Clinical aspects of Gonorrhoea

Jackie Sherrard
Objectives

- Transmission
- Signs & symptoms
- Complications
- Diagnosis
- Partners
Risk factors for GC

• Young age
  ◦ 41% of all female infections < 20 years old
• Low socioeconomic status for district of residence
• Black Caribbean ethnicity
• MSM
• PH of gonorrhoea (approx 1/3)
• Other STI
• Recent sex abroad reported by 12% of patients
• 85% MSM reported 2+ partners in the previous 3/12
  ◦ 5% reported 11+
Transmission

- Transmission is by direct inoculation of infected secretions from one mucous membrane to another
- Primary sites of infection are mucous membranes:
  - urethra
  - endocervix
  - rectum
  - pharynx
  - conjunctiva

Transmission rates
- Male to female:
  - 50 - 90%
- Female to male:
  - 20% single exposure
  - 60 – 80% after 4 exposures
- Transmission of pharyngeal infection less efficient
  - Route of exposure in 26% MSM with urethral infection

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Incubation & infectious period
Urethral infection, 227 men

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Duration of symptoms prior to presentation

- 1993, 435 male urethral infections
  - Mean 6.2 days
  - Range 1 - 120 days
    - 1 patient with 18 month urethral discharge excluded

- Lodin 1932 1.8 days
- Lodin 1954/55 3.9 days
## Site of infection in men

<table>
<thead>
<tr>
<th>Site</th>
<th>% positive</th>
<th>% only site positive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>heterosexually acquired</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>urethra</td>
<td>100</td>
<td>94</td>
</tr>
<tr>
<td>pharynx</td>
<td>3 - 6</td>
<td>0</td>
</tr>
<tr>
<td><strong>homosexually acquired (GRASP 2018)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>urethra</td>
<td>42</td>
<td>(62% 2008)</td>
</tr>
<tr>
<td>pharynx</td>
<td>49</td>
<td>(14% 2008)</td>
</tr>
<tr>
<td>rectum</td>
<td>60</td>
<td>(40% 2008)</td>
</tr>
<tr>
<td>(multiple sites 51%)</td>
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Urethral GC in men

• Symptoms
  ◦ discharge & dysuria 47%
  ◦ discharge alone 33%
  ◦ dysuria alone 5%
  ◦ other symptoms GC 3%
  ◦ symptoms of coexistent infections 3%

• Asymptomatic 10%
  ◦ unobservant
  ◦ pre symptomatic
  ◦ post symptomatic
  ◦ truly asymptomatic

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Signs in men

- profuse purulent discharge
- mucopurulent discharge
- damp meatus
- meatitis
- local complications
- “normal”
### Site of infection in women

<table>
<thead>
<tr>
<th>Site</th>
<th>% positive</th>
<th>% only site positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervix</td>
<td>95 – 100</td>
<td>46</td>
</tr>
<tr>
<td>Urethra</td>
<td>70 - 90</td>
<td>&lt;5</td>
</tr>
<tr>
<td>Pharynx</td>
<td>5 - 20</td>
<td>0 - 3</td>
</tr>
<tr>
<td>Rectum</td>
<td>5 - 50</td>
<td>5</td>
</tr>
</tbody>
</table>

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Symptoms in women

- ≈50% endocervical infection asymptomatic
- Symptoms non-specific for GC
  - up to 50% ↑ / altered vaginal discharge
  - lower abdominal pain up to 25%
  - rarely IMB or menorrhagia

- Urethral infection may cause dysuria (12%) but not frequency
- Rectal infection rarely produces slight dampness or discharge
Signs in Women

- commonly, no abnormal findings
- mucopurulent endocervical discharge and contact bleeding (<50%)
- pelvic/lower abdominal tenderness (<5%)
Anorectal GC

Symptoms
- Rectal discharge-7%
- anorectal pain, itch, ache-12%
- asymptomatic-80%

Signs
- proctitis
- pus in rectum
- none

In women
- more frequently due to transmucosal spread of infected genital secretions than AI
- usually asymptomatic
Oropharyngeal GC

- Usually asymptomatic (>90%)
- Pharyngitis may develop
- Sampling – less important with NAATs
Complications

- In UK, complications occur in approximately 3% of females and < 1% of males
- More common when untreated infection present for a prolonged period
- In both sexes infection can facilitate HIV transmission
Local complications male

- **anterior urethra**
  - Tysonitis
  - para-urethral duct infection
  - Littritis
  - Cowperitis
  - urethral stricture

- **posterior urethra**
  - prostatitis - acute & chronic
  - vesiculitis
  - epididymitis
  - trigonitis

- **anorectum**
  - anorectal abscess
  - anal fistula
Complications in women

- Spread to endometrium, fallopian tubes, and pelvic adnexae commonest (5-10%).
- Occurs at or soon after menstrual period, probably resulting from retrograde flow of menses.

