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Interventional CV Pathology
Case 2

(No Disclosures; No Conflicts of Interest)

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Interventional CV Pathology
Case 2
Timing Is Everything

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Case 2
Lecture Outline

• Presentation of Case
• Review of Literature
• Diagnosis of Case 2
• Variation of Theme
• Summary of Cases
Case 2
Lecture Outline

- Presentation of Case
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  - Summary of Cases
Case 2
Right Wrist Lesion

- 51, M with vascular disease
  Old: carotid endarterectomy for stenosis
  Recent: coronary angiogram (2 wks ago)

- Current medical history (2003)
  Right wrist lesion: swollen, tender, & red
  Clinically: infection or pseudoaneurysm

- Post-operative results
  Culture: no bacteria, fungi, mycobacteria
  Microscopy: negative GMS & AFB stains
Case 2
Right Wrist Lesion

Right Radial Artery (H&E & VVG Stains)
Case 2
Right Wrist Lesion

Foreign-Body Giant Cell Response
Case 2
Right Wrist Lesion

FB’s, Giant Cells, & Eosinophils
Case 2
Right Wrist Lesion

Parasite or Polymer? Critter or Crud?
Case 2
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Additional clinical information
  Arterial access for angio: R radial artery
  Arterial sheath used: hydrophilic-coated
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Review of Literature

• Case, 72M (Subramanian et al, 2003)
  Cor angio via radial art; hydrophilic sheath
  1 mo later, 0.5 cm mass at his access site
  Surgical excision of firm inflamed tissue

• Surgical pathology findings
  Intense foreign-body giant cell response
  FB: blue-gray, granular, & non-refractile,
    consistent with hydrophilic coating
  Same in several patients; stopped using
  coated sheaths; no more FB reactions
Case 2
Review of Literature

• **Series of 33 cases (Kozak et al, 2003)**
  1.6% of 2038 radial artery cardiac caths
  2.7% of 1224 hydrophilic-coated sheaths
  Only one brand produced wrist lesions
  Most lesions in 2-3 wks (range 3d - 3mo)

• **Surgical pathology findings**
  Abscesses & granulomas, some with FB’s
  Amorphous blue-gray extravascular FB’s,
  consistent with hydrophilic sheath coat
  (polyacrylamide & polyvinylpyrrolidone)
Case 2
Review of Literature

Contents of Catheter Kit
- Guide Wire
- Dilator
- Sheath
- Needle
- Obturator

From Mayo Clinic

Sheath
Dilator
Wire

From Internet

Hydrophilic-Coated Radial Artery Sheath
Case 2
Review of Literature

Cathet CV Intervent 2003;59:207
Case 2

Review of Literature

SAFETY ACTION NOTICE

All users of Cook Flexor Check-Flo Micropuncture radial artery access introducer sets with AQ hydrophilic coating should be informed of the risk of inflammatory response at the access site which has been associated with the use of these devices.

Users should be advised to take the precautions recommended by Cook (see Annex) as follows:

a) use a small incision in the skin to facilitate sheath insertion,
b) firmly wipe the length of the sheath with sterile saline wetted gauze prior to insertion,

(0) Local infection control policy should be adhered to, particularly when using the wetted gauze.)

Adverse incidents involving Flexor Check-Flo Micropuncture radial artery access introducer sets with AQ hydrophilic coating should be reported to William Cook (see Enquiries) and Scottish Healthcare Supplies.

ENQUIRIES

Enquiries to the manufacturer should be addressed to:

Cook Customer Support
0207 363 4185

Figure 1
Cook Flexor Check-Flo Micropuncture radial artery access introducer sets with AQ hydrophilic coating
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Diagnosis of Right Wrist Lesion

Comparison of Case 2 and Sheath Coat
Case 2
Diagnosis of Right Wrist Lesion

Comparison of Case 2 and Sheath Coat
Case 2
Diagnosis of Right Wrist Lesion

• Right radial artery, segmental resection:
  Prominent peri-arterial giant cell reaction, with numerous foreign bodies, consistent with hydrophilic polymer, with a history of trans-radial cardiac catheterization 2 wks ago using a hydrophilic-coated sheath
Case 2
Diagnosis of Right Wrist Lesion

Another Case (H&E and VVG Stains)
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Variation of Theme
Recurrent CNS Disease

58, F with subarachnoid hem (Mar 2005)
Where: in Guatemala; flown to Houston
Angio: aneurysm, distal R int carotid art
Procedure: coil emb of ruptured aneur

• Rapid-onset hemiparesis (Dec 2005)
MRI: R frontoparietal ring-enhancing (3)
Brain bx: granulomas & microabscesses
History: trips to Central & South America
Treatment: for presumed fungal infection
Variation of Theme
Recurrent CNS Disease

Coil Embolism (AJNR 2005;26:1921)
Variation of Theme
Recurrent CNS Disease

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  Where: in Guatemala; flown to Houston
  Angio: aneurysm, distal R int carotid art
  Procedure: coil emb of ruptured aneur

Rapid-onset hemiparesis (Dec 2005)
  MRI: R frontoparietal ring-enhancing (3)
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  History: trips to Central & South America
  Treatment: for presumed fungal infection
Variation of Theme
Recurrent CNS Disease

- New MRI lesions (Summer 2006)
  Right temporal lobe gray matter (Jun)
  Right paraventricular white matter (Aug)

- Right carotid angiography (Oct 2006)
  Stable coil in right carotid aneurysm, just distal to origin of right ophthalmic artery

- Infection and/or coil-related? (Nov 2006)
  No fever, chills, night sweats (pre/post-op)
  Request for review of slides from brain bx
Variation of Theme
Recurrent CNS Disease

Cerebral Granulomas (Brain Biopsy)
Variation of Theme
Recurrent CNS Disease

Granuloma with Foreign Bodies
Variation of Theme
Recurrent CNS Disease

Granulomas with Foreign Body
Variation of Theme
Recurrent CNS Disease

Micro-Abscess (Brain Biopsy)
Variation of Theme
Recurrent CNS Disease

Micro-Abscess with Foreign Body
Variation of Theme
Recurrent CNS Disease

Micro-Abscess with Foreign Body
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Summary of Cases

• **Vascular sheaths & metallic coils**
  May have a hydrophilic coat which can dislodge & cause intense foreign-body giant cell reaction

• **For vascular introducer sheaths**
  Coating may shear off & produce a perivascular nodule within weeks & be mistaken for infection

• **For vascular metallic coils**
  Pieces of coating may break loose, embolize, & cause micro-abscesses, granulomas, & infarcts
Case 2
Summary of Cases

Two Mechanisms of Injury (Diagram)

Radial Artery
Sheath

Cerebral Artery
Aneurysm with Coils

Two Mechanisms of Injury (Diagram)
Case 2
Summary of Cases

- **Microscopic features (H&E)**
  Hydrophilic polymers appear filamentous, finely granular, pale blue (by H&E), & non-polarizable, and may be found between or within giant cells.

- **Be a vigilant medical detective**
  If giant cell inflammation occurs in peri-arterial tissues or within micro-abscesses or areas of necrosis, look for organisms and foreign bodies, and also check medical history for exposure to hydrophilic-coated sheaths or metallic coils.
Case 2
Intense Foreign Body Reaction to Hydrophilic-Coated Sheaths & Coils

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