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7. ¿En qué pacientes con bacteriemia
enterocócica no es preciso realizar
un Ecocardiograma?



- *Enterococcus spp.* es una causa creciente de bacteriemia, frecuentemente asociada a infección urinaria o de origen gastrointestinal
- En 2002, Fernández-Guerrero et al. (17 ptes)
 - ≥3 los hemocultivos positivos (BCs)
 - valvulopatía subyacente
- 2004, Anderson et al, (41 ptes)
 - válvula cardíaca protésica se asoció de forma independiente con la EI.

- *Enterococcus spp.* es una causa creciente de bacteriemia
- La endocarditis enterocócica (EE) representa entre el 4 y el 25% de todos los episodios de endocarditis en nuestra institución (tabla 1).
- En nuestro centro, el ecocardiograma transesofágico sistemático (ETE) se recomienda a todos los pacientes con E-BSI. El ETE podría realizarse en el 58,7% de los pacientes visitados por los miembros del grupo de endocarditis.
- La EE se demostró en 65/1515 (4,3%) pacientes que se sometieron a ETE (Figura 1).

Table. 1. Evolution of E-BSI and EE during 2003-2012

| Year | E-BSI episodes | E-BSI/1,000 admissions | EE/ E-BSI prevalence | EE/ all IE episodes |
|------|----------------|------------------------|----------------------|---------------------|
| 2003 | 109 | 2 | 1.8% | 2/ 49 (4%) |
| 2004 | 114 | 1.9 | 7% | 8/49 (16.3%) |
| 2005 | 129 | 2.1 | 2.3% | 3/44 (6.8%) |
| 2006 | 149 | 2.3 | 3.3% | 5/46 (10.8%) |
| 2007 | 178 | 2.6 | 4.4% | 8/41(19.5%) |
| 2008 | 177 | 3 | 2.8% | 5/48 (10.4%) |
| 2009 | 170 | 3.2 | 5.2% | 9/57 (15.8%) |
| 2010 | 149 | 2.7 | 2% | 3/53 (5.6%) |
| 2011 | 181 | 3.4 | 7.7% | 14/55 (25.4%) |
| 2012 | 159 | 3.2 | 5% | 8/59 (13.5%) |

