İnfektif Endokardit Epidemiyolojisi: Ülkemizde ve Dünyada Güncel Durum

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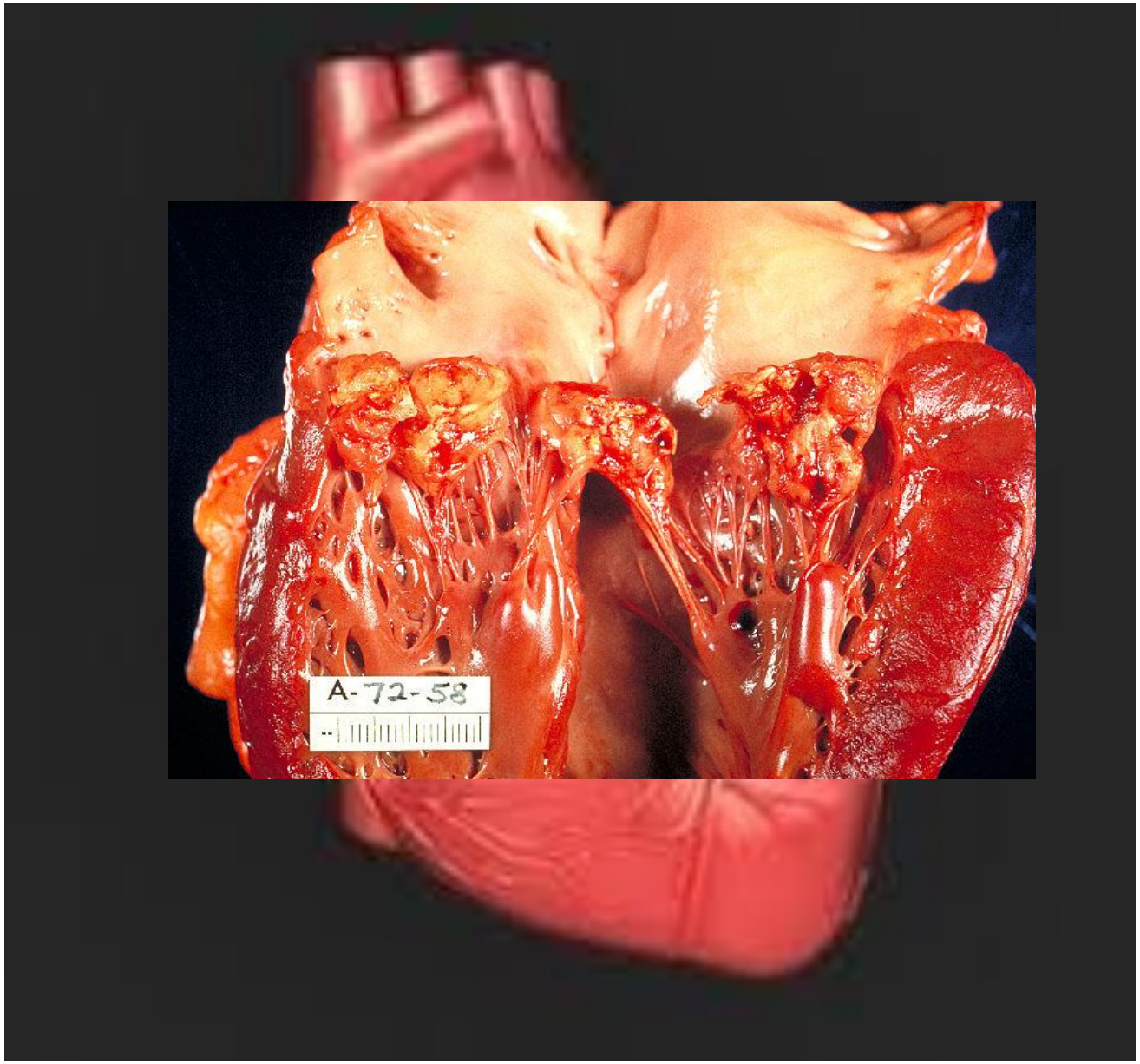
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Konuşma Taslağı

Genel Endokardit Kavramları
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- ✓ **Sağlık Bakımı İle İlişkili Endokardit**
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Arch Intern Med. 2009;169(5):463.

Sağlık Bakımı İle İlişkili Endokardit

Nozokomiyal İE, yakın dönemde hastaneye yatmış TKE veya uzun süreli kalmış cihaz/kateter zemininde gelişen İE gibi olguları kapsamaktadır.

İnfeksiyonlar, implantabl cihazlar ve kapaklar kadar triküspis kapağını içeren normal kapakları da kapsayabilir.

Tek mitral kapağın tutulması için, dağılım %28-45, aort %5-36, ikisini birlikte tutulması %0-35 arasında bildirilmiştir.

%24-34 arasında kardiyak cerrahi hikayesi olmadığı görülmüş.

Staphylococcus aureus **ve** ***enterokoklar*** **en sık iki patojen** olarak öne çıkmaktadır.

Odak olarak **en sık üriner sistem veya deri ve damar yolu infeksiyonlar veya invazif işlemler** tanımlanmıştır.

İmmünokompromize Hastada İE

Yaşlılarda infeksiyona karşı bakterisid etki zayıflamıştır.
B-hücre ve T-hücre fonksiyonları bozulması kötü beslenme sonucunda gelişebilir.
Bu koşulları tedavi etmek için kullanılan **kortikosteroidler ve sitotoksik ilaçlar** immün yanıtı düşürmektedirler.
Bu tür hastalarda olağan yaygın etkenler; ***S.aureus*, *Salmonella* ön plana çıkmaktadırlar**. ***Candida albicans*, *Aspergillus* ve *Cryptococcus neoformans* HIV-pozitif olan IV madde bağımlılarında** daha sık karşılaşılmaktadır. Bu hastalarda **sağ taraf endokarditinin** gelişmesi riski daha yüksektir.

Protez Kapak İE

Tüm dünyadaki İE serilerinde PVE %10-30 oranına sahiptir.
1965-1995 arasında PVE kümülatif insidansı %1.4-3.1 (12. ayda), %3-%5.7 (5.yılda)

Risk faktörleri; Erkek, PVE replasmanı için uzun süreli kardiyopulmoner bypass, önceden doğal kapakta bozulma
Kapak cerrahisi sonrası ilk 6 ay insidansı daha yüksektir, daha sonra yılda %0.2-0.35 oranında azalmaya başlar.
En yüksek risk kapak replasmanı yapıldığı anda aktif İE olmasıdır.
Mekanik protezlerde risk daha yüksektir, replasman sonrası 3 ay daha riskli iken bioprotezlerde ise 1 yıldan sonra riskler hafif artma göstermektedir (bioprotezlerin dejenere olmasına bağlanmaktadır).
Bioprotezler için riskler, MV için %0.49, aort kapağı için %0.91'dir. Mekanikler için MV oranı %0.18, aort için %0.27'dir.
Kapak cerrahisi sonrası ilk 2 ay içinde gelişirse erken (kapak cerrahisi ile ilişkilendirilirken), 2 aydan sonra gelişirse geç PVE (daha çok toplum kökenli olarak) denir. 2007'de bioprotezler için endokardit tanımlaması için net süre 12 ay olarak tanımlanmıştır.
Erken PVE'lerde etken genellikle MRSA iken geç olgularda KNS ve enterokoklar olarak bildirilmektedir.
Kateter aracılığıyla aortik kapak replasmanı sonucunda gelişen PVE insidansı %1.13 (femoral yol %1.1, transapikal yol %1.98).
Balon şişirilebilir durumlarda İE insidansı %1.93

Kardiyovasküler İmplantabl Elektronik Cihaz İnfeksiyonları

En yaygın kullanılan KİE cihazı **kalıcı pacemaker, kardiyak resenkronizasyon tedavisi ve takılabilir kardioverter-defibrilatör** cihazlarıdır. Bunların çoğu venöz yol kullanılarak takılır. Bu pratik işlem ile birlikte gelişen infeksiyon riskini dramatik azaltmaktadır. Yine de infeksiyon belirgin şekilde morbidite, mortalite ve maliyeti artıran bir sorun olmaya devam edebilmektedir; %0.13'den %19.9'dur.

1993-2008 arasında yıllık KİEC takılması %4.7 artarken, infeksiyonları 2004'e kadar stabl seyretmiş, 2004'den 2008'e kadar %1.53'den %2.41'e kadar artmıştır (yaklaşık iki katına kadar). Kardiyoverter-defibrilatör ile ilişkili infeksiyonlar sıklık açısından daha öndedir.

Ventriküler Destek Cihaz İnfeksiyonları

VDC takılan hastaların çok çeşitli komorbiditeleri vardır. İnfeksiyon riski VDC süresine bağlı olarak değişir. 60 günden uzun süreli VDC kullanması gereken hastaların 30 günden daha kısa VDC kullanması gereken hastalardan **2 kat daha yüksek infeksiyon riski** olduğu görülmüştür.

Bu infeksiyon hızı %13-80 arasında değişmekte, gelişme riski komorbiditeleri de içeren çoklu faktörleri, **implante edilen cihaz türlerine, VDC destek süresine** bağlı olarak değişmektedir.

Üç farklı sendrom olarak karşımıza gelebilirler;

A-Kullanılan yol infeksiyonları (EN SIK)

B-Lokal inflamasyon değişiklikleri ve çıkış yerinde drenajı olan cep infeksiyonları

C-Kapak ve/veya cihazın iç hatlarını içeren endokardit

Kapatıcı Cihaz İnfeksiyonları

Atrial septal defekt, PDA ve VSD

Minimal invazif girişimler konjenital kardiyovasküler hastalıların tedavisinde giderek kabul gören girişimlerdir. Neyse ki, cihazlar gibi implantasyondan kaynaklı olan infeksiyonları da (<%1) içeren komplikasyonlar çok nadir görülmektedir.

Çocuklarda İnfektif Endokardit

Erişkinlerde olduğu gibi, çocuklardaki infektif endokarditlerdeki eğilimler özellikle **konjenital kalp hastalığı** olan çocukların bakımı ile ilişkilendirilmiştir.

1000 pediatrik hastane başvurusunda “0.22-0.55”

Erişkinde İnfektif Endokardit

Yaşlılarda İE ile ilişkili **en önemli durum bikuspit aortik kapaktır**. Çok merkezli çalışmada, doğal kapak İE olgularının **%16** bildirilmiş. Altta yatan bir kapak hastalığı olmadığı İE gelişiminde **dejeneratif kalp lezyonları** önemli rol oynadığı düşünülmektedir. **60 yaşın üzerinde doğal kapak İE olgularının %50'sinde dejeneratif lezyon olduğu saptanmış.**

İE ile ilişkili bir başka durum **mitral prolapsus sendromudur**. **%11-23** arasında bildirilmektedir. **Geç sistolik üfürüm duyulsun duyulmasın mid-sistolik klik olması durumunda şüphenilmelidir.**

"45 yaşın üzerinde olma" ve" MVP birlikte olması" İE riskini artırmaktadır.

Bir başka çalışmada, İE'li hastaların **%25'inde MVP** olduğu gösterilmiş. **MVP'si olan ve İE'li hastalarda sol taraf İE'li hastalardan daha belirsiz semptomlar olması, daha az mortalite oranlarına sahip ve antibiyotik tedavisine yanıtı daha iyidir.**

İlaç Bağımlılarında İnfektif Endokardit

İlaç suistimali olanlarda İE insidansının tahminler net olarak bilinmemektedir. ABD'de yılda **%2'den %5 yüksek bir insidans** bildirilmiştir. Konjenital kardiyak hastalıklar ve sağ taraf kalp enstrümantasyonu İE birlikteliği varken IV madde bağımlıları olguların çoğunluğunu oluşturmaktadır.

Madde bağımlıları arasında hastaneye başvurularının **%60'ında akut infeksiyon** gelişirken bunların **%5-15'inde İE** gelişiyor.

Kapak tutulumlarının sıklığı trikuspis tek ve diğer kapaklarla birlikte tutulumu **%52.2, sadece aort %18.5, mitral kapak %10.8, mitral ve aort kapak birlikte tutulumunda %12.5 olarak bildirilmiş.**

Hastaların çoğu genç (20-40 yaş).

İnfektif Endokardit Epidemiyolojisi

İnsidansı **1.7-6.2/100 000** (popülasyona göre)

İnsidans çalışmalarında hızlar ya aynı ya da hafifçe artmış.

Endokarditli olguların yaşları **60 yaşın üzerinde artmış** görülmekte (30-40 ve 47-69 arası)

Madde bağımlılarında yılda 150-2000/100 000 kadar yüksek.

