Delayed pain in Cochlear Implant – a tailored treatment plan according to an etiology-based classification

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Disclosure

• Nothing to declare
Literature review

Pain in Cochlear Implant Recipients: An Uncommon, Yet Serious, Consequence of Cochlear Implantation

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Case report

Pain-only complaint about cochlear implant device: A five-patient pediatric experience

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Pain After Cochlear Implantation: An Unusual Complication?

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Pain - characteristics

- 3 months to 23 years (!) post implantation
- 21 implants – revision surgery
- 4 patterns of pain

Bar chart showing:
- Patients:
  - 50 (5%) Pediatrics
  - 57 (4%) Adults

- Implants:
  - 50 (5%) Pediatrics
  - 57 (4%) Adults
Patterns of pain 1

- Related to use
  - Extra-cochlear stimulation
    - Hearing deterioration
  - Mini-trauma
    - Hearing deterioration

- Related to use + stress
  - Personality traits
    - No hearing deterioration

- Relapsing with swelling
  - May be seasonal
    - No hearing deterioration

- Not related to use
  - No hearing deterioration
  - No Hx. of trauma

- Gelatinous swelling over R/S
  - No signs of infection

- Local tenderness w/o signs of infection
  - Specific sites

- Pain over large area
  - No specific findings

- No specific location, involving a large area
  - TMJ / cervicalgia / migraine

- Soft failure

- Neuralgia

- Allergy

- Biofilm
Patterns of pain 2

**Soft failure**
- Imaging normal
- Integrity may be normal
- In some cases faulty electrodes
- Does not respond to antibiotics
- Revision surgery

** Neuralgia**
- Imaging normal
- Integrity normal
- Responds to anti-inflammatories
  - Persistent
  - Revision surgery not helpful

**Allergy**
- Imaging normal
- Integrity normal
- Allergy to implant components
- "Responds" to antibiotics
  - Persistent
  - May resolve spontaneously
  - If revision surgery - change manufacturer

**Biofilm**
- Imaging normal
- Integrity normal
- Blood tests normal
- Responds to antibiotics
  - If revision surgery - in 2 stages
Normal findings

Replace external parts
Reprogramming

Resolved
Follow up

Unresolved

Local findings
Specific treatment

Antibiotics (4 weeks)
+/- local anti-inflammatory
+/- systemic anti-inflammatory (2 weeks)

Resolved
Follow up

Unresolved

Imaging$^1$: Transorbital and Stenver’s CT

Integrity testing$^{1,2}$

Categorize$^3$

Neuralgia
Local Bethamethason injection

Allergy

Biofilm

Soft Failure

Chronic pain management
Consider changing manufacturer
Delayed reimplantation
Primary reimplantation

$^1$ In parallel with treatment
$^2$ When available
$^3$ When considering reimplantation
Results - Categories of pain

- Soft failure: 17
- Neuralgia: 12
- Allergy: 6
- Biofilm: 22

Total implants: 57
Summary

• Pathogenesis in most cases – biofilm or soft failure
  • Biofilm – 78% responded to conservative tx.
  • Soft failure – 82% required revision surgery

• Allergy – 90% manage with close follow-up

• Neuralgia – Bad prognosis. Chronic pain tx.
Conclusion

• Delayed pain after CI is an under-reported complication
• Defining the pattern of pain is crucial for choosing treatment

Thank you for your attention