- Perihepatitis (FitzHugh–Curtis syndrome) more frequent with *C. trachomatis*
- Right hypochondrial pain, referred to the shoulder, occasionally with pleural effusion and rub
  - may lead to referral to a surgical or general medical clinician.
Local complications in women

- bartholinitis/skenitis
- endometritis
- salpingitis
- peritonitis
- tubo-ovarian abscesses
- neonatal infection
**Disseminated gonococcal infection (DGI)**

- 4-5 x more common in women, reflecting lack of genital symptoms
- Haematogenous dissemination from infected mucous membrane
- Comparatively benign bacteraemia affecting joints and skin
- Systemic symptoms are minimal
- WBC and ESR not greatly raised
- Erythema nodosum-like lesions have been described
- Response to antibiotic treatment is rapid but joints may need to be aspirated

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Disseminated gonococcal infection

- skin lesions most common on distal extremities
  - begin as papules or petechiae
  - evolve into microseptic pustular infarcts
  - seldom more than five or six lesions.
• Polyarticular arthritis or tenosynovitis involving
  ◦ knees, wrists, small joints of hands, ankles, elbows
• Endocarditis and meningitis - very rare
  ◦ most often seen in individuals with deficiency in one of the components of complement pathway
• Myocarditis
Screening

- NAATs are test of choice for asymptomatic individuals for urethral or endocervical infection
- NAATs offer significantly enhanced sensitivity compared with culture and test of choice for rectal & pharyngeal infection in MSM
- Positive NAATs from extragenital sites and low prevalence populations need confirmation
- Culture should be taken in all cases of gonorrhoea diagnosed by NAATs prior to antibiotics so that susceptibility testing can be performed and resistant strains identified
Specimen collection - males

- Urethra (microscopy & culture) / FPU (NAATs)
  - All men

- Oropharynx (culture & NAATs)
  - All gonorrhoea contacts
  - MSM

- Rectum (microscopy, culture & NAATs)
  - All MSM if history of oro–anal or anogenital contact
  - Direct vision of rectal mucosa (i.e. using proctoscope) improves sensitivity of microscopy
  - Swabs with heavy faecal contamination should be discarded
Specimen collection - females

- **VVS using a NAAT**
  - (NAATs poor sensitivity on female urine)
- **Endocervix (microscopy & culture)**
  - endocervical cultures alone will identify 90-95% of women with GC
- **Urethra (culture)**
  - to supplement endocervical when using culture
  - In women who have had a hysterectomy urethra offers a better yield than high vaginal

- Additionally, when GC contact,
  - *(or when symptomatic at these sites and when indicated by sexual history)*
  - Rectum (culture & NAATs)
  - Oropharynx (culture & NAATs)
Urethral microscopy

- Specific & sensitive for symptomatic infection
  - 93 - 98% cases diagnosed
- Less useful in asymptomatic men
  - 164 asymptomatic men (80% GC contacts)
  - 31 (18.9%) microscopy negative
- Much less useful in women
  - Approx 20%

(x1000) monomorphic GNID
Other sites

- Microscopy of specimens from cervix and rectum is less reliable
  - Endocervical 37-50%
  - Rectal 40 - 50% - offer in MSM if symptoms

- Microscopy NOT appropriate for pharyngeal specimens
Diagnosis of complicated GC

Bartholin’s abscess: expressed material can be Gram stained for microscopy and culture / NAATs

DGI

- full set of genital tests is advised in patients with suspected DGI
- diagnosis may be made on blood culture or culture of joint aspirate
  - both lack sensitivity compared with genital sampling
- must be remembered that these patients have an STI
- should be advised accordingly & sexual contacts sought and investigated
Sexual assault

- Beware NAATS in low prevalence population
- Cultures and implementation of chain of evidence should be considered if there is prospect of legal proceedings for sexual abuse
- *Neisseria gonorrhoeae* may infect the vaginal mucosa of prepubertal girls because the vagina is lined with columnar epithelium in pre-pubertal girls.
  - Vaginal samples should be cultured in these circumstances in view of the implications of the diagnosis and to provide diagnostic certainty.
GC contacts

- Data is lacking on sensitivity of a single set of tests from anogenital sites to identify infection with N. gonorrhoeae
  - Will depend on timing of sexual contact
  - Pragmatic that a test should be done when the patient presents and if the exposure was within the last two weeks, repeated two weeks after exposure
Co-infections

- GC often co-exists with other STIs
- Coincident STIs should be tested for

<table>
<thead>
<tr>
<th></th>
<th>% Women</th>
<th>% Hetero men</th>
<th>% MSM</th>
</tr>
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<tbody>
<tr>
<td>Syphilis</td>
<td>0</td>
<td>0</td>
<td>0.6</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>34.5</td>
<td>23.6</td>
<td>18.1 (+0.5 LGV)</td>
</tr>
<tr>
<td>HSV</td>
<td>1.2</td>
<td>1.2</td>
<td>0.7</td>
</tr>
<tr>
<td>HPV</td>
<td>0</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>HIV</td>
<td>3</td>
<td>2.6</td>
<td>25.1</td>
</tr>
</tbody>
</table>
Sexual partners

- Patients should be advised to avoid sexual contact until they and their partner(s) have completed treatment and follow-up.
- Contact trace all patients identified with GC.
- Males with symptomatic urethral infection should refer all partners with whom they had sexual contact in the preceding 2 weeks or their last partner if longer ago.
- Patients with infection at other sites or asymptomatic infection should trace all partners for the preceding 3 months.
- In neonates diagnosed with gonococcal ophthalmitis, it is important that mother and her sexual partners are seen and managed as contacts.
Clinical gonorrhoea - summary

- Transmission
- Signs & symptoms
- Complications
- Diagnosis
- Partners
References

- www.bashh.org
  - CEG guidelines
    - management of gonorrhoea
    - gonorrhoea testing

- PHE
  - GRASP Annual report, year 2017 collection