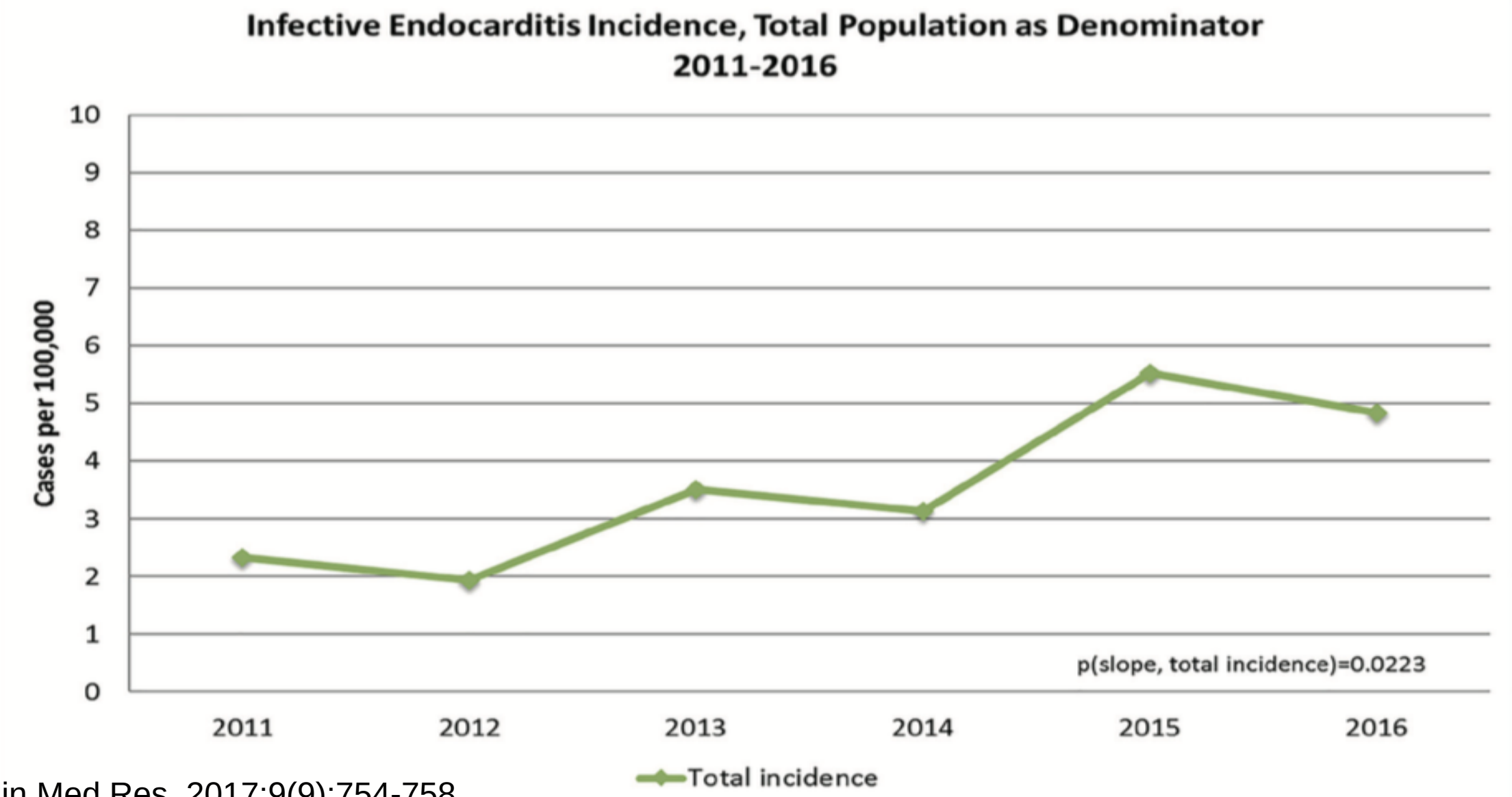
Altta yatan hastalıkların doğasında major değişiklikler olmuş

Yine etkenler açısından **stafilokok insidansı** artma göstermiştir.

Sağlık bakımı ile ilişkili endokardit insidansı (doğal ve protez kapak) artmakta

IV madde bağımlıları arasında, uzun-süreli hemodiyaliz hastalarında, İV kateteri olan hastalarda, DM'li hastalarda ve HİV ile infekte olan hastalarda İE insidansı artma göstermektedir.

İnfektif Endokardit İnsidansı



J Clin Med Res. 2017;9(9):754-758

Trends in Infective Endocarditis Incidence, Microbiology, and Valve Replacement in the United States From 2000 to 2011

Sadip Pant, MD,* Nileshkumar J. Patel, MD,† Abhishek Deshmukh, MD,‡ Harsh Golwala, MD,* Nilay Patel, MD,§ Apurva Badheka, MD,‖ Glenn A. Hirsch, MD, MHS,* Jawahar L. Mehta, MD, PhD¶

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TABLE 1 Incidence of IE, Microbiology, and Valve Replacement From 2000 to 2011

Year	Total No. of IE Cases	Incidence of IE per 100,000 Population	Valve Replacement per 1,000 IE Cases	Staphylococcal IE per 1 Million Population	Streptococcal IE per 1 Million Population	Gram-Negative IE per 1 Million Population	Fungal IE per 10 Million Population
2000	29,820	11	14	35	26	6	6
2001	31,526	11	16	38	28	5	11
2002	32,229	11	19	38	29	6	11
2003	35,190	12	18	42	29	7	12
2004	36,660	13	19	46	29	7	11
2005	37,508	13	23	46	31	8	15
2006	40,573	14	23	50	32	8	14
2007	38,207	12	30	46	32	8	17
2008	41,143	14	19	51	35	8	17
2009	43,502	14	27	57	38	12	16
2010	43,560	14	27	55	38	12	17
2011	47,134	15	26	61	42	12	20

JACC VOL. 65, NO. 19, 2015 Pant et al. 2 0 1 5 : 2 0 7 0 – 6

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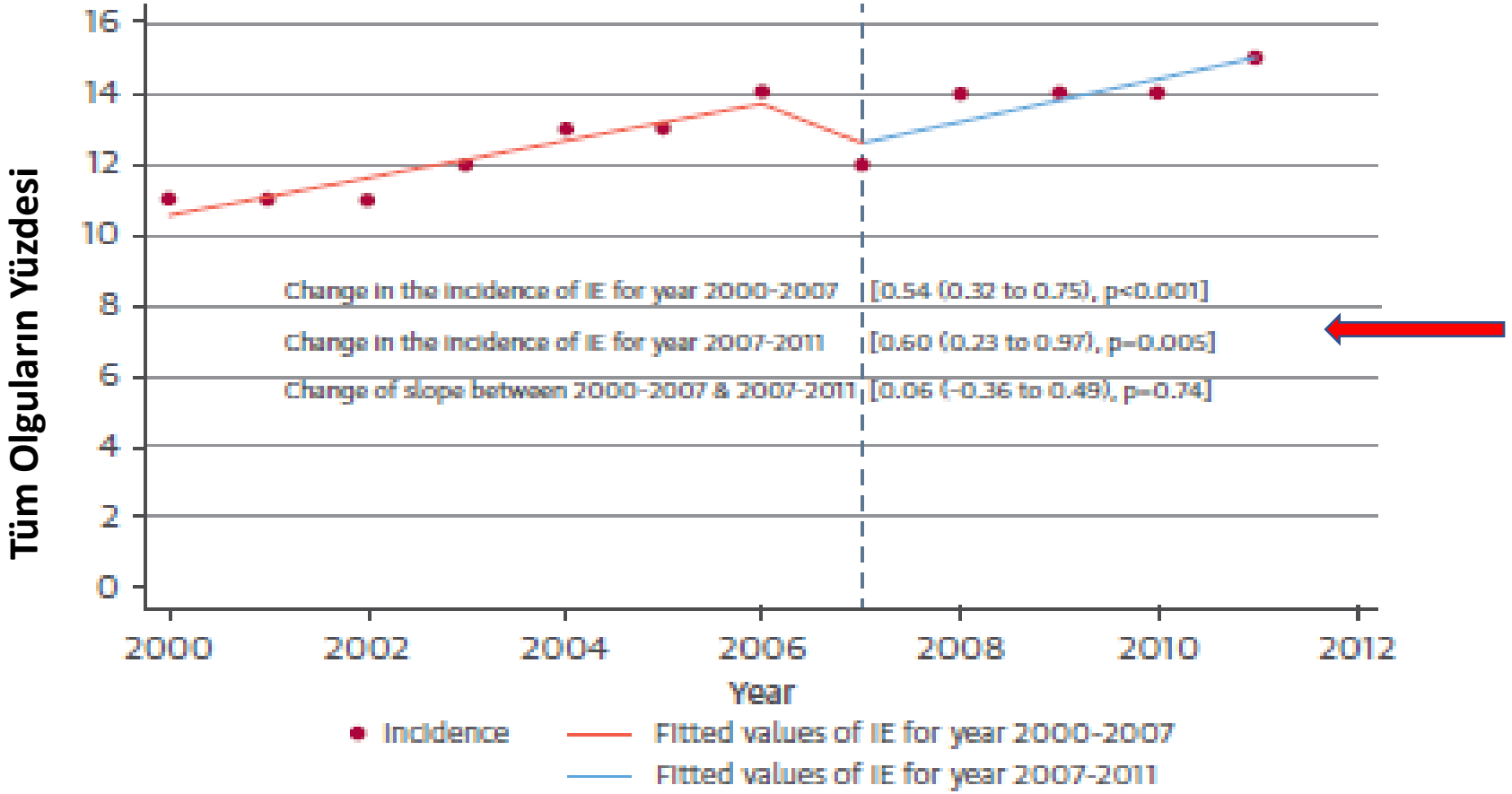
ABD'de İnfektif Endokardit Nedeniyle Hastanede Yatış Hızları)2000-2007 ile 2007-2011)



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Original Article J Clin Med Res. 2017;9(9):754-758

Epidemiology of Infective Endocarditis in Rural Upstate New York, 2011 - 2016

Saeeda Fatima[a, e], Benajmin Dao[a], Ayesha Jameel[a], Konika Sharma[a], David Strogatz[b], Melissa Scribani[b], Harish Raj Seetha Rammohan[c, d]

45 İE, 9 olası İE

3.5/100 000 insidans (18 yaş üzerini dikkate alırsak 4.4)

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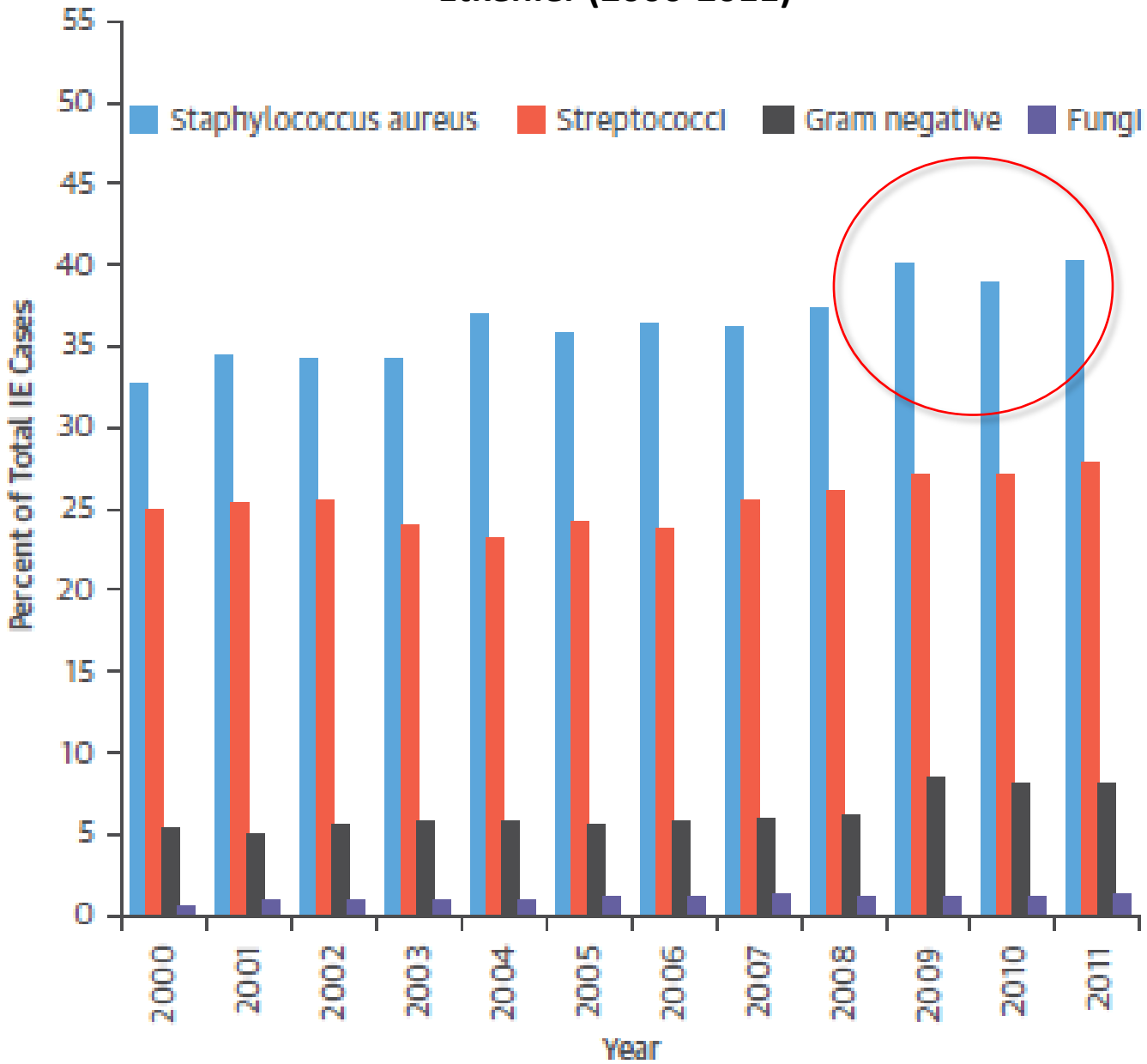
Etkenler (2000-2011)



