Body Fluid Exposures

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Overview
Differential Diagnosis & Workup
Treatment & Medication
Follow-up

Body Fluid Exposures

- Background
  - Occupational transmission
    - Parenteral
    - Mucous membranes
    - Non-intact skin exposure

Body Fluid Exposures

- Background
  - Most serious
    - Hepatitis B virus (HBV)
    - Hepatitis C virus (HBC)
    - Human Immunodeficiency virus (HIV)
      - Other contaminants can coincide
        - Staph Aureus
        - Streptococcus
        - C. Tetani

Body Fluid Exposures

- Pathophysiology
  - Skin is generally impervious
  - Mucous membranes less so
    - Thin layer of mucus secreted by columnar cells
    - Closely associated via Gap Junctions
    - Allow intercellular communication
    - Prolongs viability of fragile viruses e.g. HIV, HBV

Body Fluid Exposures

- Pathophysiology
  - High vascularity of MMs & permeable cellular layer increases risk of infection
  - Intact skin is virtually impermeable to these viruses except when it is disrupted with:-
    - Needle stick injury
    - Open wounds

Body Fluid Exposures

- Pathophysiology
- ***High Risk***
  - Blood
  - Body fluids
    - Semen, vaginal secretions with visible blood
    - Cerebrospinal fluid
    - Amniotic fluid
    - Synovial fluid
    - Pleural, Peritoneal, Pericardial fluids

Body Fluid Exposures

- Pathophysiology
- ***Low Risk*** for HBV, HCV, HIV:-
  - (Unless Blood is present)
  - Saliva, sweat, tears
  - Faeces, Nasal secretions, urine, vomit

Body Fluid Exposures

- Incidence of Sharps injury and infection
  - Nurses:- 0.98 per nurse per year
  - Physicians:- 1.8 per MD per year
  - Job acquired HIV
    - Twice as high in nurses v. MDs
  - Inoculum blood
    - HBV infection 22-30%
    - HIV 0.3%

Body Fluid Exposures

- Mortality & Morbidity from significant exposure (Open bore needle, positive source)
  - HBV Risk
    - Health care workers when not innoculated and not given prophylaxis
    - 6-30% chance of becoming infected

Body Fluid Exposures

- Mortality & Morbidity from significant exposure (Open bore needle, positive source)
  - HCV Risk
    - 2-7%
    - Vast majority of infected persons become
      - Long term carriers
      - 66% develop raised liver enzymes
      - Highest need for Liver Transplant ($ 300,000 pa for life)

Body Fluid Exposures

- Mortality & Morbidity from significant exposure (Sharps injury, positive source)
  - HIV
    - 0.3%
    - Higher if open bore needle
    - If deeply penetrating
    - If blood injected, e.g. transfusion, plasma, FVIII
    - If source patient has high viral load or low CD4 count. (*lymphocyte killed by HIV*)

Body Fluid Exposures

- History
  - Means of exposure
  - *Splash*
    - *exposed intact keratinized skin*
    - *Mucosa*
    - *Non-intact skin*
  - *Needle Stick*

Body Fluid Exposures

- At Risk
  - All hospital Workers and visitors, students
  - Trauma scenes
  - Sexual encounters
  - Terrorist inoculations

- **We must be prepared to act for all comers.**

Body Fluid Exposures

- Victim assessment
  - Body area of risk exposure
  - Depth of wounds
  - Extremity neurovascularity
  - Scratches, paper cuts
  - Eyes, nose, mouth mucosa

Body Fluid Exposures

- Reporting
  - Were normal universal precautions observed?
  - Recapping poorly
  - Sharp left out, no container.
  - Were Occupational Safety and Health Admin. Standards (OSHA) observed?
  - True Accident?

Body Fluid Exposures

- Laboratory Investigations
  - Test for:-
    - HBV, HCV, HIV
  - At time of incident. (Gives baseline as no one sero-converts that quickly)
  - Try to test source of possible contamination
  - Female at risk- pregnancy test.
  - Imaging studies if risk of retained foreign body

Body Fluid Exposures

- Actions at the Site
  - Copious Lavage
    - Soap and Water still the best.
    - Irrigate MMs thoroughly
    - Close site with dressings
  - Rapid sanitation fluids are not proven to be of value but if nothing else around use them.

Body Fluid Exposures

- ER Department
  - Thorough history and examination
  - Includes all known details of source
    - Meds history
    - Viral Load
    - CD4 levels

Body Fluid Exposures

- ER Department
  - Copious irrigation and soap
  - 6 litres of sterile saline +
  - Tet tox if status unknown
  - Advise victim of risks
  - Refer to Infectious Disease Service urgently if high risk
  - Consider anti-retroviral prophyalaxis.

Body Fluid Exposures

- ER Department
  - *If source known HIV carrier*:
    - PO Combivir 300mg bid and Nelfinavir 750 mg tid
    - Or
    - PO Combivir as above plus Indinavir 800 mg TID

Body Fluid Exposures

- ER Department
  - **HBV** prophylaxis
    - Hepatitis B immunoglobulin (HBIG)
    - HBV vaccine if indicated (not immunized)
  - **HCV**
  - No known prophylaxis yet.

Body Fluid Exposures

- Follow up Care
  - Test exposed care giver or other victim at 3 and 6 month intervals for sero-conversion.
  - Arrange through GP, Public Health Services,
  - Occupational Health Department.

Body Fluid Exposures

- Prevention
  - ***This is the best protection.***
    - ***Wash hands between patients***
    - ***Wear protection when handling body fluids or mucous membranes***
      - ***Gloves, masks, gowns, eyewear***
    - ***Recapping needles is dangerous***
    - ***Single layer gloves reduce risk by 50%***
    - ***Double gloves reduce risk by 99%***

Body Fluid Exposures

- Other Complications
  - Don't forget:-
  - Penetrating wounds introduce other infectious organisms
    - Antibacterial prophylaxis – antibiotics stat.

Body Fluid Exposures

- Prognosis
  - Many variables
  - Generally good if plan followed
  - Less than 1% develop HIV related disease
  - Don't forget sero-evaluation for six months.

Body Fluid Exposures

- *Thank You*