross section of uterus showing endometrium



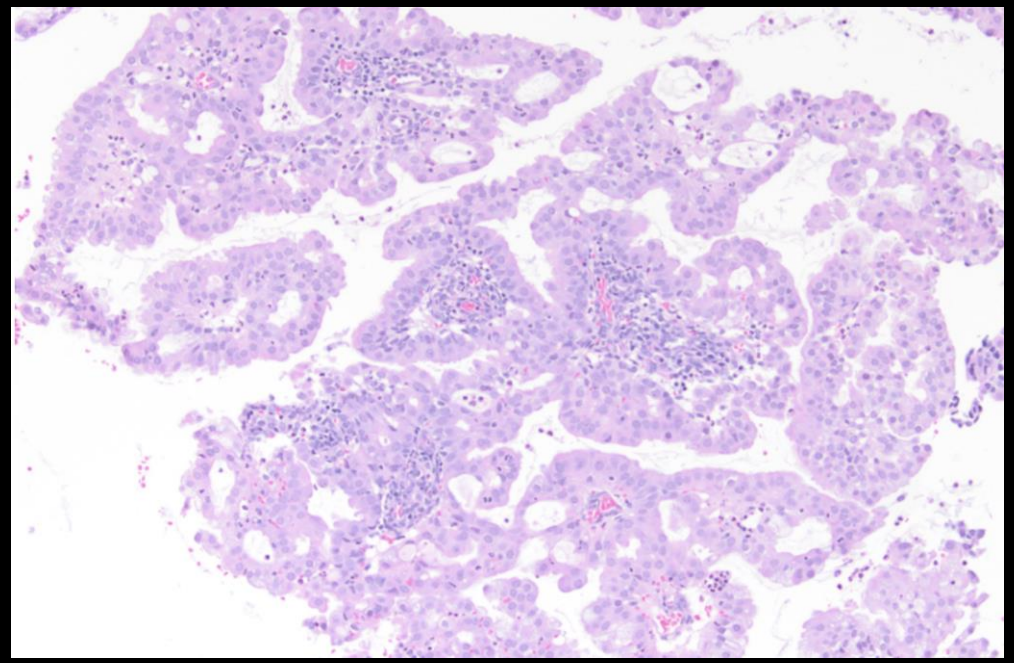


Surgical specimen consisting of uterus with leiomyoma, bilateral fallopian tubes, and cervix

Surgical Pathology Findings



Back-to-back glands without intervening stroma



Cytologic atypia within glands

Final Dx:

Grade 1A Endometroid Endometrial Adenocarcinoma
(no myometrial invasion)

Incidental findings during surgery:
Left Ovarian Hemorrhagic Corpus Luteum Cyst
Endometriosis

Case Discussion: Endometrial Cancer

- Etiology: Type 1: Unopposed estrogen causes excessive proliferation of the endometrium.
- Pathophysiology: Continuous stimulation of the endometrium combined with cellular mutations lead to uncontrolled proliferation of the normal glands found in the tissue. The lesion begins as an Endometrial Intraepithelial Lesion (EIN) and progresses to adenocarcinoma as it invades the stroma, causing an increase in the gland to stroma ratio. Endometroid endometrial adenocarcinoma primarily spreads to other parts of the body through the lymphatic system. Risk factors associated with Type 1 endometrial cancer include obesity, chronic anovulation, estrogen hormonal therapy, tamoxifen use, early menarche, and late menopause.