JACC VOL. 65, NO. 19, 2015 Pant et al. 2015:2070–6

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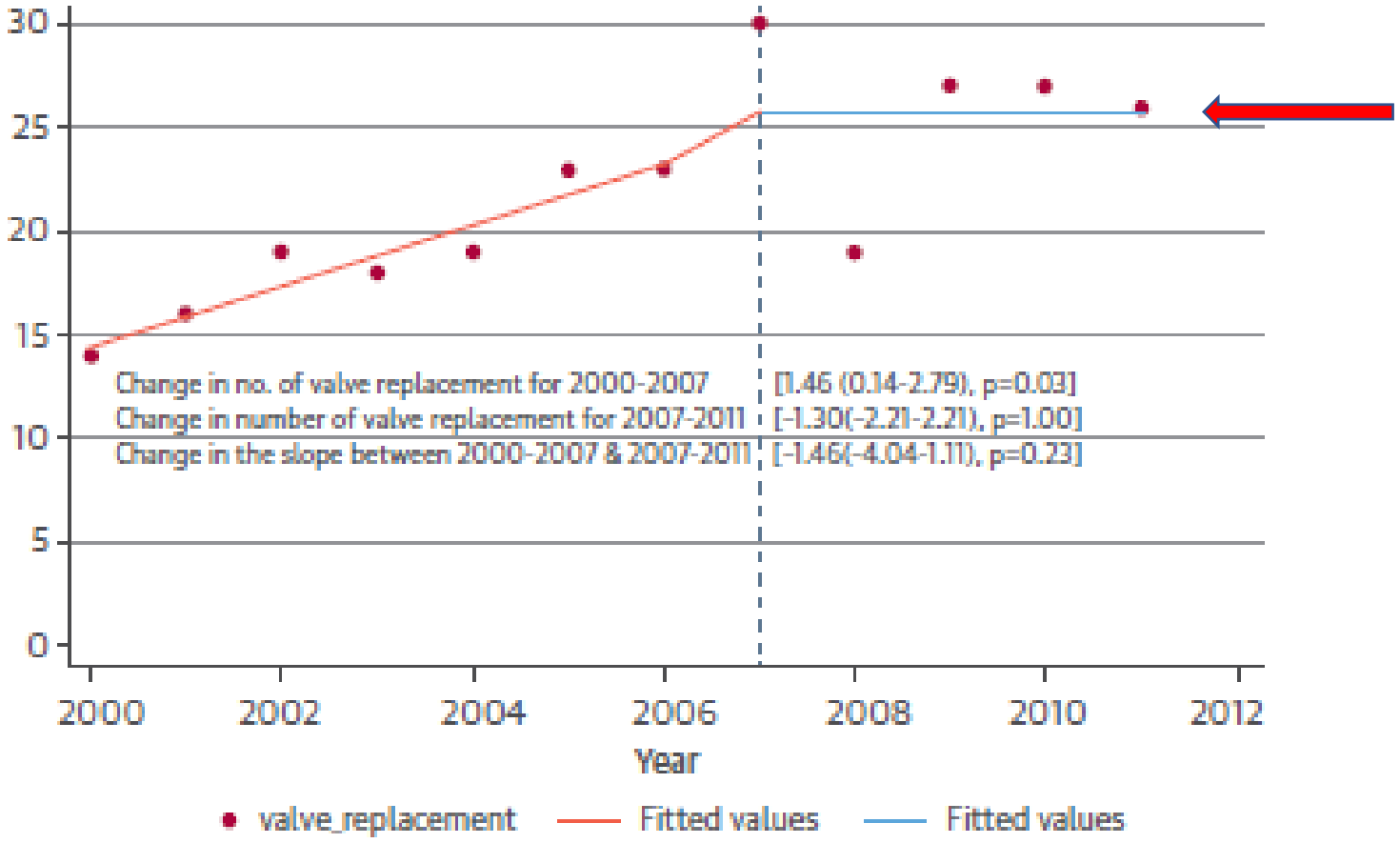
Kapak Replasman Hızı (1000 IE Olgusu Oranı ile) (ABD 2000-2011)



JACC VOL. 65, NO. 19, 2015 Pant et al. 2015:2070–6

Risk Faktörleri

A-Hastaya Ait Faktörler

1-Yaş

>60 yaş: ABD ve Avrupa'da olguların yarısından çoğu **60 yaşın üzerinde hastalardır.** Son 40 yıl içinde ortalama yaş eğrisi giderek artmaktadır. Bunun iki nedeni olabileceği öngörülmüş; **romatizmal kalp hastalığı** insidansı ve önemi giderek artmakta. Yaşlılarda **dejeneratif kapak hastalığı** olasılığı da giderek artmaktadır, kapak değişim riski de artmakta

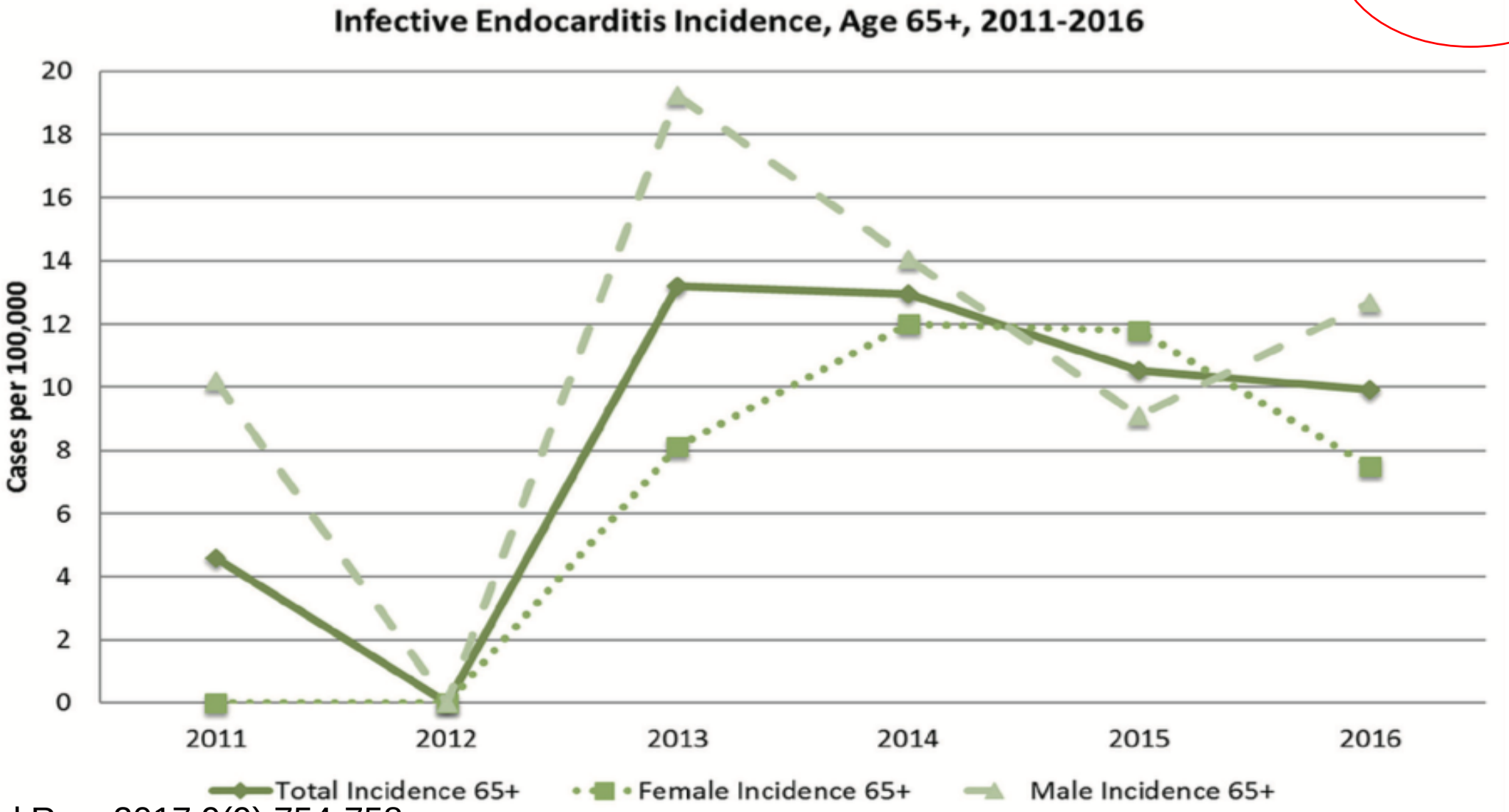
Temel Karakteristikler

Features	Total cohort ($N=325$[b])	Patients who died ($n=234$)	Patients who survived ($n=87$)	Statistical analysis			
				Univariate analysis *p*-Value	Multivariate analysis		
					p-Value	HR	95% CI
Age, years	46.94 ± 17.11	44.54 ± 17.40	54.04 ± 14.37	<0.001			
Sex, male	187	134	53	0.582			
Left-sided IE	284	202	78	0.420			
Aortic valve endocarditis	156	108	48	0.160			
History of previous endocarditis	18	12	6	0.541			
Prosthetic valve endocarditis	141						
Early prosthetic valve endocarditis	52	25	27	<0.001			
Late prosthetic valve endocarditis	89	62	26	0.559			
Chronic renal failure	19	9	10	0.010			
Coronary heart disease	49	27	22	0.002	0.012	2.09	1.17–3.73
Hypertension	46	34	12	0.864			
Diabetes mellitus	31	16	15	0.005			
Congestive heart failure before endocarditis	20	13	7	0.412			
Chronic obstructive lung disease	4	4	0	0.220			
Chronic haemodialysis	11	3	8	0.001	0.001	4.13	1.83–9.30
Healthcare-associated endocarditis	75	45	30	0.005			
Central nervous system emboli	52	23	29	<0.001	0.002	2.33	1.35–4.03
Peripheral arterial emboli	25	14	11	0.049			
Splenic abscess	15	8	7	0.082			
Paravalvular abscess	48	29	19	0.036			
Congestive heart failure	102	55	47	<0.001	0.003	2.15	1.29–3.56
Blood leukocyte count, $\times 10^9$/l	12.02 ± 6.13	10.98 ± 4.67	14.75 ± 8.42	<0.001			
Blood thrombocyte count, $\times 10^9$/l	244.950 ± 111.51	261.920 ± 113.73	198.810 ± 91	<0.001	0.09	0.996	0.994–0.998
Blood haemoglobin level, g/dl	10.57 ± 2.04	10.81 ± 2.15	9.92 ± 1.53	<0.001	0.047	0.87	0.76–0.99
Serum CRP level, mg/l	79.53 ± 68.93	71.32 ± 61.69	101.05 ± 81.53	0.002			
Serum creatinine level, mg/dl	1.33 ± 1.38	1.07 ± 0.78	1.83 ± 0.21	<0.001			
Serum blood sugar level, mg/dl	118.70 ± 46.43	113.70 ± 40.73	131.99 ± 57.24	0.011			
Serum ALT level, U/l	43.94 ± 91.50	38.36 ± 77.15	59.04 ± 120.92	0.096			
ESR, mm/h	63.98 ± 31.01	61.23 ± 30.10	71.24 ± 32.41	0.009			
Vegetation area, cm^2	1.35 ± 1.41	1.23 ± 1.17	1.45 ± 1.65	0.346			
Staphylococcus aureus IE	65	38	25	0.013			
Enterococcus spp IE	21	12	9	0.095			
Viridans Streptococcus IE	63	55	8	0.004			
Cardiac surgery for IE	168	139	29	<0.001	<0.001	0.33	0.19–0.56
Total length of hospital stay, days	36.59 ± 22.79	38.60 ± 17.29	31.65 ± 33.32	<0.001			

International Journal of Infectious Diseases 30 (2015) 106–114

İnfektif Endokarditi İnsidansı (65 yaş üstü)

>65 yaş İE riski↑



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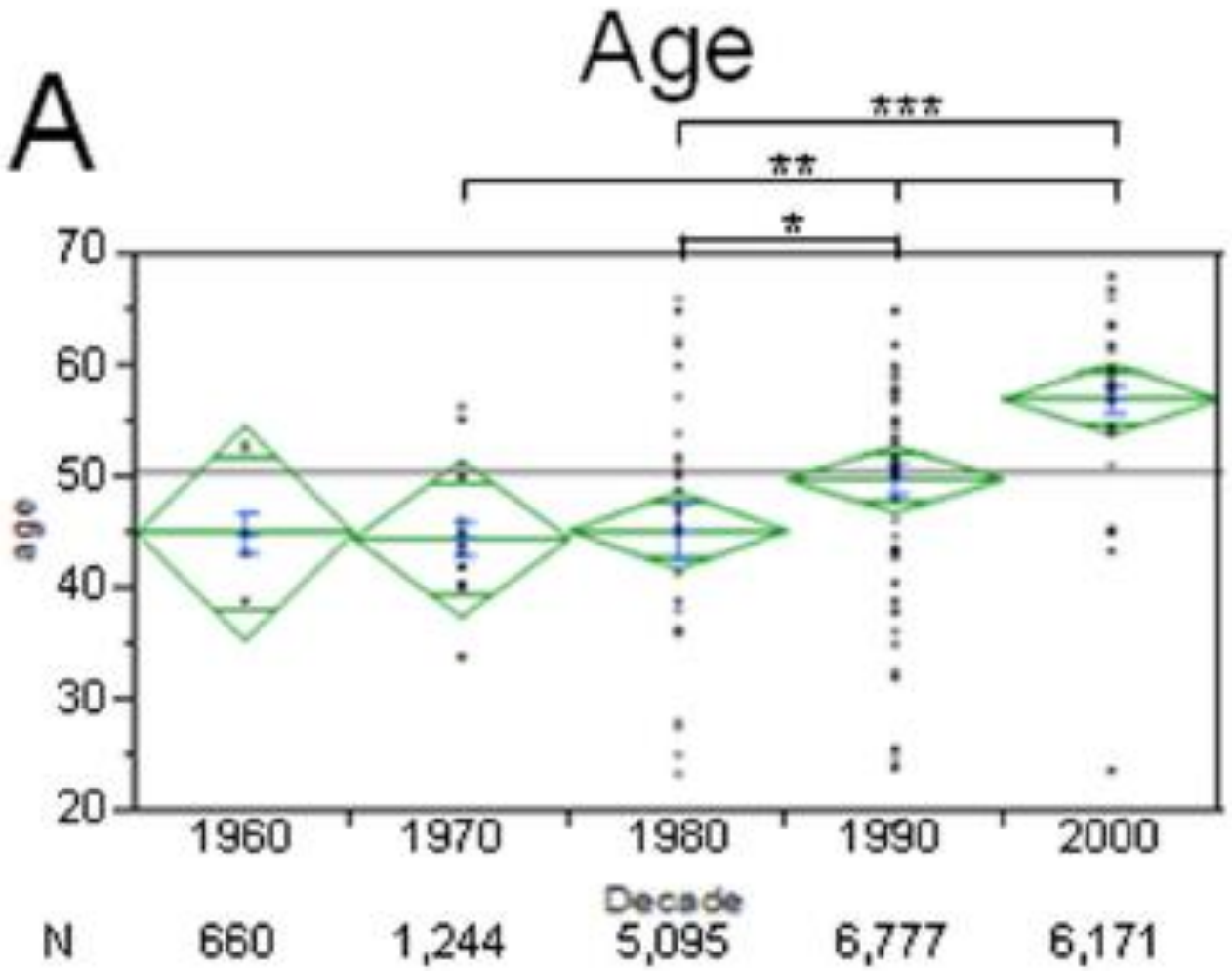