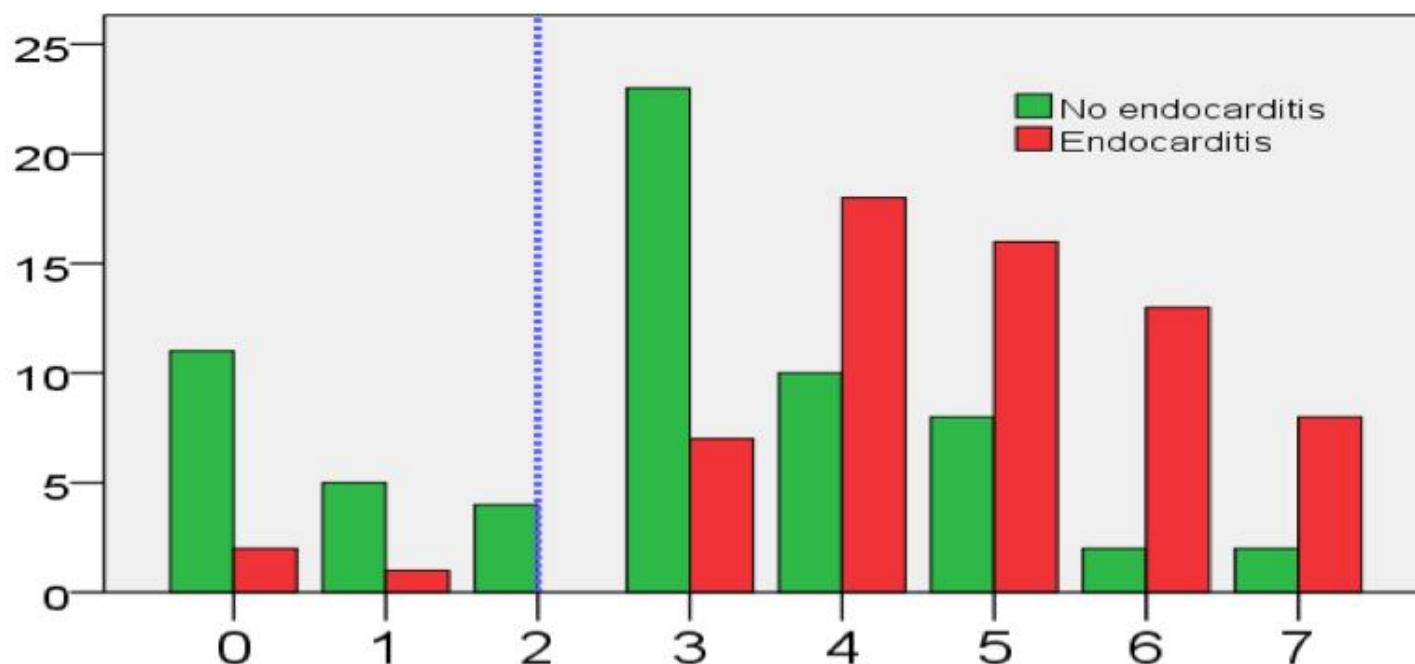
| | Endocarditis N=65 (%) | No Endocarditis N=65 (%) | p |
|--------------------------------|--|---|-----------------|
| Median age (IQR) | 74 (65-78,5) | 72 (61-80) | 0.18 |
| Females | 18 (27.7) | 23 (35.4) | 0.34 |
| Underlying Disease | | | |
| Congestive heart failure | 27 (43.5) | 19 (29.2) | 0.09 |
| Stroke | 18 (27.7) | 9 (13.8) | 0.05 |
| Transplant | 6 (9.2) | 7 (10.8) | 0.77 |
| Immunosuppression therapy | 15 (24.2) | 7 (10.8) | 0.03 |
| Neoplasia | 14 (23) | 27 (41.5) | 0.02 |
| Renal Failure | 23 (35.4) | 21 (32.5) | 0.41 |
| Previous Endocarditis | 8 (13.3) | 4 (6.2) | 0.17 |
| Heart valve disease | 41(63.07) | 19 (29.23) | <0.01 |
| Prosthetic valve | 31(75.6) | 17 (89.4) | 0.18 |
| Native valve disease | 10 (24.4) | 2 (10.6) | 0.07 |
| Previous cardiac valve surgery | 25 (44.6) | 16 (24.6) | 0.03 |
| Etiology | | | |
| <i>Enteroccus</i> . spp | 2 (3.1) | 3 (4.6) | 0.648 |
| <i>E. faecalis</i> | 56 (86.2) | 38 (58.5) | <0.01 |
| <i>E. faecium</i> | 7 (10.8) | 24 (36.9) | <0.01 |
| Positive BC 3/3 | 61 (93.8) | 45 (69.2) | <0.01 |
| Site of acquisition | | | 0.01 |
| Community | 28 (43.1) | 13 (20) | <0.01 |
| Nosocomial | 30 (46.2) | 45 (69.2) | 0.01 |
| Health care associated | 7 (10.8) | 7 (10.8) | 0.03 |
| Known BSI origin | | | |
| Gastrointestinal | 9 (13.8) | 31 (48.4) | <0.01 |
| Unknown | 25 (38.4) | 7 (10.7) | <0.01 |

Table 2: Independent risk factors for having endocarditis with an enterococcal bacteremia

| | OR | 95% CI | p |
|----------------------------------|-----|------------|-------|
| Heart valve disease | 3.3 | 1.4 - 7,8 | 0.005 |
| Unknown source of the bacteremia | 5.9 | 2.1 – 17.4 | 0.001 |
| Continuous bacteremia | 9.8 | 2.1 – 46.9 | 0.004 |

