HIV TRANSMISSION IN PEDIATRICS – IS SOURCE ALWAYS KNOWN?

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CASE SUMMARY

11 year old adolescent boy

- Intermittent breathlessness for the past 6 months
- Exacerbated since 1 week
- Associated with cough / fever

PAST HISTORY

Repeated admissions requiring oxygen therapy

Failure to gain weight since past 6 yrs

Recurrent bilateral CSOM for 3-4 years

- No H/O recurrent diarrhoea / skin infections
- No H/O abscesses
- No H/O rashes / joint pains
- No H/O similar illness in other siblings or family
- No H/O known TB contacts

GENERAL EXAMINATION

- Sick looking, febrile , pallor, clubbing +,no lymphadenopathy
- Emaciated
  - Wt: 14.3 kg / 36 kg (< 3rd centile)
  - Ht: 112.6 cm / 143 cm (< 3rd centile)
  - BMI : 11.39 (severe thinness)
- Respiratory distress- ICR+,SCR+, suprasternal retractions +
- Hypoxia SaO_2 - 84%

SYSTEMIC EXAMINATION

- Respiratory: Bilateral extensive crackles +
- Neurological : normal
- Abdomen: no organomegaly, no distension
- Cardiovascular: normal

PROVISIONAL DIAGNOSIS

- Interstitial lung disease
- Immunodeficiency with Koch's disease
- Cystic fibrosis

INVESTIGATIONS

- CBC – anemia
- RFT, LFT - normal
- CRP, ESR – elevated
- CXR – bilateral infiltrates (previous CXR - similar findings)
- Mantoux test – negative
- ABG : pH -7.39 , pO_2 -175.2 , pCO_2 -34.5 , $cHCO_3$ – 20.8
- Blood culture - sterile

- HIV ELISA – POSITIVE
- CD4 count – 10 cells/µl (< 350 – immunodeficiency)
- CD4 % - 2%
- RNA PCR Viral load – 3585527 copies/ml

DIAGNOSIS

- Interstitial lung disease
  due to secondary immunodeficiency

  ? Pneumocystis infection

  ? Underlying Koch's

TREATMENT

- Oxygen
- IV Pip + Tazo
- Oral cotrimoxazole / steroids
- Oral azithromycin
- Nebulisations

- Afebrile ,breathlessness settled,SaO_2 – 95%

- Shifted to YRG for further treatment

AT YRG:

- Treated with Efavirenz / Lamivudine/ Stavudine / ATT (considering chronic respioratory illness)
- Readmitted after 3 months for CSOM (Pseudomonas / Klebseilla in culture)
- CD4 count – 289 cells / µl , CD4 % - 9%
- On follow up – no new infection.

AMBUSHED!!!

Parental screening: NEGATIVE

Siblings screening: NEGATIVE

RETROSPECTIVE CASE ANALYSIS

- No H/O blood or blood products transfusions
- No H/O unsterile injections (not immunized for age)
- No past H/O surgeries / invasive procedures
- No known H/O sexual abuse
- No known H/O HIV positivity in the family or neighbourhood
- No H/O any cultural practices
- No tattoos on the body
- Environmental H/O – not residing near any hospital / garbage disposal area.

WHERE'S THE SOURCE?

- Outside the hospital exposure ?

  1.needle stick injury?

  2. accidental injury?

- Unknown**?**

LITERATURE SEARCH

- **CA-NSI** : any injury that occurred outside a medical setting with a needle potentially contaminated with blood.
- A total of 274 patients were identified over a period of 19 years
- Blood was reported on the needle or syringe in only 36 cases (13.1%)
- Bleeding was seen in only 71 (25.9%) of cases.

Circumstances of Injury

Circumstances	No. (%) of Injuries
Picked up/played with needle	177 (64.6)
Stepped on/fell on needle	25 (9.1)
Stuck by playmate	11 (4.0)
Stuck while handling trash	10 (3.6)
Other/unknown	51 (18.6)

- Needlestick injuries likely carry a considerably smaller risk of transmission of HIV.
- Needles found in the community have been exposed to environmental temperatures and drying for an indeterminate period of time.
- Most injuries are superficial (only 26%) and rarely involve a device with blood visible on the needle or syringe (13%).
- Although the risk of seroconversion may be small, it remains a possibility.

*Pediatric Injuries From Needles Discarded in the Community: Epidemiology and Risk of Seroconversion (**Pediatrics 2008;122;e487)***

- It is worrying that many injuries occurred in places where children might be considered 'safe'.
- Shocking was the fact that 10 children presented after copying drug abusers.
- Attempts to prevent HIV seroconversion remain of unproved value.
- Attention should be directed towards the prevention of needlestick injuries.
- This might be achieved by publicizing the dangers of needles and by urging drug abusers to dispose of needles in a more responsible manner.

*Out of hospital needlestick injuries - J P Wyatt, C E Robertson, W G Scobie (**Arch Dis Child 1994; 70: 245-246**)*

UNUSUAL TRANSMISSIONS OF HIV

CASE REPORT 1:

- Transmission between 2 children in the same household (one on ART , other infected after 18 months of exposure – similar viral pattern)
- Source child : nose bleeds +, recipient child : skin rashes and dermatitis

Transmission from One Child to Another of Human Immunodeficiency Virus Type 1 with a Zidovudine-Resistance Mutation (Joseph E. Fitzgibbon, Sunanda Gaur et al

N Engl J Med 1993; 329:1835-1841)

CASE REPORT 2 :

- 2 adolescent brothers – one of them reported to have got infected probably from peers at the school (? Bite during a quarrel)
- One transmitted the infection to another through a razor blade?

*(**CDC** publication on HRQOL in **December 1993**)*

POSSIBILITIES IN THIS CHILD

- Inadvertent needle prick
- ????? Unsafe injection practice
- ? From peers
- Unknown

MANAGEMENT OF AN ACCIDENTAL NEEDLE STICK INJURY

- Risk of HIV transmission from a needle discarded in public is low.
- Wound to be cleaned with soap and water; do not squeeze to induce bleeding.
- Determine child's immunisation status for tetanus and HBV.
- Assess the extent of wound and probability of exposure to blood (see for open skin lesions or mucous membranes).
- Circumstance of injury to be documented.
- Testing needles and syringes for viruses is not indicated.
- Baseline HBV, HIV and HCV status (may be stored for later testing).
- If antiretrovirals are being considered: CBC,RFT,LFT

PREVENTION

- Parents and health care providers to be aware of the problem of discarded needles.
- Children should be educated about the potential dangers of injection drug use.
- Children should be taught not to handle needles and syringes, and to report finding stray ones to adult, who should then arrange for the safe disposal of the needle in a puncture-proof, closed container.
- Community programs should be in place to keep parks and public places, where children generally play, free of discarded needles.
- Dumping of hospital waste near a residential locality should be avoided.

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"A safe injection is one that does not harm the recipient, does not harm the health care worker, and does not harm the community" – **WHO**

THANK YOU!