Slipczuk L, et al PLoS One. 2013;8(12):e82665

Zhu et al. BMC Cardiovascular Disorders (2017) 17:113
DOI 10.1186/s12872-017-0548-8

BMC Cardiovascular Disorders

RESEARCH ARTICLE Open Access

The changing epidemiology and clinical features of infective endocarditis: A retrospective study of 196 episodes in a teaching hospital in China

Wan Zhu[1†], Qian Zhang[2†] and Jingping Zhang[2*]

İE Hastalarında Mortalite Açısından Risk Faktörleri

Index	OR (95%CI)	*P*	
Age ≥ 60(years)	6.861 (0.94–50.1)	<0.05	√
Duration ≥1 month	0.452 (0.05–3.93)	0.472	
Congestive heart failure	8.854 (1.34–54.7)	<0.05	√
Renal insufficiency	1.350 (0.09–18.8)	0.823	
Diabetes	7.224 (1.17–44.7)	<0.05	√
PVE	1.651 (0.17–16.3)	0.667	
Staphylococcus aureus or negative bacilli	18.813 (2.39–148.2)	<0.05	√
Cardiac conduction abnormalities	2.032 (0.36–11.5)	0.422	

Zhu et al. BMC Cardiovascular Disorders (2017) 17:113

Trends in Infective Endocarditis in California and New York State, 1998-2013

Nana Toyoda, MD; Joanna Chikwe, MD; Shinobu Itagaki, MD, MS; Annetine C. Gelijns, PhD; David H. Adams, MD; Natalia N. Egorova, PhD

Characteristic	No. (%) Overall (N = 75 829)	1998-2001 (n = 16 511)	2002-2005 (n = 18 887)	2006-2009 (n = 19 611)	2010-2013 (n = 20 820)	Annual Percentage Change, % (95% CI)	P Value[a]
Demographic							
Age, mean (SD), y	62.3 (18.9)	61.0 (19.4)	61.9 (19.0)	63.0 (18.5)	63.3 (18.5)		<.001[b]
Male	44 804 (59.1)	9550 (57.8)	10 971 (58.1)	11 672 (59.5)	12 611 (60.6)	0.5 (0.2 to 0.7)	<.001
Race							
White	52 776 (69.6)	11 750 (71.2)	13 262 (70.2)	13 534 (69.0)	14 230 (68.3)	−0.3 (−0.5 to −0.2)	<.001
Black	10 074 (13.3)	2189 (13.3)	2547 (13.5)	2714 (13.8)	2624 (12.6)	−0.4 (−0.8 to 0.03)	.07
Other	12 979 (17.1)	2572 (15.6)	3078 (16.3)	3363 (17.1)	3966 (19.0)	1.7 (1.3 to 2.1)	<.001
Comorbidities							
Hypertension	47 604 (62.8)	8176 (49.5)	11 495 (60.9)	13 189 (67.3)	14 744 (70.8)	2.8 (2.6 to 3.0)	<.001
Complicated diabetes	11 165 (14.7)	1921 (11.6)	2632 (13.9)	3097 (15.8)	3515 (16.9)	3.0 (2.6 to 3.4)	<.001
Coronary artery disease	30 326 (40.0)	5589 (33.9)	7433 (39.4)	8303 (42.3)	9001 (43.2)	2.0 (1.7 to 2.2)	<.001
Peripheral vascular disease	11 763 (15.5)	2246 (13.6)	3295 (17.4)	3145 (16.0)	3077 (14.8)	0.3 (−0.1 to 0.7)	.11
Chronic obstructive pulmonary disease	19 185 (25.3)	3327 (20.2)	4675 (24.8)	5450 (27.8)	5733 (27.5)	2.5 (2.2 to 2.8)	<.001
Chronic kidney disease	22 308 (29.4)	3059 (18.5)	4397 (23.3)	6776 (34.6)	8076 (38.8)	6.3 (6.0 to 6.6)	<.001
Dialysis dependent	13 989 (18.4)	2459 (14.9)	3797 (20.1)	4000 (20.4)	3733 (17.9)	1.0 (0.6 to 1.3)	<.001
Liver disease	15 477 (20.4)	2544 (15.4)	3625 (19.2)	4108 (20.9)	5200 (25.0)	3.9 (3.5 to 4.3)	<.001
Cancer	13 121 (17.3)	2480 (15.0)	3157 (16.7)	3538 (18.0)	3946 (19.0)	1.9 (1.5 to 2.3)	<.001
Human immunodeficiency virus[c]	715 (1.7)	182 (2.0)	203 (1.9)	178 (1.6)	152 (1.3)	−3.4 (−4.9 to −1.8)	<.001

Chapter 3

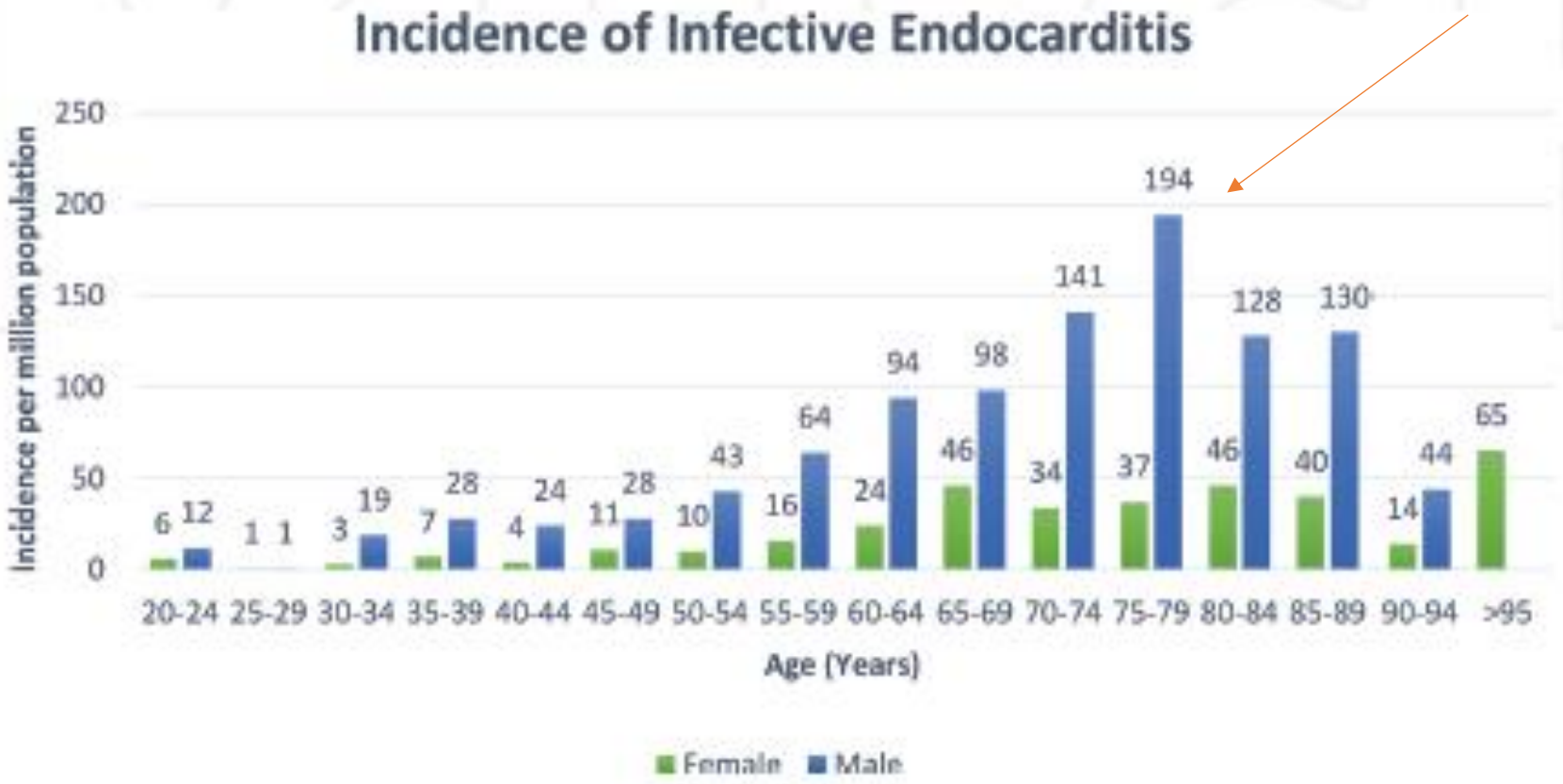
Epidemiology of Infective Endocarditis

Fabian Andres Giraldo Vallejo

Additional information is available at the end of the chapter

497 İE Olgusu

Erkekler
75-79 yaş arası



Clin Infect Dis. 2012;54(9):1230–9.

*ieturkiyetemizlenmis.sav [DataSet1] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

26 : Kültürnegatif

Visible: 26 of 26 Variables

	Araştırmacı	YılB	YılS	Kurumadı	Şehir	Olgusayısı	Yaşortalamsı	Erkek	ARA	Protez kapak	İVDU	CİED	Diyaliz	Staf	Saureus	MR	Strep	Enterokok	Brusella	Kültürnegatif	Ameliyat	Nozokomiyal	Dukekesin	Mortalite
1	Zencir C	2012,0	2015,0	Adnan Mend...	Aydın	59,0	59,0	43,0	.	32,0	.	.	.	.	39,0	.	.	.	.	.	27,0	.	100,0	27,0
2	Gürsül NC	2006,0	2013,0	Atatürk EAH	İzmir	80,0	51,0	70,0	.	12,0	,0	25,0	7,5	4...	27,0	...	20,0	17,0	12,0	51,0	56,0	.	.	15,0
3	Elbey MA	2005,0	2012,0	Çok Merk	Çok	248,0	47,0	55,0	28,0	30,0	.	6,0	.	2...	21,0	...	11,0	11,0	5,0	37,5	54,0	.	100,0	33,0
4	Leblebici H	2002,0	2004,0	Çok Merk	Çok	112,0	45,0	50,0	18,0	17,0	8,0	.	5,4	5...	35,0	.	29,0	16,0	.	16,0	13,0	.	90,0	29,0
5	Akıl	2005,0	2012,0	Çok Merk	Çok	158,0	47,0	51,0	39,0	,0	.	.	.	2...	.	...	11,0	11,0	6,0	34,0	51,0	.	.	31,0
6	Kocabaş U	2000,0	2012,0	Ege Tıp	İzmir	194,0	48,0	66,0	22,0	12,0	.	3,1	6,0	3...	.	.	16,0	6,0	.	43,0	52,0	.	100,0	20,0
7	İnanç T	2005,0	2007,0	Erciyes Tıp	Kayseri	27,0	47,0	63,0	67,0	41,0	.	.	.	3...	11,0	.	4,0	11,0	4,0	45,0	19,0	.	.	15,0
8	Tuğcu A	1997,0	2007,0	Florance	İstanbul	68,0	51,0	59,0	40,0	56,0	.	3,0	12,0	4...	28,0	...	25,0	1,5	,0	21,0	59,0	28,0	84,0	25,0
9	Sucu M	2004,0	2007,0	Gaziantep Tıp	Gazia...	72,0	45,0	57,0	36,0	29,0	.	.	3,0	2...	10,0	.	23,0	4,0	4,0	36,0	28,0	.	100,0	15,0
10	Çetinkaya Y	1974,0	1999,0	Hacettepe	Ankara	228,0	36,0	55,0	64,0	20,0	,0	,4	.	2...	24,0	.	14,0	6,0	5,7	50,0	37,0	12,0	53,0	23,0
11	Kaya Z	2008,0	2012,0	Harran Tıp	Urfa	24,0	41,0	50,0	.	13,0	.	4,0	8,3	2...	.	.	17,0	4,0	33,0	21,0	37,0	.	.	8,0
12	Işık S	1998,0	2001,0	İst Hst	İstanbul	14,0	41,0	70,0	61,0	23,0	.	.	.	2...	.	.	24,0	.	.	54,0	100,0	.	70,0	.
13	Küçükateş E	2001,0	2010,0	Kard Enst	İstanbul	22,0	47,0	55,0	55,0	41,0	,0	.	.	3...	.	.	27,0	9,0	9,0	50,0	100,0	.	.	18,0
14	Çaylan R	1997,0	2001,0	KATÜ	Trabzon	32,0	47,0	73,0	.	22,0	.	.	.	3...	22,0	.	19,0	9,0	.	78,0	25,0	.	.	41,0
15	Özveren O	1997,0	2004,0	Koşuyolu	İstanbul	119,0	39,0	69,0	39,0	20,0	.	2,0	.	2...	22,0	...	9,0	3,0	3,0	57,0	76,0	.	100,0	.
16	Adademir T	1985,0	2011,0	Koşuyolu	İstanbul	174,0	39,0	79,0	.	15,0	.	.	.	1...	.	...	29,0	.	6,0	47,0	100,0	.	.	16,0
17	Şimşek Yav...	2000,0	2015,0	Siyami Ersek	İstanbul	325,0	47,0	58,0	34,0	44,0	,9	5,6	3,0	3...	20,0	...	19,0	7,0	5,0	22,0	52,0	23,0	86,0	27,0
18	Erbay AR	2004,0	2008,0	Yüksek İhtisas	Ankara	107,0	45,0	71,0	.	44,0	.	.	.	.	.	.	.	.	.	34,0	.	.	.	27,0
19	Çay S	2002,0	2006,0	Yüksek İhtisas	Ankara	96,0	47,0	58,0	.	19,0	.	2,0	.	1...	4,0	.	4,0	8,0	8,3	62,0	51,0	.	100,0	12,5
20	Heper G	1995,0	1999,0	Yüksek İhtisas	Ankara	74,0	25,0	66,0	66,0	14,0	.	.	.	4...	21,0	.	29,0	15,0	7,0	11,0	.	.	.	18,0
21	Turak O	2009,0	2012,0	Yüksek İhtisas	Ankara	157,0	59,0	55,0	15,0	42,0	.	9,0	.	3...	13,0	.	22,0	7,0	6,0	29,0	39,0	.	100,0	26,0
22	Ağca FV	2009,0	2014,0	Yüksek İhtis...	Bursa	85,0	52,0	56,0	22,0	40,0	.	13,0	.	2...	8,0	...	11,0	5,0	6,0	32,0	27,0	.	100,0	36,0
23	TOPLAM	1974,0	2015,0	TÜRKİYE	TÜRKİ...	2475,0	46,0	60,0	40,0	26,0	2,0	7,0	7,0	3...	20,0	...	18,0	8,0	8,0	40,0	50,0	21,0	91,0	23,0
24																								
25																								
26																								

