

HEALTH-CARE HEMATOGENOUS VERTEBRAL OSTEOMYELITIS: A SEVERE AND POTENTIALLY PREVENTABLE INFECTIOUS DISEASES

C Pigrau, D Rodríguez-Pardo, B Almirante, L Moretó, N Fernández-Hidalgo, F Pellise, M Larrosa, M Puig, A Pahissa

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Infectious Diseases, Microbiology and Orthopedic Departments. Hospital Universitari Vall d'Hebron

Introduction

Recently, haematogenous vertebral osteomyelitis (VO) has been sporadically associated with catheter-related infections and other nosocomial infections or procedures. However, available data on the impact, source of infection, clinical findings, and outcome of healthcare associated spinal infections is limited.

The aim of our study was to describe the risk factors, infectious source, aetiology, clinical characteristics, therapy and outcome of healthcare-associated vertebral osteomyelitis (HCAVO) and compare them with community cases (CAVO).

Materials and Methods

A retrospective cohort study of consecutive patients with vertebral osteomyelitis (VO) was conducted in our third-level hospital between 1987 and 2011. HCAVO was defined based on onset of symptoms after 1 month of hospitalization or within 6 months after hospital discharge (nosocomial), or ambulatory manipulations in the 6 months before the diagnosis (nosohusial). Continuous variables were compared using the unpaired Student *t* or Mann-Whitney *U* test, and proportions using the chi-square or Fisher exact test, where appropriate.

Results

Forty-one (25%) out of 163 VO were classified as healthcare-associated (fig 1).

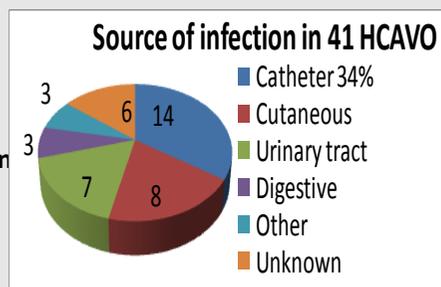
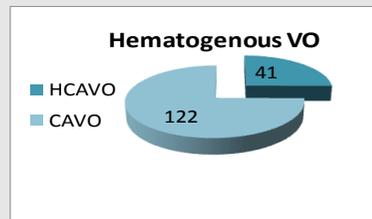
This percentage increased from 15% (9/61) in the 1987-1999 to 31% (32/102) during the second twelve year period ($P < 0.01$).

Twenty-nine of the 41 cases (71%) were considered nosocomial, and 12 (29%) nosohusial.

A catheter related intravascular infection was the most common source of the infection

Among them 5/14 (36%) were in relation with haemodialysis procedures.

Localization: Cervical (20%), Dorsal (32%) Lumbosacral (37%), Multifocal (12%)



Results

Microbiological etiology	HCAVO n=41 (%)
Gram positives	27 (65.8)
MSSA	11 (26.8)
MRSA	3 (7.3)
CoNS	6 (14.6)
<i>Streptococcus</i> species	4 (17.1)
<i>Enterococcus faecalis</i>	3 (7.3)
Gram negatives (aerobic)	9 (21.9)
Other	5 (12)
<i>Candida albicans</i>	3 (7.3)
Anaerobes	3(7.3)

Underlying conditions	70.3%
- Immunosuppressive therapy	16 (39%)
- Diabetes	13 (32%)
- Chronic renal failure (CRF)	8 (20%)
Clinical findings	
- Back pain	36 (88%)
- Fever	30 (73%)
- Neurological complications	13 (32%)
- Infectious endocarditis	8 (20%)
- Metastatic foci	3 (7%)
Outcome	
-Surgical therapy	4 (10%)
- Related mortality	6 (15%)
- Treatment failure	9/41 (22%)
- Relapse	3/32 (9%)
- Neurological deficit	5/35 (14%)
- Unfavourable outcome	12/41 (29%)

Compared to CAVO, HCAVO cases were:

Older (66.0 vs 60.5 $p < 0.05$), had more underlying conditions (73% vs 50% $p < 0.05$), CRF (19% vs 4% $p < 0.05$), immunosuppression (39% vs 7%), a known source of the infection (85% vs 54%), lower incidence of back pain (89 vs 98% $p < 0.05$) and lumbar involvement (37% vs 62%) and more infections due to CoNS (15% vs 2% $p < 0.05$) or *Candida* spp (7% vs 0%).

Outcome: HCAVO cases had a higher mortality (15 vs 6% $p = 0.069$) and relapse rate in survivors (9% vs 1%, $p < 0.05$). No differences were observed in the frequency of neurological complications (32% vs 25%), infective endocarditis (20% vs 23%), length of antimicrobial therapy (8 vs 8 w) and need of vertebral surgery (10% vs 13%).

Conclusions

- In our setting, hematogenous pyogenic VO infections, a relevant condition, is healthcare-associated in 25% of the cases, and a third of these are potentially preventable catheter-related infections.
- HCAVO affects patients with underlying conditions and is caused mainly by grampositive cocci
- Compared with community-acquired cases, HCAVO is associated with a higher mortality and relapse rate; hence , further prevention measures should be assessed.