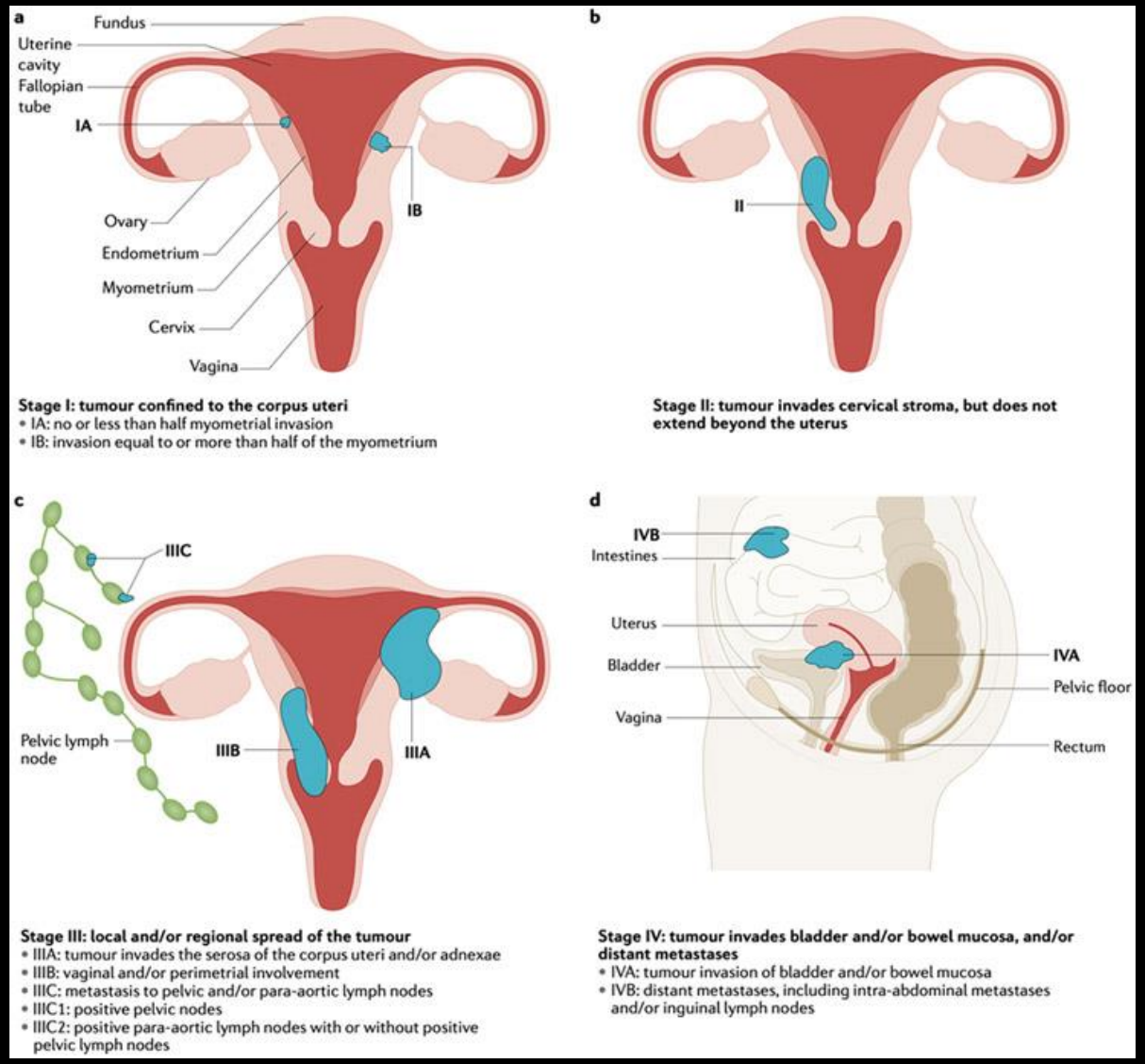
Case Discussion: Endometrial Cancer

- Epidemiology: Endometrial cancer is the most common neoplasm of the female genital tract with an average age of diagnosis of 61. There has been a dramatic increase in the rate of endometrial cancer in the United States with disproportionate incidence among racial and ethnic minority groups.
- Clinical Presentation: Unusually heavy menstrual bleeding, intermenstrual bleeding, post-menopausal vaginal bleeding, pelvic pain, smooth uterine enlargement
- Differential of abnormal uterine bleeding: (PALM COEIN): Polyp, Adenomyosis, Leiomyoma, Malignancy, Coagulopathy, Ovulatory disorder, Endometrial causes, Iatrogenic, Not otherwise specified

Case Discussion: Endometrial Cancer

- Imaging/Diagnosis: Endometrial biopsy and ultrasound
- Management: Depends on stage of neoplasm. The uterus is removed via surgical hysterectomy. Progesterone therapy has been used in some low-grade neoplasms with high rate of recurrence. Radiation therapy is sometimes utilized as an adjuvant treatment. Chemotherapy consisting of carboplatin and paclitaxel is sometimes used with radiation therapy in high grade cancers.

Case Discussion: Endometrial Cancer Staging



Stage I: tumour confined to the corpus uteri
- IA: no or less than half myometrial invasion
- IB: invasion equal to or more than half of the myometrium

Stage II: tumour invades cervical stroma, but does not extend beyond the uterus

Stage III: local and/or regional spread of the tumour
- IIIA: tumour invades the serosa of the corpus uteri and/or adnexae
- IIIB: vaginal and/or perimetrial involvement
- IIIC: metastasis to pelvic and/or para-aortic lymph nodes
- IIIC1: positive pelvic nodes
- IIIC2: positive para-aortic lymph nodes with or without positive pelvic lymph nodes

Stage IV: tumour invades bladder and/or bowel mucosa, and/or distant metastases
- IVA: tumour invasion of bladder and/or bowel mucosa
- IVB: distant metastases, including intra-abdominal metastases and/or inguinal lymph nodes

References:

Mahdy H, Casey MJ, Vadakekut ES, et al. Endometrial Cancer. [Updated 2024 Apr 20]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-.

Makker V, MacKay H, Ray-Coquard I, Levine DA, Westin SN, Aoki D, Oaknin A. Endometrial cancer. Nat Rev Dis Primers. 2021 Dec 9;7(1):88. doi: 10.1038/s41572-021-00324-8. PMID: 34887451; PMCID: PMC9421940.

Raglan O, Kalliala I, Markozannes G, Cividini S, Gunter MJ, Nautiyal J, Gabra H, Paraskevaidis E, Martin-Hirsch P, Tsilidis KK, Kyrgiou M. Risk factors for endometrial cancer: An umbrella review of the literature. Int J Cancer. 2019 Oct 1;145(7):1719-1730. doi: 10.1002/ijc.31961. Epub 2019 Feb 20. PMID: 30387875.

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