Türkiyeden yapılmış 22 çalışmada yer alan toplam 2475 infektif endokardit olgusunun değerlendirilmesi (1974-2015)

Parametre	Sonuç veren çalışma sayısı	Değer
Yaş ortalaması, yıl	22	46
Erkek Oranı %	22	60
ARA %	15	40
Protez kapak %	22	26
İVDU %	5	2
CİED %	11	7
Diyaliz %	7	7
Nozokomiyal %	3	21
Stafilokok %	20	31
S.aureus %	15	20
MRSA %	8	5
Streptokok %	20	18
Enterokok %	18	8
Brucella %	16	8
Kan kültürü negatif %	21	40
Duke kesin endokardit %	13	91
Mortalite %	20	23

A-Hastaya Ait Faktörler

2-Erkek Cinsiyet: Erkeler çoğu İE serisinde baskın olarak daha sık görülmekte; 3:2’den 9:1 gibi

Olguların Karakteristikleri

Demographics	
Age, median years (range)	61.5 (21 - 93)
Female gender	19 (35%)
Race (Caucasian)	54 (100%)
Diagnosis	
Definite IE	45 (85%)
Possible IE	9 (14%)
Comorbidities	
Diabetes mellitus	21 (38.8%)
HIV	1 (1.85%)
Neoplasm	6 (11.1%)
Other immunosuppressed states	2 (3.7%)
Valvular heart disease	15 (28.8%)
Heart failure	11 (20.4%)
Bicuspid aortic valve	1 (1.85%)
Atrial fibrillation	13 (24.07%)
Distant infections	12 (22.2%)
Pulmonary disease	11 (20.37%)
Renal insufficiency	13 (24.1%)
Dialysis dependent	7 (12.9%)
Predisposing factor	
Rheumatic heart disease	1 (1.85%)
Mitral valve prolapse	0
IV drug use	13 (24.1%)
Previous cardiac surgery	16 (29.6%)
Congenital heart disease	1 (2.38 %)
Previous IE	12 (22.2%)
Implantable intra-cardiac device	8 (14.8%)
Central venous line	6 (11.1%)
Affected valve	
Native valve	39 (72.2%)
Prosthetic valve	7 (12.9%)
Lead infection	8 (14.8%)
Aortic	12 (22.2%)
Mitral	26 (48%)
Tricuspid	7 (12.9%)
Pulmonary	3 (5.5%)

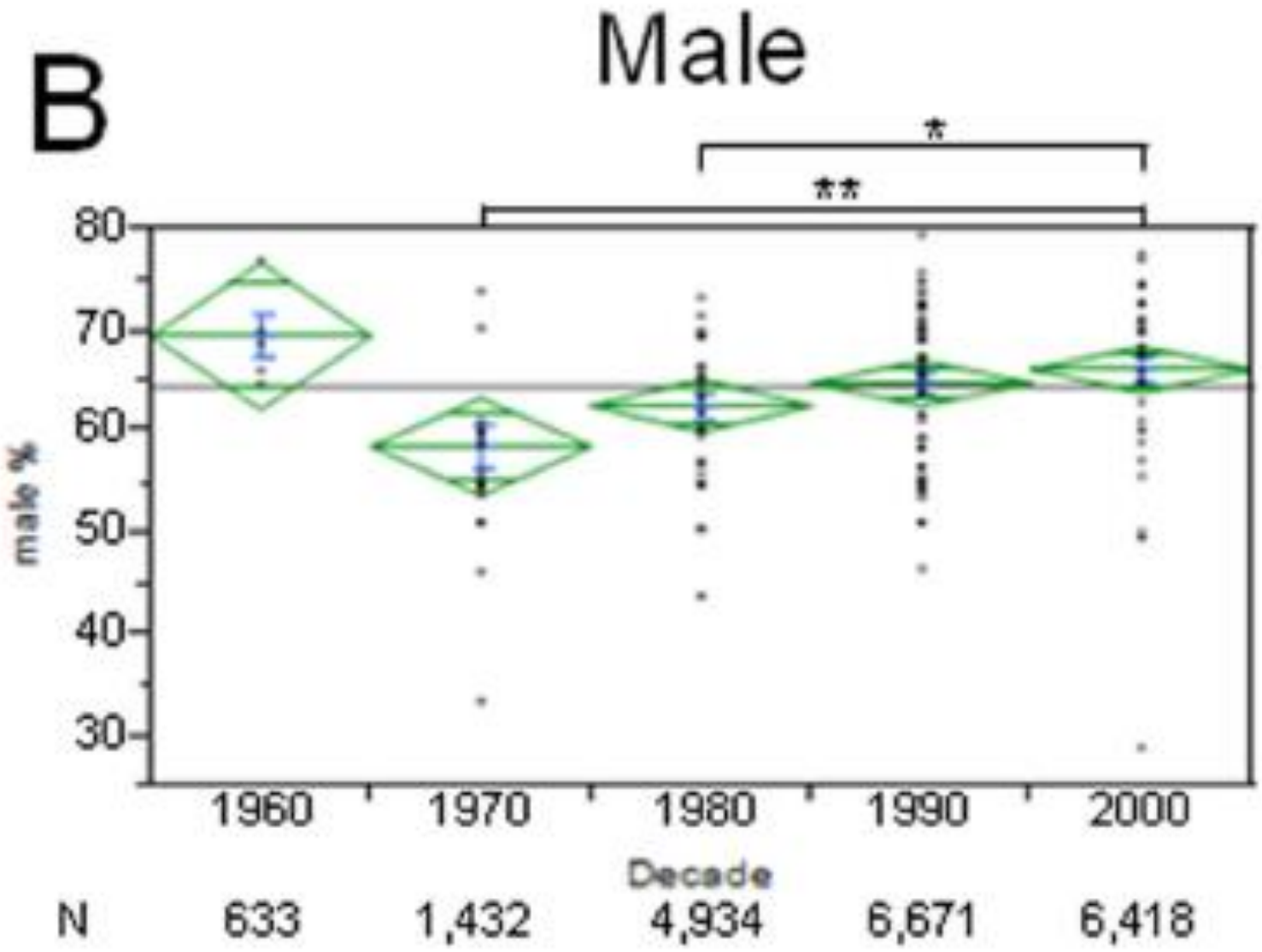
J Clin Med Res. 2017;9(9):754-758

2003-2010 arası: 88 hasta

Table 6 Surgery and mortality as a function of different variables

Variable	Total no. (%)	Valve surgery		Mortality	
		No. (%)	*P* value	No. (%)	*P* value
All	88 (100)	26 (29.5)	...	15 (17.0)	...
Gender episodes					
Women	29 (33.0)	9	0.99	6	0.52
Men	59 (67.0)	17		9	
Origin					
Nosocomial	29 (33.0)	5	0.12	10	0.0023
Community	59 (67.0)	21		5	
Location					
Only mitral valve	37 (42.0)	10	0.68	5	0.58
Only aortic valve	32 (36.4)	10		6	
Aortic and mitral	10 (11.4)	4		3	
Right-sided or bilateral	5 (5.7)	2		0	
Unknown	4 (4.5)	0		1	
Preexisting valve disease					
Native valve disease	14 (15.9)	3	0.59	6	0.085
Prosthetic valve	6 (6.8)	1		0	
History of IE	3 (3.4)	2		0	
Miscellaneous*	15 (17.1)	5		1	
No known heart disease	50 (56.8)	15		8	
Valve surgery					
Yes	26 (29.5)	...	...	2	0.22
No	62 (70.5)	...		13	

Acta Clinica Belgica 2014 VOL. 69 NO. 3:183-190



Slipczuk L, et al PLoS One. 2013;8(12):e82665

Chapter 3

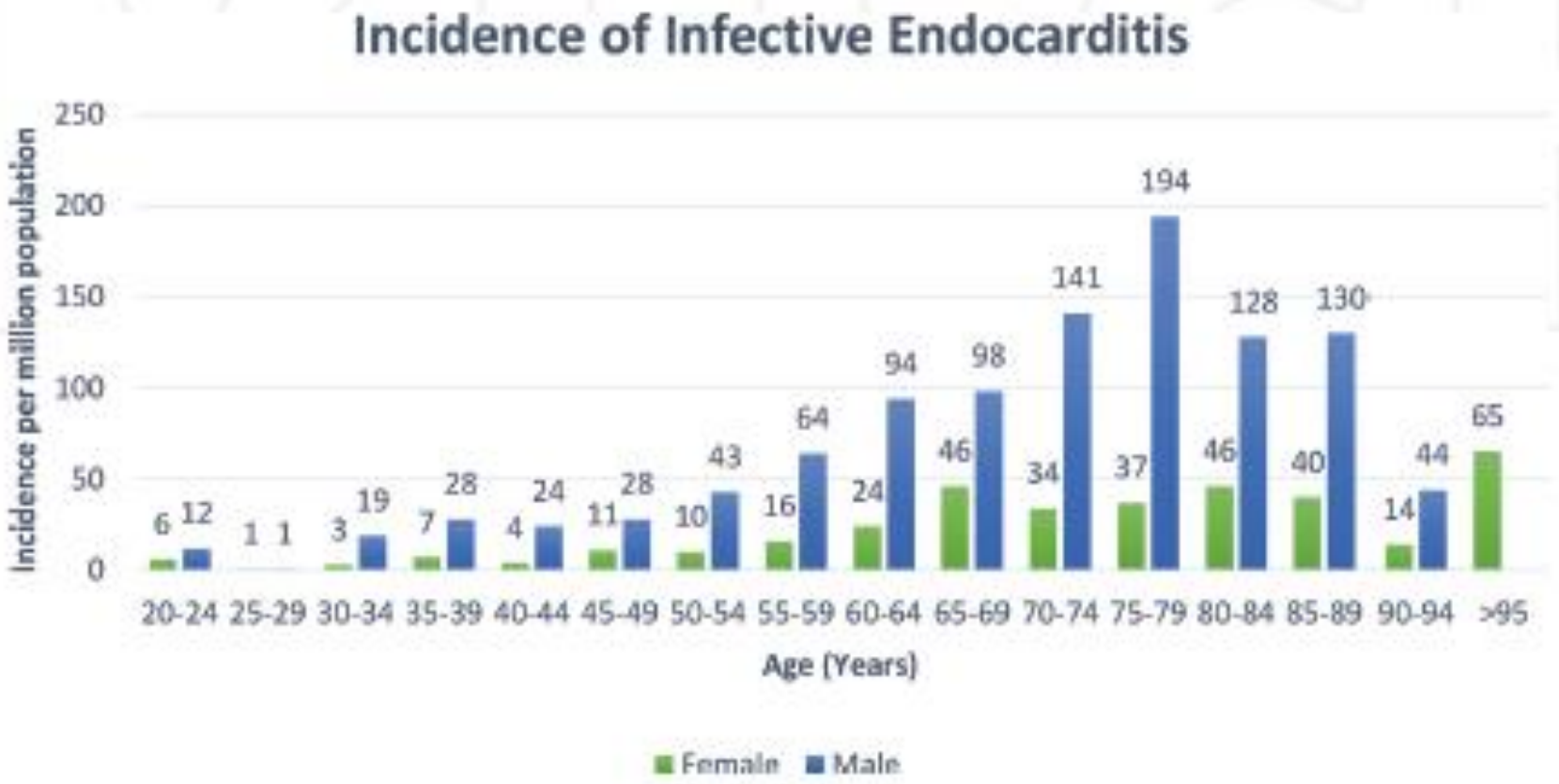
Epidemiology of Infective Endocarditis

Fabian Andres Giraldo Vallejo

Additional information is available at the end of the chapter

497 İE Olgusu

Erkekler
75-79 yaş arası



Clin Infect Dis. 2012;54(9):1230–9.

