Adult Spinal Infection

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SpR Teaching

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Spinal Infection

- Discitis
- Vertebral Osteomyelitis
- Epidural Abscess

- Aetiology
  - Haematogenous
    - Urological, Respiratory, Skin infection
  - Direct Traumatic Inoculation
  - Overlying ulcerative disease
  - Adjacent infections
    - Retropharyngeal, Retroperitoneal
  - Lymphatic (Particularly TB)

Spinal Infection

- Epidemiology
  - Bimodal distribution
    - Small peak in 1st and 2nd Decades
    - Larger peak from 5th Decade
  - Male:Female - 2:1
- Risk factors
  - Diabetes
  - Age
  - Immunocompromise
    - AIDS
    - Chronic steroid use
    - IVDU
    - Malnutrition
  - Obesity

Epidemiology & risk factors

Diagnosis, management and outcome of clinically-suspected spinal infection

Roberto Luzzati [a,*], Donatella Giacomazzi [a], Maria Chiara Danzi [c], Leonello Tacconi [b], Ercole Concia [c], Sandro Vento [c,1]

Journal of Infection (2009) 58, 259–265

BRITISH INFECTION SOCIETY

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Retrospective study of 82 spontaneous spinal infection cases in adults over 11 years in two Italian hospitals (Trieste & Verona)

Table 1 Baseline demographics and characteristics of patients.

Variable	No. Cases (% of total)
All cases (age, mean ± standard deviation)	82 (54 ± 11 years)
Male gender	50 (61)
Foreign-born persons	10 (12)
Northern Africa	8
Southern America	2
Predisposing factors and/or underlying diseases	35 (47)
Diabetes mellitus	17
Alcohol abuse and/or liver cirrhosis	6
Cardiovascular disease	4
Chronic renal insufficiency	3
Malignancies	2
Drug addiction	2
Other diseases[a]	6

[a] One case each of HIV infection, splenectomy, psoriasis, chronic hepatitis C, Crohn's disease, hip prosthesis.

Presentation

- Back pain
  - Vague, insidious onset
- Red Flags
  - Age - <20, >50
  - Constitutional Symptoms
  - Risk Factors
  - Pain worse when supine
  - Neurology

Nontuberculous Pyogenic Spinal Infection in Adults

A 12-Year Experience From a Tertiary Referral Center

Joseph S. Butler, MB BCh, BAO,* Martin J. Shelly, MRCSI,* Marcus Timlin, MRCSI,* William G. Powderly, MD, FRCPI,† and John M. O'Byrne, MCh, FRCSI*

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Table 1. Clinical Presentation

Presentation	No. of Cases	% of Total
Back/neck pain	47	97.9
Fever >37.5 C	6	12.5
Weight loss >1 stone	4	8.3
Nausea and vomiting	2	4.2
Anorexia	1	2.1
Lethargy	1	2.1
Confusion	1	2.1
Dysphagia	1	2.1
Neurologic deficit	14	29.2

Delay in Presentation

- Symptoms insidious and may be attributed to mechanical back pain
- High index of suspicion needed, particularly in the presence of risk factors and
- Up to 90% of patients with neurology at presentation will have long-term deficit†

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- 48 Patients
  - 14 – < 2weeks
  - 21 – 2-6 weeks
  - 9 – 6-12 weeks
  - 4 – 3-6 months

† Davis et al. The Clinical Presentation and Impact of Diagnostic Delays on Emergency Department Patients with Spinal Epidural Abscess. *The Journal of Emergency Medicine*, Vol. 26, No. 3, pp. 285-291, 2004

Work up

- History and Exam
- Plain radiographs
- WCC, CRP, **ESR**
- Blood cultures if pyrexial
- MRI
- Percutaneous biopsy
- Open biopsy

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	Diagnostic yield
Blood Cultures	43.6%
Percutaneous Biopsy	72.7%
Open biopsy	91.6%

Microbiology

- *Staph aureus* – 40-60%
- *Pseudomonas* – associated with IVDU
- *E. Coli, Klebsiella, Proteus* – associated with spread from UTI
- *Salmonella* – sickle cell disease
- *Mycobacterium Tuberculosis*

Spinal Infection – TB

- 1/3 of world population have *M. Tuberculosis*
- 10-15% extrapulmonary involvement
- 5% of these spinal
- Half of bony TB is spinal
- Risk factors same as pyogenic infections
- Clinical
  - Back pain less common
  - Constitutional symptoms may be only presenting features
- Work-up same as pyogenic spinal infections
  - Anaemia, hypoalbuminaema, mildly elevated WCC, lympocytosis

Management

- Non-operative
  - More effective in younger and immunocompetant patients
  - Antibiotics after identification of microbe
    - Parenteral initially, then oral
      - 6 weeks or more

Management

- Operative
  - Indications
    - Failure of non-operative Mx
    - Need for open biopsy
    - Spinal abscess
    - Sepsis
    - Progressive spinal deformity / instability
    - Refractory pain
    - Neurological compromise

Management

- Operative
  - Adequate debridement
  - Decompression of neural elements as needed
  - Stabilisation?

Beneficial Influence of Titanium Mesh Cage on Infection Healing and Spinal Reconstruction in Hematogenous Septic Spondylitis

A Retrospective Analysis of Surgical Outcome of Twenty-Five Consecutive Cases and Review of Literature

Panagiotis Korovessis, MD, PhD, Thomas Repantis, MD, Panagiotis Iliopoulos, MD, and Alexander Hadjipavlou, Prof.*

From the Department of Orthopaedic, General Hospital "Agios Andreas," Patras, Greece; and *Department of Orthopedics, University of Crete, Greece.

