Contamination of Laryngoscope Handles

Dr David Williams
Consultant Anaesthetist
ABMU NHS Trust, Swansea

D. Williams, J. Dingley, C. Jones, N. Berry
Contamination of Laryngoscope Handles, J Hosp Infection Feb 2010 (in press)

Background

- No clear local / national decontamination protocols
- Many widely used techniques inadequate \(^1,2\)
- Contamination with \(^1,3-8\):
  - Organisms - ? MRSA, CJD
  - Blood - ? HBV, HIV
- Risk to patients & staff

Objectives

- Identify:
  Nature & extent of microbial and blood contamination on "ready for use" laryngoscope handles
- ? Association with:
  - design of laryngoscope handle
  - type of surgery
Methods

- Research & Ethics Committee approval
- Samples: 14:00 - 16:00 17-18 Nov 2008
- No advance notice
- All "Ready for use" handles
- 32 anaesthetic rooms
- Sterile technique: No touch / fresh gloves
- Sterile paper templates 2cm ø ~ 3cm²

• Blinding

• Growth:
  - Heavy: >20 colonies/plate
  - Medium: 11-20
  - Light: 5-10
  - Scanty <5
  - Enrichment only

• Type:
  - Routine methods
  - LT-MALDI-TOF Mass Spectrometer

Results: Negative findings

- Anaerobes
- Fungi
- MRSA
- vancomycin-resistant enterococci
- multi-resistant Gm –ve bacilli
- Blood
  - ? no contamination
  - ? inadequate sensitivity
  - ? methodology
Extent of Contamination

- 192 samples
- 99 positive cultures
- Mainly polymicrobial

Nature of Contamination

- 128 colonies
- 35 different species

What organisms were grown?

- Coag -ve Staph most common
  - Hands of staff
- Airborne organisms
  - B.cereus: 9 (14%) handles, micrococi :2 (3%) handles
- Spore forming organisms
  - B.cereus & bacilli sp 38 / 128 (30%)
  - ? Selected by local policy of alcohol wipes
- Potential pathogens
  - enterococi, MSSA, klebsiella, acinetobacter

Where were organisms grown from?

- More species & heavier growth from knurled areas (B,C) cf. smooth areas (A)
  - ? due to increased handling
  - ? fissures = reservoir for organisms
- More species & heavier growth from contact point on knurled area (C) cf. other knurled areas (B)
- Oral flora (S.viridans) grown from contact point (C) only
- Potential route for pt-pt transmission of pathogenic bacteria / prions / blood
- No association with type of surgery / hospital site
Proposals

- High incidence of contamination (86%)
  - Effective national disinfection protocol
  - NB. Alcohol-resistant (spore forming) (clostridia, B.cereus)
  - New sterile handles for each case
  - Single use handles - Collect & recycle
  - Disposable sheaths
  - Bacteriostatic agents in handles (Ag+ ion)

- Coag-ve Staph
  - Gloves / Hand hygiene protocols

- Airborne bacteria (micrococci, B.cereus)
  - Sealed packaging prior to use

References

5. Perry SM. The presence of viable and/or occult blood on anaesthesia and monitoring equipment. Am Assoc Nurse Anes J 2001;69:44-48

Redesign handles
- avoid knurled / fissured grips
- ergonomic design / polymer coating

Redesign blade mount
- ensure blade tip does not contact handle when folded in "off" position