JAMA | Original Investigation

Trends in Infective Endocarditis in California and New York State, 1998-2013

Nana Toyoda, MD; Joanna Chikwe, MD; Shinobu Itagaki, MD, MS; Annetine C. Gelijns, PhD; David H. Adams, MD; Natalia N. Egorova, PhD

Characteristic	No. (%) Overall (N = 75 829)	1998-2001 (n = 16 511)	2002-2005 (n = 18 887)	2006-2009 (n = 19 611)	2010-2013 (n = 20 820)	Annual Percentage Change, % (95% CI)	P Value[a]
Demographic							
Age, mean (SD), y	62.3 (18.9)	61.0 (19.4)	61.9 (19.0)	63.0 (18.5)	63.3 (18.5)		<.001[b]
Male	44 804 (59.1)	9550 (57.8)	10 971 (58.1)	11 672 (59.5)	12 611 (60.6)	0.5 (0.2 to 0.7)	<.001
Race							
White	52 776 (69.6)	11 750 (71.2)	13 262 (70.2)	13 534 (69.0)	14 230 (68.3)	−0.3 (−0.5 to −0.2)	<.001
Black	10 074 (13.3)	2189 (13.3)	2547 (13.5)	2714 (13.8)	2624 (12.6)	−0.4 (−0.8 to 0.03)	.07
Other	12 979 (17.1)	2572 (15.6)	3078 (16.3)	3363 (17.1)	3966 (19.0)	1.7 (1.3 to 2.1)	<.001
Comorbidities							
Hypertension	47 604 (62.8)	8176 (49.5)	11 495 (60.9)	13 189 (67.3)	14 744 (70.8)	2.8 (2.6 to 3.0)	<.001
Complicated diabetes	11 165 (14.7)	1921 (11.6)	2632 (13.9)	3097 (15.8)	3515 (16.9)	3.0 (2.6 to 3.4)	<.001
Coronary artery disease	30 326 (40.0)	5589 (33.9)	7433 (39.4)	8303 (42.3)	9001 (43.2)	2.0 (1.7 to 2.2)	<.001
Peripheral vascular disease	11 763 (15.5)	2246 (13.6)	3295 (17.4)	3145 (16.0)	3077 (14.8)	0.3 (−0.1 to 0.7)	.11
Chronic obstructive pulmonary disease	19 185 (25.3)	3327 (20.2)	4675 (24.8)	5450 (27.8)	5733 (27.5)	2.5 (2.2 to 2.8)	<.001
Chronic kidney disease	22 308 (29.4)	3059 (18.5)	4397 (23.3)	6776 (34.6)	8076 (38.8)	6.3 (6.0 to 6.6)	<.001
Dialysis dependent	13 989 (18.4)	2459 (14.9)	3797 (20.1)	4000 (20.4)	3733 (17.9)	1.0 (0.6 to 1.3)	<.001
Liver disease	15 477 (20.4)	2544 (15.4)	3625 (19.2)	4108 (20.9)	5200 (25.0)	3.9 (3.5 to 4.3)	<.001
Cancer	13 121 (17.3)	2480 (15.0)	3157 (16.7)	3538 (18.0)	3946 (19.0)	1.9 (1.5 to 2.3)	<.001
Human immunodeficiency virus[c]	715 (1.7)	182 (2.0)	203 (1.9)	178 (1.6)	152 (1.3)	−3.4 (−4.9 to −1.8)	<.001

*ieturkiyetemizlenmis.sav [DataSet1] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

26 : Kültürnegatif

Visible: 26 of 26 Variables

	Araştırmacı	YılB	YılS	Kurumadı	Şehir	Olgusayısı	Yaşortalamsı	Erkek	ARA	Protez kapak	İVDU	CİED	Diyaliz	Staf	Saureus	MR	Strep	Enterokok	Brusella	Kültürnegatif	Ameliyat	Nozokomiyal	Dukekesin	Mortalite
1	Zencir C	2012,0	2015,0	Adnan Mend...	Aydın	59,0	59,0	43,0	.	32,0	.	.	.	.	39,0	.	.	.	.	.	27,0	.	100,0	27,0
2	Gürsül NC	2006,0	2013,0	Atatürk EAH	İzmir	80,0	51,0	70,0	.	12,0	,0	25,0	7,5	4...	27,0	...	20,0	17,0	12,0	51,0	56,0	.	.	15,0
3	Elbey MA	2005,0	2012,0	Çok Merk	Çok	248,0	47,0	55,0	28,0	30,0	.	6,0	.	2...	21,0	...	11,0	11,0	5,0	37,5	54,0	.	100,0	33,0
4	Leblebici H	2002,0	2004,0	Çok Merk	Çok	112,0	45,0	50,0	18,0	17,0	8,0	.	5,4	5...	35,0	.	29,0	16,0	.	16,0	13,0	.	90,0	29,0
5	Akıl	2005,0	2012,0	Çok Merk	Çok	158,0	47,0	51,0	39,0	,0	.	.	.	2...	.	...	11,0	11,0	6,0	34,0	51,0	.	.	31,0
6	Kocabaş U	2000,0	2012,0	Ege Tıp	İzmir	194,0	48,0	66,0	22,0	12,0	.	3,1	6,0	3...	.	.	16,0	6,0	.	43,0	52,0	.	100,0	20,0
7	İnanç T	2005,0	2007,0	Erciyes Tıp	Kayseri	27,0	47,0	63,0	67,0	41,0	.	.	.	3...	11,0	.	4,0	11,0	4,0	45,0	19,0	.	.	15,0
8	Tuğcu A	1997,0	2007,0	Florance	İstanbul	68,0	51,0	59,0	40,0	56,0	.	3,0	12,0	4...	28,0	...	25,0	1,5	,0	21,0	59,0	28,0	84,0	25,0
9	Sucu M	2004,0	2007,0	Gaziantep Tıp	Gazia...	72,0	45,0	57,0	36,0	29,0	.	.	3,0	2...	10,0	.	23,0	4,0	4,0	36,0	28,0	.	100,0	15,0
10	Çetinkaya Y	1974,0	1999,0	Hacettepe	Ankara	228,0	36,0	55,0	64,0	20,0	,0	,4	.	2...	24,0	.	14,0	6,0	5,7	50,0	37,0	12,0	53,0	23,0
11	Kaya Z	2008,0	2012,0	Harran Tıp	Urfa	24,0	41,0	50,0	.	13,0	.	4,0	8,3	2...	.	.	17,0	4,0	33,0	21,0	37,0	.	.	8,0
12	Işık S	1998,0	2001,0	İst Hst	İstanbul	14,0	41,0	70,0	61,0	23,0	.	.	.	2...	.	.	24,0	.	.	54,0	100,0	.	70,0	.
13	Küçükateş E	2001,0	2010,0	Kard Enst	İstanbul	22,0	47,0	55,0	55,0	41,0	,0	.	.	3...	.	.	27,0	9,0	9,0	50,0	100,0	.	.	18,0
14	Çaylan R	1997,0	2001,0	KATÜ	Trabzon	32,0	47,0	73,0	.	22,0	.	.	.	3...	22,0	.	19,0	9,0	.	78,0	25,0	.	.	41,0
15	Özveren O	1997,0	2004,0	Koşuyolu	İstanbul	119,0	39,0	69,0	39,0	20,0	.	2,0	.	2...	22,0	...	9,0	3,0	3,0	57,0	76,0	.	100,0	.
16	Adademir T	1985,0	2011,0	Koşuyolu	İstanbul	174,0	39,0	79,0	.	15,0	.	.	.	1...	.	...	29,0	.	6,0	47,0	100,0	.	.	16,0
17	Şimşek Yav...	2000,0	2015,0	Siyami Ersek	İstanbul	325,0	47,0	58,0	34,0	44,0	,9	5,6	3,0	3...	20,0	...	19,0	7,0	5,0	22,0	52,0	23,0	86,0	27,0
18	Erbay AR	2004,0	2008,0	Yüksek İhtisas	Ankara	107,0	45,0	71,0	.	44,0	.	.	.	.	.	.	.	.	.	34,0	.	.	.	27,0
19	Çay S	2002,0	2006,0	Yüksek İhtisas	Ankara	96,0	47,0	58,0	.	19,0	.	2,0	.	1...	4,0	.	4,0	8,0	8,3	62,0	51,0	.	100,0	12,5
20	Heper G	1995,0	1999,0	Yüksek İhtisas	Ankara	74,0	25,0	66,0	66,0	14,0	.	.	.	4...	21,0	.	29,0	15,0	7,0	11,0	.	.	.	18,0
21	Turak O	2009,0	2012,0	Yüksek İhtisas	Ankara	157,0	59,0	55,0	15,0	42,0	.	9,0	.	3...	13,0	.	22,0	7,0	6,0	29,0	39,0	.	100,0	26,0
22	Ağca FV	2009,0	2014,0	Yüksek İhtis...	Bursa	85,0	52,0	56,0	22,0	40,0	.	13,0	.	2...	8,0	...	11,0	5,0	6,0	32,0	27,0	.	100,0	36,0
23	TOPLAM	1974,0	2015,0	TÜRKİYE	TÜRKİ...	2475,0	46,0	60,0	40,0	26,0	2,0	7,0	7,0	3...	20,0	...	18,0	8,0	8,0	40,0	50,0	21,0	91,0	23,0
24																								
25																								
26																								

Türkiyeden yapılmış 22 çalışmada yer alan toplam 2475 infektif endokardit olgusunun değerlendirilmesi (1974-2015)

Parametre	Sonuç veren çalışma sayısı	Değer
Yaş ortalaması, yıl	22	46
Erkek Oranı %	22	60
ARA %	15	40
Protez kapak %	22	26
İVDU %	5	2
CİED %	11	7
Diyaliz %	7	7
Nozokomiyal %	3	21
Stafilokok %	20	31
S.aureus %	15	20
MRSA %	8	5
Streptokok %	20	18
Enterokok %	18	8
Brucella %	16	8
Kan kültürü negatif %	21	40
Duke kesin endokardit %	13	91
Mortalite %	20	23

A-Hastaya Ait Faktörler

3-IV Madde Kullanımı: Bazı ilaçlar damar endotelyal hasar ve peşi sıra infeksiyon gelişebiliyor.

Predispozan Faktörler ve Klinik Bulgular

Feature	n (%)	Feature	n (%)
Predisposing conditions		*Complaints*	
Chronic rheumatic heart disease	110 (33.9)	Fever	276 (84.9)
Prosthetic valve	141 (43.5)	Dyspnoea	131 (40.5)
Pace/ICD*	18 (5.6)	Fatigue	118 (36.4)
Previous infective endocarditis	18 (5.6)	Anorexia and weight loss	33 (10.2)
Bicuspid aortic valve	18 (5.6)	Arthralgia	19 (5.9)
Other congenital heart defects	26 (8.0)	Headache and change in consciousness	15 (4.6)
Structural heart valve disease	12 (3.3)	*Physical investigation and laboratory findings*	
Degenerative heart valve disease	19 (5.9)	Fever	307 (94.4)
Intravenous drug user	3 (0.9)	New murmur	145 (44.8)
Other features		Skin rashes	8 (2.5)
Left-sided endocarditis	284 (87.3)	Roth spot	5 (1.5)
Aortic valve	124 (38.2)	Splenomegaly	55 (16.9)
Mitral valve	124 (38.2)	Peripheral arterial emboli	17 (5.2)
Aortic and mitral valve	36 (11.0)	Central nervous system emboli	52 (16.6)
Right-sided endocarditis	41 (12.7)	Pulmonary emboli	8 (2.5)
Tricuspid valve	21 (6.5)	Splenic abscess	15 (4.6)
Pulmonary valve	2 (0.6)	Congestive heart failure	104 (32.1)
Place of infection acquisition		Vegetation on echocardiography	253 (78.1)
Community-acquired	250 (76.9)	Abscess on echocardiography	48 (14.8)
Healthcare-associated	75 (23.1)	Haematuria	121 (38.6%)
Nosocomial	33 (10.2)	Elevated rheumatoid factor	28 (8.9%)
Non-nosocomial	42 (12.9)	Elevated C-reactive protein level	295 (91)
		Elevated erythrocyte sedimentation rate	276 (85)

