ASYMPTOMATIC MICROSCOPIC HEMATURIA IN WOMEN

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DISCLOSURES

• No financial disclosures

• Urogynecologist via Ob/Gyn pathway
ASYMPTOMATIC MICROHEMaturia

- Prevalence ranges from 2.4% - 31.1%
  - Varies based on
    - Age
    - Gender
    - Definition
    - Frequency of samples

- Important prognostic factor for GU malignancy
RISK FACTORS FOR MALIGNANCY

- Gross hematuria
- Male sex
- Age greater than 50
- History and/or current tobacco use
- History of pelvic radiation
Asymptomatic Microscopic Hematuria (AMH):
- 3 or more red blood cells (RBC) per high power field (HPF) on a properly collected urine sample
  - Not a urine dipstick sample

Properly collected urine sample:
- Non contaminated
- No evidence of infection
AUA GUIDELINES - 2012

• Exclusion of benign causes:
  – Menstruation
  – Vigorous exercise
  – Viral illness
  – Trauma
  – Infection
  – Recent urological procedures
AUA GUIDELINES - 2012

1. Urologic referral
2. Renal function testing
3. Cystoscopy
4. CT urography
AMH

• Men vs. women

• Associated pathology?
  – Pelvic organ prolapse
  – Vaginal atrophy
  – Urinary tract infection (recurrent)
AMH IN WOMEN?

• Lippman et al, 2017
  – 2009-2015 retrospective cohort from Kaiser

  2.7 Million UA ➔ 552, 119 MH (20%) ➔ 14, 539 Urology Referral ➔ 3,573 subjects

  – Most subjects were white or Hispanic, > 50 years of age, and non smokers with 4-45 RBC/HPF.
AMH IN WOMEN?

• Lippmann et al - 2017
  – Causes of AMH:
    • Urolithiasis (24%)
    • UTI (2%)
    • Urologic cancer (1%, n=34)
    • Unknown (74%)
  – Risk factors associated with AMH:
    • Increasing age
    • History of gross hematuria in prior 6 months
    • Degree of MH on microscopy
    • Current or previous smoking history
AMH IN WOMEN?

• Lippmann et al – 2017
  – Overall rate of urologic cancer was 1.3%
    • Rate < 60 yo, 0.6%
    • Rate ≥ 60 yo, 2.2%
  • Rate with gross hematuria
    – 1.6% with negative microscopy
    – 8.3% with positive microscopy
  • Rate without gross hematuria
    – 1.1% with negative microscopy
    – 0.8% with positive microscopy
AMH IN WOMEN?

- Lippmann et al – 2017
  - Risk factors associated with urologic cancer
    - MH >25 RBC/HPF (OR 1.8, CI 0.9-3.2)
    - History of smoking (OR 3.2, CI 1.8-5.9)
    - History of gross hematuria (OR 6.2, CI 3.4-11.5)
AMH AND POP?

• Pillalmami et al – 2015
  – 1,040 women presented to Urogyn clinic
    • Mean age 64.1
    • 197 (93.4%) with cystocele
    • 20.1% (209) met criteria for AMH
      – 0 cases of malignancy on w/u
  – Based on low incidence of cancer and the prevalence of AMH in prolapse patients, need to consider specific guidelines for this population.
AMH AND POP?

• Brazell et al – 2014
  – 230 women in Urogyn database

  • 29 (12.6%) met criteria for AMH

  • Stratified with or without prolapse (anterior > stage 1)
    – POP + AMH (18.3%)
    – No POP + AMH (5.1%)
    – P .003

  • Increased prevalence with increased POP stage
AMH AND POP?

- Linder et al – 2017
  - Retrospective review at single Urogyn clinic
  - 455 urinalysis with microscopy were performed
  - 3.3% (15) met criteria for AMH
    - Symptomatic POP or urinary incontinence, p .87
    - Stage 2 or greater anterior prolapse, p .91
    - Increased rates via voided vs. cath specimen (15.2% vs. 2.4%), p .003
AMH AND POP?

- Linder et al - 2017
  - 15 women with AMH
    - 8 upper and lower tract evaluation
    - 7 lower tract only

  - 2 cases of bladder malignancy – rate of 13%

- No association between POP and rate of AMH
AMH & ATROPHY?

• Bradley et al – 2016
  
  – Cross-sectional analysis covering 2 years at a single institution
  – Women > 55 yo with hematuria diagnosis
    • 237 women
    • 169 (71.3%) met criteria for AMH
  
  • Rate of urologic malignancy was 1.4% (n=2)
AMH & ATROPHY?

• Bradley et al – 2016
  
  – 150/237 (63.3%) underwent vaginal exam
    • 60.0% had objective atrophy
    • 89.3% had no prolapse
    • 11.7% had prolapse stage 2 or greater
RISK FACTORS FOR AMH IN WOMEN

• Richter et al – 2016
  
  – Multi-center case control study over 8 study sites
  
  • 493 cases
  • 501 controls
RISK FACTORS ASSESSED

- Urethral caruncle
- Pelvic organ prolapse
- Vaginal atrophy
- Personal or family hx of nephrolithiasis
- Prior prolapse or incontinence surgery
- Past or current tobacco use
- Chemical use
- Family hx of urological malignancy
- Prior pelvic radiation
- Prior alkylating chemotherapy
RISK FACTORS ASSESSED

- Urethral caruncle
- Pelvic organ prolapse
- Vaginal atrophy
- Personal or family hx of nephrolithiasis
- Prior prolapse or incontinence surgery
- Past or current tobacco use
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- Family hx of urological malignancy
- Prior pelvic radiation
- Prior alkylating chemotherapy
COST OF AMH?

• Cost-effectiveness of Common Diagnostic Approaches for Evaluation of Asymptomatic Microscopic Hematuria

1. CT alone
2. Cystoscopy alone
3. CT and cystoscopy - AUA
4. Renal ultrasound and cystoscopy - Dutch, Canada
COST OF AMH?

• Men and women included

• 3 or more RBC/HPF
  – Absent infection
  – No hx of urological malignancy

• Costs evaluated from a payer perspective at reported as rate of cost per cancer detected
COST OF AMH?

• 1. CT: detected 221 cancers at a cost of $9,300,000.

• 3. CT and cystoscopy: detected 1 additional cancer and increased cost to $6,480,484.

• 4. Renal ultrasound and cystoscopy: detected 245 cancers at a cost of $53,810
COS  OF  AMH?

• Bradley et al – 2016
  – 237 PMP

  • 169 (71.3%) had the diagnosis of AMH

  • 210 (88.6%) underwent complete evaluation
    – 151 with true AMH
    – 59 with pos dipsticks or setting of UTI (28.7%)
• Asymptomatic Microscopic Hematuria (AMH):
  – 3 or more red blood cells (RBC) per high power field (HPF) on a properly collected urine sample
    • Not a urine dipstick sample

• Properly collected urine sample:
  – Non contaminated
  – No evidence of infection
• Exclusion of benign causes:
  – Menstruation
  – Vigorous exercise
  – Viral illness
  – Trauma
  – Infection
  – Recent urological procedures
  – Urogenital atrophy
  – Prolapse
CONCLUSION

• AMH is a common finding

• Low risk, never-smoking women, < 50 years of age, ≤ 25 RBC/HPF:
  – Risk of malignancy is ≤ 0.5%

• Low risk, never-smoking women, 35 – 50 years of age:
  – Evaluation indicated only if > 25 RBC/HPF
REFERENCES

- Brazell et al. Do Patients with POP have increased frequency of asymptomatic microscopic hematuria? Journal of Urology 2014 Feb 83(6): 1236-1238.