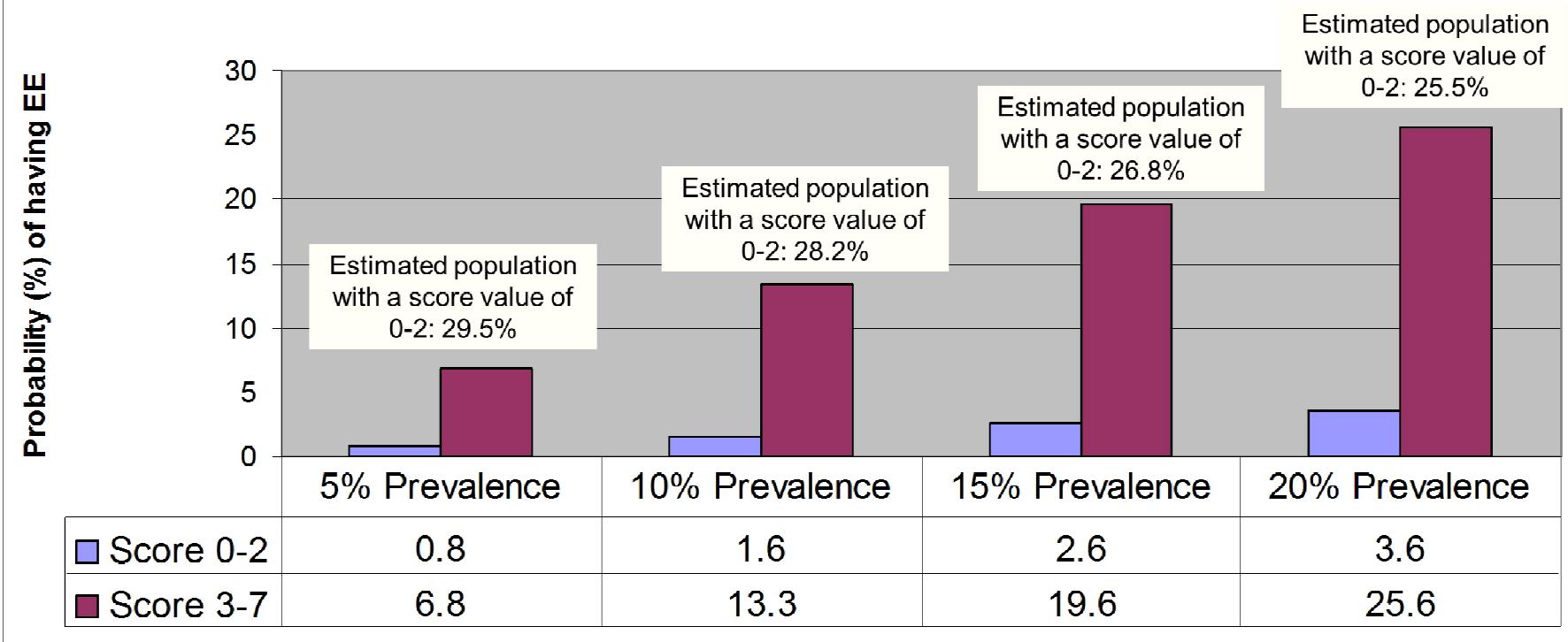
| Variable | Points |
|-----------------------|----------|
| Valvulopathy | 1 |
| Heart murmur | 1 |
| Unknown source of BSI | 2 |
| 3/3 + BC | 3 |
| Total | 7 |

- NOVA score that ranged from 0 to 7 points. The best cut-off score value was ≥ 3 , S = 95.4% and Sp = 30.8% to detect IE.



- The probability of having IE with a score < 3 and a prevalence of IE of 5% was only 0.84% (**Fig 4**). IE probability with higher prevalence populations is shown in Fig.4

Fig.4: Probability of having EE in populations with different prevalences



Risk Factors of Endocarditis in Patients With *Enterococcus faecalis* Bacteremia: External Validation of the NOVA Score

Anders Dahl,¹ Trine K. Lauridsen,¹ Magnus Arpi,² Lars L. Sørensen,¹ Christian Østergaard,³ Peter Sogaard,⁴ and Niels E. Bruun^{1,5}

Table 3. Adapted NOVA Score in Patients Examined by Echocardiography

| Adapted NOVA Score | Endocarditis (n = 78) | No Endocarditis (n = 162) | Negative and Positive Predictive Value |
|----------------------|-----------------------|---------------------------|--|
| <4 (TEE not needed) | 2 | 38 | 95% (negative predictive value) |
| ≥4 (TEE recommended) | 76 | 124 | 38% (positive predictive value) |
| Sensitivity | 97% | | |
| Specificity | 23% | | |

Patients (n = 240) with *Enterococcus faecalis* bacteremia examined by echocardiography.

Abbreviation: TEE, transesophageal echocardiography.