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Olguların Karakteristikleri

Demographics	
Age, median years (range)	61.5 (21 - 93)
Female gender	19 (35%)
Race (Caucasian)	54 (100%)
Diagnosis	
Definite IE	45 (85%)
Possible IE	9 (14%)
Comorbidities	
Diabetes mellitus	21 (38.8%)
HIV	1 (1.85%)
Neoplasm	6 (11.1%)
Other immunosuppressed states	2 (3.7%)
Valvular heart disease	15 (28.8%)
Heart failure	11 (20.4%)
Bicuspid aortic valve	1 (1.85%)
Atrial fibrillation	13 (24.07%)
Distant infections	12 (22.2%)
Pulmonary disease	11 (20.37%)
Renal insufficiency	13 (24.1%)
Dialysis dependent	7 (12.9%)
Predisposing factor	
Rheumatic heart disease	1 (1.85%)
Mitral valve prolapse	0
IV drug use	13 (24.1%)
Previous cardiac surgery	16 (29.6%)
Congenital heart disease	1 (2.38 %)
Previous IE	12 (22.2%)
Implantable intra-cardiac device	8 (14.8%)
Central venous line	6 (11.1%)
Affected valve	
Native valve	39 (72.2%)
Prosthetic valve	7 (12.9%)
Lead infection	8 (14.8%)
Aortic	12 (22.2%)
Mitral	26 (48%)
Tricuspid	7 (12.9%)
Pulmonary	3 (5.5%)

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Author	N	De	Definition	Cert	Age	Male	SA	SV	CNS	Ent	CN	Mort	IVDA	Prosthetic	Year	Country	Quality
Agüero[33]	25	R	Pelletier	NR	NR	NR	12	40			12				77-80	Chile	C
AIPEI[34]	390	P	Duke	Def	60	71	23	16	6	7	5	17	6	16	99	France	A
Ako[35]	69	R	Duke	Pos	55	72	15	38		10	25	19	0	33	90-99	Tokyo	B
Ako[35]	125	R	Duke	Pos	46	70	6	45		6		25	0	16	80-90	Japan	B
Allal[36]	101	R	Other	N/A	56	70	18	11		9	17			4	66-82	France	C
Al-Tawfiq[37]	54	R	Mod Duke	Def	60	68	43	17	7	22		29		19	95-08	Saudi Arabia	B
Auger[38]	50	R	Pelletier	Pos	43		6	28			14				69-77	Canada	C
Avanekar[39]	600	P	Mod Duke	NR	63	67	22	32	7	10				34	80-98	USA	B
Bailey[40]	210	R	Hickie	N/A	43	70	14	25			30	31	0	8	62-71	Australia	C
Barrau[41]	170	P	Mod Duke	Def	65	74	13	18	7	10	11		3	41	14-00	France	A
Bennis[42]	157	R	Other	N/A	28	63	4		11		22			4	83-94	Morocco	C
Bishara[43]	252	R	Mod Duke	Pos	62	54	24	32	11	6	25	16	0	23	87-96	Israel	B
Borer[44]	71	R	Duke	Pos	50	55	4	18		18	8	17	1	27	80-94	Israel	B
Bouramoue[45]	32	R	Von Reyn	Pos			19				41				76-89	Congo	B
Bouza[46]	109	P	VReyn/Steckelberg/Duke	Pos	50	73	45	9	14	9	10		36	17	94-96	Spain	B
Braun[47]	261	P	Von Reyn/Duke	Pos	49	69	18	31		10	23	16		28	80-99	Chile	B
Buchholtz[48]	235	P	Mod Duke	Pos	61	70	22		9	18	12	15	6	25	02-05	Denmark	B
Cabell[49]	329	P	Duke	Pos	57	54	40	11	9	10	10		8	27	93-99	USA	B
Casabe[50]	294	P	Duke	Pos	51	70	26	31	2	11	20	24	14	9	92-93	Argentina	B
Cecchii[51]	147	P	Mod Duke	Def			19	18	8		25	14	10	25	00-01	Italy	A
Cetinkaya[52]	189	R	Mod Duke/Von Reyn	NR	36	66	12	8	5	6	50		0	20	74-99	Turkey	B
Chao[53]	88	R	Duke	Pos	41	67	32	17	2	3	20	25	24	8	90-97	Taiwan	B
Chen[54]	58	R	Duke	Def	41	79	21	55	9	3	5				87-98	Taiwan	B
Chen[55]	178	R	Von Reyn	Pos	62		39	27		6				25	79-91	Australia	B
Cheng[56]	101	R	Other	Pos	39		8	53		4	14				79-87	Taiwan	C
Choudhury[57]	190	R	Other	N/A	25	70	17	8	3	2	54	25		1	81-91	India	C
Chu[58]	65	R	Duke	Pos	68	29	31	25	2	5	23	20		23	97-02	NZ	B
Cicalini[59]	151	R	Duke	Def	44	69	42	19	8	7	17		60	11	92-03	Italy	B
Cicalini[59]	132	R	Duke	Def	36	65	44	23	6	5	15		58	12	80-91	Italy	B
Corral[60]	550	R	Mod Duke	Pos	51	73	44	15	12	5	8		41		85-02	Spain	B
Couturier[61]	66	R	Duke/Von Reyn	Def	57	65	26			6	20		5	14	92-98	France	B
Deprele[62]	80	R	Duke	NR	65	70	7	21	6	11	11			10	95-01	France	B
Di Salvo[63]	178	R	Duke	Def	57	75				5	12	11	3	26	93-00	France	B
Durack[64]	204	R	Duke	Def	48	51	37	23	7	7	3	21	28	31	85-92	USA	B
Dwyer[65]	193	R	Von Reyn	Pos	51	65	39	26	5	5	10		9	22	79-92	Australia	B

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Fedorova[67]	112	R	Duke	NR	51	65	23			4	41	26	15	3	00-07	Russia	B
Fefer[68]	108	R	Duke/Von Reyn	Pos	57	56	13	31	7	11	18	11		31	90-99	Israel	B
Ferreiros[69]	390	P	Mod Duke	Def	59	70	28	25	6	10	11	25	4	16	01-02	Argentina	A
Finland[70]	78	R	Other	N/A			31	18		9					60-64	USA	C
Garvey[71]	165	R	Other	N/A		56	14	32	6		16	30	7	20	68-73	USA	C
Gergaud[72]	53	R	Von Reyn	Pos	66	66	11	19	4	11	15		13	17	83-90	France	B
Giannitsioti[73]	195	P	Mod Duke	Pos	64	65	17	21	10	20	10	20	7	22	00-04	Greece	B
Gossius[74]	46	R	Von Reyn	Pos			37	20	13	4	20			17	72-81	Norway	B
Gotsman[75]	100	R	Duke	Def	55	55	17	22	5	4	12	8	1	24	91-00	Israel	B
Gracey[76]	49	R	Other	N/A	39		14	49							60-65	Australia	C
Haddy[77]	23	R	Cherubin	N/A			39				0				73-79	USA	C
Haddy[77]	43	R	Cherubin	N/A			7				16				64-73	USA	C
Hammami[78]	72	R	Duke	Def	32	56	18	17	6	1				67	97-00	Tunisia	B
Heiro[79]	95	R	Duke	Pos	55	70	33	20	8	6	18		26	16	00-04	Finland	B
Heiro[79]	125	R	Duke	Pos	58	72	24	22	10	6	29	11	5	20	90-99	Finland	B
Heiro[79]	106	R	Duke	Pos	51	56	13	19	9	14	34		0	26	80-89	Finland	B
Heper[80]	74	R	Other	N/A	25	66	14	19	15	10		18		14	95-99	Turkey	C
Hermida Amej[81]	87	R	Mod Duke	Def	55	76	44	18	7	8	2		30		89-03	Spain	B

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	1960s	1970s	1980s	1990s	2000s	p
SA	38 % [-1%-77%]	22% [12%-31%]	21% [15%-26%]	21% [14%-27%]	19% [13%-24%]	0.82
SV	43% [-9%-95%]	37% [24%-50%]	34% [27%-42%]	23% [14%-31%]	27% [19%-33%]	0.14
Entero		56% [-3%-14%]	13% [8%-19%]	8% [3%-13%]	9% [5%-13%]	0.33

Cases	261
Time frame	2000-2010
Age	59.8
Male	49.4%
In-hosp mort	25.3%
Prosthetic	10.7%
IVDA	14.6%
Staph aureus	48.3%
MSSA	25.3%
MRSA	23.0%
Enterococci	19.2%
Strep viridans	9.6%
Coag Neg Staph	6.9%
Culture neg	3.8%

Conclusion

The present study represents the largest systematic review of IE epidemiology to date. Important findings include an increase in staphylococcal IE frequency over the last half-century, particularly in North America, and a worldwide decrease in SV IE percentage. In the last decade SA IE and enterococci IE frequencies have increased while culture negative IE has decreased. Patients with IE are getting older and the male to female ratio is increasing. Mortality has changed little in the last four decades.

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JAMA | Original Investigation

Trends in Infective Endocarditis in California and New York State, 1998-2013

Nana Toyoda, MD; Joanna Chikwe, MD; Shinobu Itagaki, MD, MS; Annetine C. Gelijns, PhD; David H. Adams, MD; Natalia N. Egorova, PhD

Predisposing factor							
History of congenital heart disease	3437 (4.5)	658 (4.0)	857 (4.5)	1043 (5.3)	879 (4.2)	0.7 (−0.01 to 1.5)	.05
History of valve surgery	10 591 (14.0)	2116 (12.8)	2515 (13.3)	2800 (14.3)	3160 (15.2)	1.6 (1.2 to 2.0)	<.001
History of implanted pacemaker or defibrillator	9765 (12.9)	1446 (8.8)	2207 (11.7)	2865 (14.6)	3247 (15.6)	4.8 (4.3 to 5.2)	<.001
Disease type							
Native-valve endocarditis	54 332 (71.7)	12 299 (74.5)	13 747 (72.8)	14 038 (71.6)	14 248 (68.4)	−0.7 (−0.9 to −0.5)	<.001
Prosthetic-valve endocarditis	9777 (12.9)	1989 (12.0)	2355 (12.5)	2558 (13.0)	2875 (13.8)	1.3 (0.8 to 1.7)	<.001
Cardiac device-related endocarditis	2236 (3.0)	217 (1.3)	454 (2.4)	717 (3.7)	848 (4.1)	8.8 (7.8 to 9.9)	<.001
Drug abuse-related endocarditis	9484 (12.5)	2006 (12.1)	2331 (12.3)	2298 (11.7)	2849 (13.7)	0.9 (0.4 to 1.3)	<.001
Mode of acquisition							
Community-acquired	35 701 (47.1)	8288 (50.2)	8571 (45.4)	8683 (44.3)	10 159 (48.8)	−0.2 (−0.4 to 0.03)	.09
Health care-associated	40 128 (52.9)	8223 (49.8)	10 316 (54.6)	10 928 (55.7)	10 661 (51.2)	0.2 (−0.04 to 0.4)	.10
Nosocomial	13 304 (17.5)	2923 (17.7)	3475 (18.7)	3721 (19.0)	3185 (15.3)	−1.0 (−1.4 to −0.7)	<.001
Nonnosocomial	26 824 (35.4)	5300 (32.1)	6841 (36.2)	7207 (36.7)	7476 (35.9)	0.8 (0.5 to 1.1)	<.001