SPINE Volume 33, Number 21, pp E759–E767

- **Single stage**
  - anterior debridement +/- partial vertebrectomy
  - Anterior titanium cages with bone graft
  - Posterior pedicle screw fixation
- **Follow-up 56 months (31-116)**
  - 1 died postoperatively with PE
  - 100 % resolution of infection
  - Patient with partial neurology recovered (3 with ASIA A made no recovery)

Safety of instrumentation in patients with spinal infection

Clinical article

MAHMOUD RAYES, M.D., CHAIM B. COLEN, M.D., PH.D., DIAA A. BAHGAT, M.D., TETSUHIRO HIGASHIDA, M.D., MURALI GUTHIKONDA, M.D., SETTI RENGACHARY, M.D., AND HAZEM A. ELTAHAWY, M.D., PH.D., F.R.C.S.

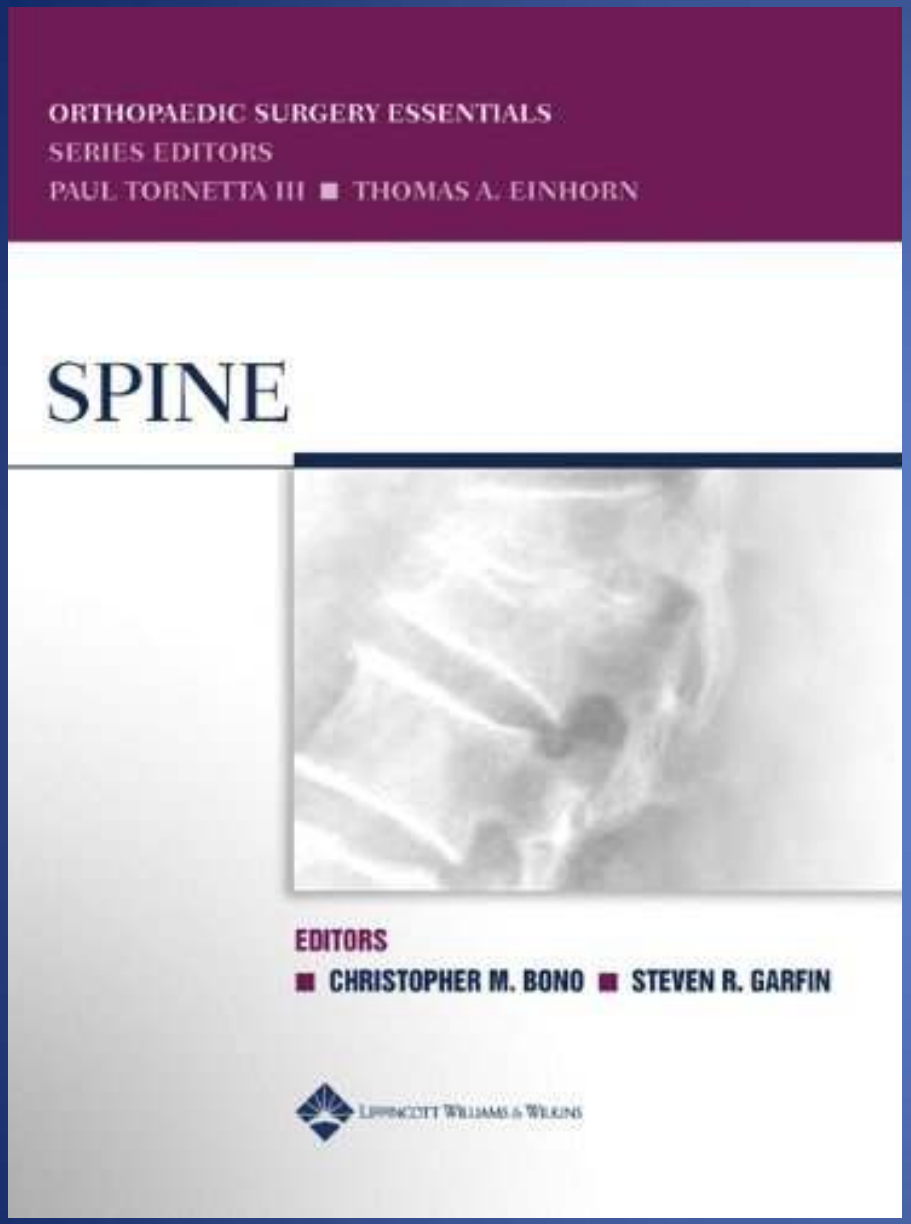
Department of Neurological Surgery, Wayne State University School of Medicine, Detroit, Michigan

J Neurosurg Spine 12:647–659, 2010

- Retrospective analysis of 47 patients treated with debridement and instrumentation
  - 34 anterior (plates / cages)
  - 7 posterior (Screws)
  - 6 A&P (3 staged)
- Follow-up 22 months (1-80)
  - 8 deaths
  - 5 complications
    - 2 haematoma, 1 hardware failure, 2 recurrence of infection (1 had hardware replacement)
  - 34 improved neurology (5 did not)

Summary

- Have a high index of suspicion
- Look for risk factors and red flags
- Appropriate clinical work-up and microbial identification before antibiotics
- Indications for surgery, use of stabilisation



LWW, 2004
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Any Questions?