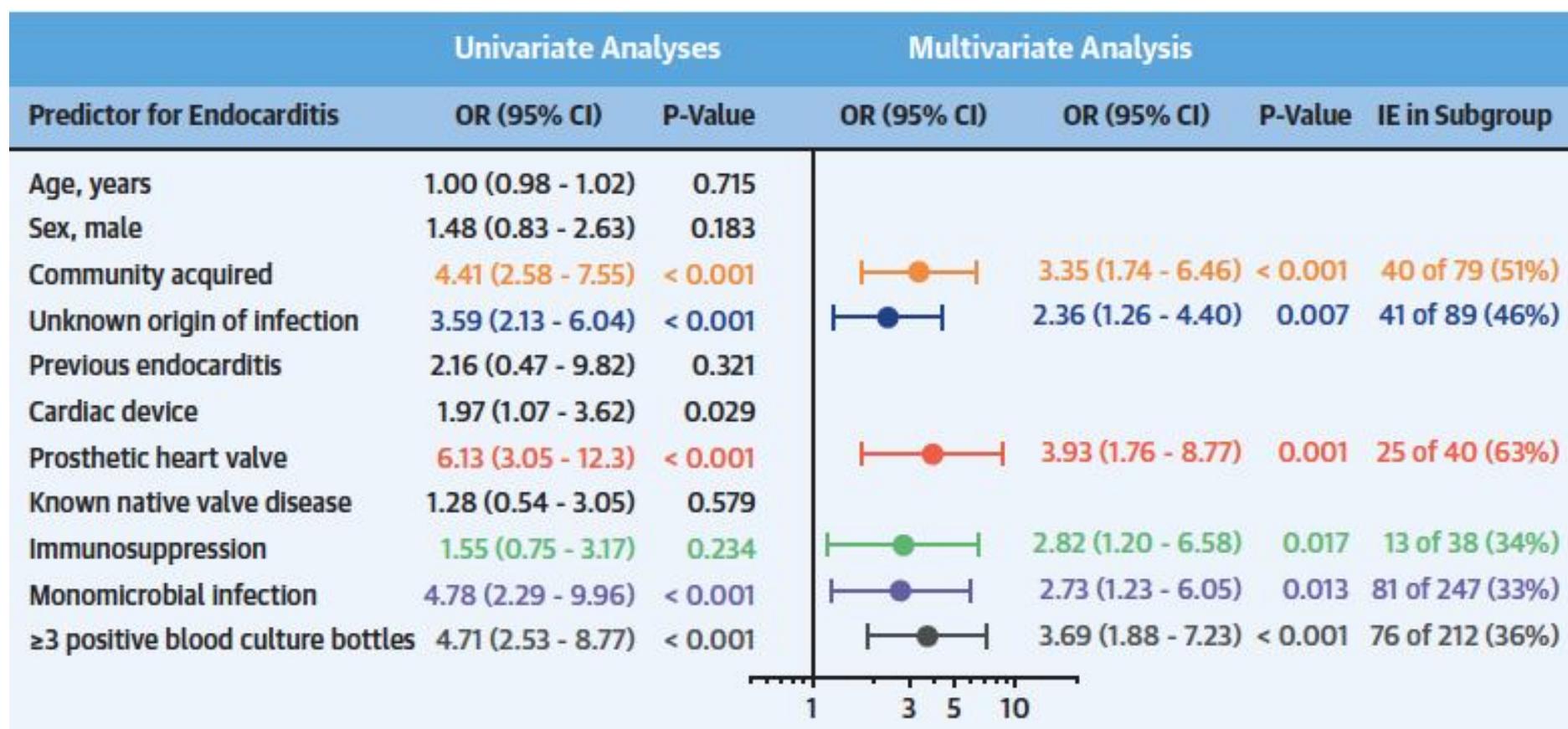
Prevalence of Infective Endocarditis in *Enterococcus faecalis* Bacteremia

Dahl et al.

