Microbial aetiology of hip hemiarthroplasty (HHA) infections versus those associated with total hip arthroplasty (THA): impact of antimicrobial resistance

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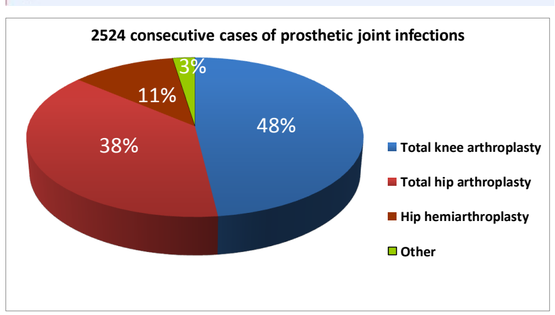
Objectives

Our objective was to **compare the microorganisms causing infections associated with HHA for femoral neck fracture and THA implanted during elective surgery.** We used data from a large cohort of patients with PJIs. Infections caused by multidrug-resistant organisms (MDRO) were also analyzed.

Methods

We conducted a multicenter study of 2524 consecutive cases of prosthetic joint infections diagnosed in 19 Spanish hospitals from 2003 through 2012.



Methods

Patients with infected HHAs for femoral fractures and electively implanted THAs were included in the current investigation. For each patient group, we determined the percentages of each of the commonest microorganisms, as well as polymicrobial infections and MDROs.

We defined MDRO according to Magiorakos et al (Clin Microbiol Infect 2012;18: 268).

Results

A total of 949 cases were included: 248 HHA and 701 THA infections.

Patients with infected HHAs were older (median 82 vs. 72 years) than infected THA patients. More infected HHA than infected THA patients were women (70.2% vs. 49.4%; p<0.001), had underlying diseases (85.5% vs 58.2%, p<0.001), Charlson scores of ≥ 3 (36.3% vs. 17.7%; p<0.001), and ASA scores ≥ 3 (65.2% vs 33.6%; p<0.001).

Conclusions

Patients with infected HHSs are older, have more comorbidities and early infections than patients with infected THAs. Compared to THA infections, HHA infections are characterized by a greater preponderance of gram-negative bacilli, MDROs and polymicrobial infections.

	Hip arthroplasty infections (n=949)	Infections associated with HHAs for femoral neck fracture (n=248)	Infections associated with THA implanted during elective surgery (n=701)	P value
Type of prosthetic joint infection (Tsukayama et al)				
Early postoperative infection	411 (43.3%)	169 (**68.1%**)	242 (34.5%)	<0.001
Late chronic infection	381 (40.1%)	58 (23.4%)	323 (**46.1%**)	<0.001
Positive intraoperative cultures	78 (8.2%)	7 (2.8%)	71 (**10.1%**)	<0.001
Acute hematogenous infection	75 (7.9%)	13 (5.2%)	62 (8.8%)	0.071
Microorganisms	**Culture-positive hip arthroplasty infections (n=868)**	**Culture-positive HHA infections (n=238)**	**Culture-positive THA infections (n=630)**	
Coagulase-negative staphylococci	321 (37%)	65 (27.3%)	256 (**40.6%**)	<0.001
Aerobic gram-negative bacilli (GNB)	298 (34.3%)	129 (**54.2%**)	169 (26.8%)	<0.001
Staphylococcus aureus	233 (26.8%)	74 (31.1%)	159 (25.2%)	0.083
***Enterococcus* species**	75 (8.6%)	16 (6.7%)	59 (9.4%)	0.216
***Streptococcus* species**	63 (7.3%)	12 (5%)	51 (8.1%)	0.122
***Candida* species**	14 (1.6%)	5 (2.1%)	9 (1.4%)	0.483
Polymicrobial infections	156 (18%)	61 (**25.6%**)	95 (15.1%)	<0.001
Multidrug-resistant Organisms	162 (18.7%)	74 (**31.1%**)	88 (14%)	<0.001
Methicillin-resistant *S. aureus*	82 (9.4%)	33 (**13.9%**)	49 (7.8%)	0.006
Multidrug-resistant GNB	82 (9.4%)	44 (**18.5%**)	38 (6%)	<0.001
Extended-spectrum beta-lactamases producing Enterobacteriaceae	23 (2.6%)	13 (**5.5%**)	10 (1.6%)	0.002

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