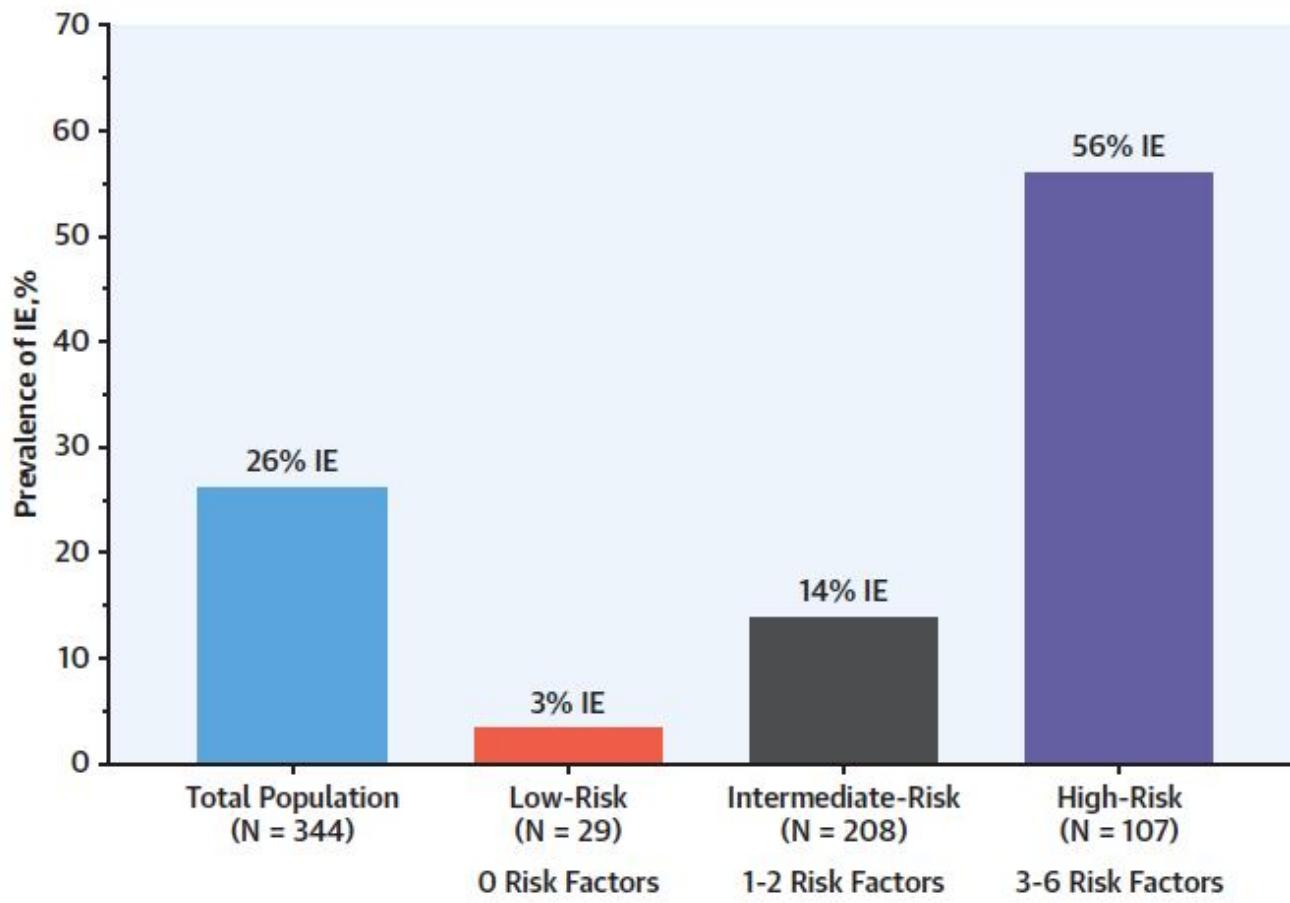
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Estudio prospectivo Enero 2014 → Diciembre 2016



CENTRAL ILLUSTRATION Prevalence and Risk Factors of Infective Endocarditis in *Enterococcus faecalis* Bacteremia



Enterococcus faecalis Bacteremia

Consider an Echocardiography, But Consult an
Infectious Diseases Specialist*

¿En qué pacientes con bacteriemia enterocócica no es preciso realizar un Ecocardiograma?

- El uso de la ETE en todos los pacientes con E-BSI es difícil, costoso, requiere mucho tiempo y no está libre de complicaciones.
- Dependiendo de la prevalencia de Endocarditis Infecciosa de cada centro, utilizando un score pronóstico (NOVA score) podría no ser necesario hacer un Ecocardiograma a un 25-30% de los pacientes con bacteriemia por *Enterococcus* spp.