*ieturkiyetemizlenmis.sav [DataSet1] - IBM SPSS Statistics Data Editor

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26 : Kültürnegatif

Visible: 26 of 26 Variables

	Araştırmacı	YılB	YılS	Kurumadı	Şehir	Olgusayısı	Yaşortalamsı	Erkek	ARA	Protez kapak	İVDU	CİED	Diyaliz	Staf	Saureus	MR	Strep	Enterokok	Brusella	Kültürnegatif	Ameliyat	Nozokomiyal	Dukekesin	Mortalite
1	Zencir C	2012,0	2015,0	Adnan Mend...	Aydın	59,0	59,0	43,0	.	32,0	.	.	.	.	39,0	.	.	.	.	.	27,0	.	100,0	27,0
2	Gürsül NC	2006,0	2013,0	Atatürk EAH	İzmir	80,0	51,0	70,0	.	12,0	,0	25,0	7,5	4...	27,0	...	20,0	17,0	12,0	51,0	56,0	.	.	15,0
3	Elbey MA	2005,0	2012,0	Çok Merk	Çok	248,0	47,0	55,0	28,0	30,0	.	6,0	.	2...	21,0	...	11,0	11,0	5,0	37,5	54,0	.	100,0	33,0
4	Leblebici H	2002,0	2004,0	Çok Merk	Çok	112,0	45,0	50,0	18,0	17,0	8,0	.	5,4	5...	35,0	.	29,0	16,0	.	16,0	13,0	.	90,0	29,0
5	Akıl	2005,0	2012,0	Çok Merk	Çok	158,0	47,0	51,0	39,0	,0	.	.	.	2...	.	...	11,0	11,0	6,0	34,0	51,0	.	.	31,0
6	Kocabaş U	2000,0	2012,0	Ege Tıp	İzmir	194,0	48,0	66,0	22,0	12,0	.	3,1	6,0	3...	.	.	16,0	6,0	.	43,0	52,0	.	100,0	20,0
7	İnanç T	2005,0	2007,0	Erciyes Tıp	Kayseri	27,0	47,0	63,0	67,0	41,0	.	.	.	3...	11,0	.	4,0	11,0	4,0	45,0	19,0	.	.	15,0
8	Tuğcu A	1997,0	2007,0	Florance	İstanbul	68,0	51,0	59,0	40,0	56,0	.	3,0	12,0	4...	28,0	...	25,0	1,5	,0	21,0	59,0	28,0	84,0	25,0
9	Sucu M	2004,0	2007,0	Gaziantep Tıp	Gazia...	72,0	45,0	57,0	36,0	29,0	.	.	3,0	2...	10,0	.	23,0	4,0	4,0	36,0	28,0	.	100,0	15,0
10	Çetinkaya Y	1974,0	1999,0	Hacettepe	Ankara	228,0	36,0	55,0	64,0	20,0	,0	,4	.	2...	24,0	.	14,0	6,0	5,7	50,0	37,0	12,0	53,0	23,0
11	Kaya Z	2008,0	2012,0	Harran Tıp	Urfa	24,0	41,0	50,0	.	13,0	.	4,0	8,3	2...	.	.	17,0	4,0	33,0	21,0	37,0	.	.	8,0
12	Işık S	1998,0	2001,0	İst Hst	İstanbul	14,0	41,0	70,0	61,0	23,0	.	.	.	2...	.	.	24,0	.	.	54,0	100,0	.	70,0	.
13	Küçükateş E	2001,0	2010,0	Kard Enst	İstanbul	22,0	47,0	55,0	55,0	41,0	,0	.	.	3...	.	.	27,0	9,0	9,0	50,0	100,0	.	.	18,0
14	Çaylan R	1997,0	2001,0	KATÜ	Trabzon	32,0	47,0	73,0	.	22,0	.	.	.	3...	22,0	.	19,0	9,0	.	78,0	25,0	.	.	41,0
15	Özveren O	1997,0	2004,0	Koşuyolu	İstanbul	119,0	39,0	69,0	39,0	20,0	.	2,0	.	2...	22,0	...	9,0	3,0	3,0	57,0	76,0	.	100,0	.
16	Adademir T	1985,0	2011,0	Koşuyolu	İstanbul	174,0	39,0	79,0	.	15,0	.	.	.	1...	.	...	29,0	.	6,0	47,0	100,0	.	.	16,0
17	Şimşek Yav...	2000,0	2015,0	Siyami Ersek	İstanbul	325,0	47,0	58,0	34,0	44,0	,9	5,6	3,0	3...	20,0	...	19,0	7,0	5,0	22,0	52,0	23,0	86,0	27,0
18	Erbay AR	2004,0	2008,0	Yüksek İhtisas	Ankara	107,0	45,0	71,0	.	44,0	.	.	.	.	.	.	.	.	.	34,0	.	.	.	27,0
19	Çay S	2002,0	2006,0	Yüksek İhtisas	Ankara	96,0	47,0	58,0	.	19,0	.	2,0	.	1...	4,0	.	4,0	8,0	8,3	62,0	51,0	.	100,0	12,5
20	Heper G	1995,0	1999,0	Yüksek İhtisas	Ankara	74,0	25,0	66,0	66,0	14,0	.	.	.	4...	21,0	.	29,0	15,0	7,0	11,0	.	.	.	18,0
21	Turak O	2009,0	2012,0	Yüksek İhtisas	Ankara	157,0	59,0	55,0	15,0	42,0	.	9,0	.	3...	13,0	.	22,0	7,0	6,0	29,0	39,0	.	100,0	26,0
22	Ağca FV	2009,0	2014,0	Yüksek İhtis...	Bursa	85,0	52,0	56,0	22,0	40,0	.	13,0	.	2...	8,0	...	11,0	5,0	6,0	32,0	27,0	.	100,0	36,0
23	TOPLAM	1974,0	2015,0	TÜRKİYE	TÜRKİ...	2475,0	46,0	60,0	40,0	26,0	2,0	7,0	7,0	3...	20,0	...	18,0	8,0	8,0	40,0	50,0	21,0	91,0	23,0
24																								
25																								
26																								

Türkiyeden yapılmış 22 çalışmada yer alan toplam 2475 infektif endokardit olgusunun değerlendirilmesi (1974-2015)

Parametre	Sonuç veren çalışma sayısı	Değer
Yaş ortalaması, yıl	22	46
Erkek Oranı %	22	60
ARA %	15	40
Protez kapak %	22	26
İVDU %	5	2
CİED %	11	7
Diyaliz %	7	7
Nozokomiyal %	3	21
Stafilokok %	20	31
S.aureus %	15	20
MRSA %	8	5
Streptokok %	20	18
Enterokok %	18	8
Brucella %	16	8
Kan kültürü negatif %	21	40
Duke kesin endokardit %	13	91
Mortalite %	20	23

A-Hastaya Ait Faktörler

4-Ağız Hijyeninin Kötü Olması veya Diş İnfeksiyonları:

Rutin ağız veya diş bakımı İE için risk faktörü değildir. Diş eti dokusu ve dişin periapikal bölgesi ve oral mukozanın perforasyonu İE riskini artırabilir.

Oral streptokoklar

Antibiyotik profilaksisi özellikle altta yatan yapısal kalp hastalığı olan veya protez kalp kapak hastalığı olduğu zaman invazif diş girişimlerinde gerekir.

B-Komorbid Koşullar

1-Yapısal Kalp Hastalığı:

İE olgularının ¾'de endokardit tanısı sırasında altta bir yapısal kalp anormalliği vardır.

Bir İspanyol çalışmasında altta yatan bir kalp hastalığı olmadan İE sıklığında artış gözlenmiş, bu hastalarda bir immünosüpresyon olasılığının gözden kaçırılmamamsı gerektiği belirtilmiştir.

B-Komorbid Koşullar

2-Kapak Hastalığı; Kapak hastalıkları romatizmal kalp hastalığı, mitral kapak hastalığı, mitral kapak prolapsusu (mitral rejurtitasyonunun eşlik ettiği), aort kapak hastalığı ve diğer kapak hastalıklarını içerir.

NY'da 1938 ve 1967'de romatizmal kapak hastalığı en yaygın kardiyak hastalık idi (%39). Buna tezat olarak, 1980 ve 1984 arasında romatizmal kalp hastalığı İE'li hastaların sadece %6'sında saptanmıştır.

B-Komorbid Koşullar

3-Konjenital Kalp Hastalığı — Konjenital kapak lezyonları (aort stenozu, bikuspit aort kapağı, pulmoner stenoz, VSD, PDA,aort kuarktasyonu,Fallot tetralojisi) İE'ye eğilimi artırır.

2401 konjenital KH olan (aort stenozu, pulm stenoz veya VSD) hastalarda 135/100 000 hasta yılı insidansı var. EN sık endokardit, aort stenozu ve VSD sonrasında gelişmiş.

Predispozan Faktörler ve Klinik Bulgular

Feature	n (%)	Feature	n (%)
Predisposing conditions		*Complaints*	
Chronic rheumatic heart disease	110 (33.9)	Fever	276 (84.9)
Prosthetic valve	141 (43.5)	Dyspnoea	131 (40.5)
Pace/ICD*	18 (5.6)	Fatigue	118 (36.4)
Previous infective endocarditis	18 (5.6)	Anorexia and weight loss	33 (10.2)
Bicuspid aortic valve	18 (5.6)	Arthralgia	19 (5.9)
Other congenital heart defects	26 (8.0)	Headache and change in consciousness	15 (4.6)
Structural heart valve disease	12 (3.3)	*Physical investigation and laboratory findings*	
Degenerative heart valve disease	19 (5.9)	Fever	307 (94.4)
Intravenous drug user	3 (0.9)	New murmur	145 (44.8)
Other features		Skin rashes	8 (2.5)
Left-sided endocarditis	284 (87.3)	Roth spot	5 (1.5)
Aortic valve	124 (38.2)	Splenomegaly	55 (16.9)
Mitral valve	124 (38.2)	Peripheral arterial emboli	17 (5.2)
Aortic and mitral valve	36 (11.0)	Central nervous system emboli	52 (16.6)
Right-sided endocarditis	41 (12.7)	Pulmonary emboli	8 (2.5)
Tricuspid valve	21 (6.5)	Splenic abscess	15 (4.6)
Pulmonary valve	2 (0.6)	Congestive heart failure	104 (32.1)
Place of infection acquisition		Vegetation on echocardiography	253 (78.1)
Community-acquired	250 (76.9)	Abscess on echocardiography	48 (14.8)
Healthcare-associated	75 (23.1)	Haematuria	121 (38.6%)
Nosocomial	33 (10.2)	Elevated rheumatoid factor	28 (8.9%)
Non-nosocomial	42 (12.9)	Elevated C-reactive protein level	295 (91)
		Elevated erythrocyte sedimentation rate	276 (85)

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Olguların Karakteristikleri

Demographics	
Age, median years (range)	61.5 (21 - 93)
Female gender	19 (35%)
Race (Caucasian)	54 (100%)
Diagnosis	
Definite IE	45 (85%)
Possible IE	9 (14%)
Comorbidities	
Diabetes mellitus	21 (38.8%)
HIV	1 (1.85%)
Neoplasm	6 (11.1%)
Other immunosuppressed states	2 (3.7%)
Valvular heart disease	15 (28.8%)
Heart failure	11 (20.4%)
Bicuspid aortic valve	1 (1.85%)
Atrial fibrillation	13 (24.07%)
Distant infections	12 (22.2%)
Pulmonary disease	11 (20.37%)
Renal insufficiency	13 (24.1%)
Dialysis dependent	7 (12.9%)
Predisposing factor	
Rheumatic heart disease	1 (1.85%)
Mitral valve prolapse	0
IV drug use	13 (24.1%)
Previous cardiac surgery	16 (29.6%)
Congenital heart disease	1 (2.38 %)
Previous IE	12 (22.2%)
Implantable intra-cardiac device	8 (14.8%)
Central venous line	6 (11.1%)
Affected valve	
Native valve	39 (72.2%)
Prosthetic valve	7 (12.9%)
Lead infection	8 (14.8%)
Aortic	12 (22.2%)
Mitral	26 (48%)
Tricuspid	7 (12.9%)
Pulmonary	3 (5.5%)

J Clin Med Res. 2017;9(9):754-758

İnfektif Endokardit İçin Predispozan Durumlar =85)

Table 2. Predisposing conditions of patients

Variables	Case n (%)
Native valve endocarditis	40 (47.1)
Rheumatic heart disease	19 (22.4)
Degenerative heart disease	15 (17.6)
Congenital heart disease	2 (2.4)
Other	4 (4.7)
Prosthetic valve endocarditis	34 (40.0)
Pacemaker/ICD lead endocarditis	11 (12.9)

Site	n	%
Mitral valve	32	37.6
Aortic valve	24	28.2
Aortic + Mitral valve	16	18.8
Tricuspid valve	2	2.4
Pulmonic valve	1	1.2
Tetralogy of Fallot	1	1.2

Organism	Case n (%)
Defined causative agent	58 (68.2)
Stahylococci	23 (27.1)
MRSA	2 (2.4)
MSSA	5 (5.8)
MRCNS	10 (11.8)
MSCNS	6 (7.1)
Enterococcus spp.	4 (4.7)
Streptococcus spp	9 (10.5)
Brucella spp.	5 (5.8)
Gram negative	4 (4.7)
Candida spp.	5 (5.8)
Corynebacterium spp.	1 (1.1)
Mixed	3 (3.5)

Agca FV, et al. Int J Clin Exp Med 2015;8(8):13962-13968

B-Komorbid Koşullar

4-Protez Kalp Kapakları

Predispozan Faktörler ve Klinik Bulgular

Feature	n (%)	Feature	n (%)
Predisposing conditions		*Complaints*	
Chronic rheumatic heart disease	110 (33.9)	Fever	276 (84.9)
Prosthetic valve	141 (43.5)	Dyspnoea	131 (40.5)
Pace/ICD*	18 (5.6)	Fatigue	118 (36.4)
Previous infective endocarditis	18 (5.6)	Anorexia and weight loss	33 (10.2)
Bicuspid aortic valve	18 (5.6)	Arthralgia	19 (5.9)
Other congenital heart defects	26 (8.0)	Headache and change in consciousness	15 (4.6)
Structural heart valve disease	12 (3.3)	*Physical investigation and laboratory findings*	
Degenerative heart valve disease	19 (5.9)	Fever	307 (94.4)
Intravenous drug user	3 (0.9)	New murmur	145 (44.8)
Other features		Skin rashes	8 (2.5)
Left-sided endocarditis	284 (87.3)	Roth spot	5 (1.5)
Aortic valve	124 (38.2)	Splenomegaly	55 (16.9)
Mitral valve	124 (38.2)	Peripheral arterial emboli	17 (5.2)
Aortic and mitral valve	36 (11.0)	Central nervous system emboli	52 (16.6)
Right-sided endocarditis	41 (12.7)	Pulmonary emboli	8 (2.5)
Tricuspid valve	21 (6.5)	Splenic abscess	15 (4.6)
Pulmonary valve	2 (0.6)	Congestive heart failure	104 (32.1)
Place of infection acquisition		Vegetation on echocardiography	253 (78.1)
Community-acquired	250 (76.9)	Abscess on echocardiography	48 (14.8)
Healthcare-associated	75 (23.1)	Haematuria	121 (38.6%)
Nosocomial	33 (10.2)	Elevated rheumatoid factor	28 (8.9%)
Non-nosocomial	42 (12.9)	Elevated C-reactive protein level	295 (91)
		Elevated erythrocyte sedimentation rate	276 (85)

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Author	N	De	Definition	Cert	Age	Male	SA	SV	CNS	Ent	CN	Mort	IVDA	Prosthetic	Year	Country	Quality
Agüero[33]	25	R	Pelletier	NR	NR	NR	12	40			12				77-80	Chile	C
AIPEI[34]	390	P	Duke	Def	60	71	23	16	6	7	5	17	6	16	99	France	A
Ako[35]	69	R	Duke	Pos	55	72	15	38		10	25	19	0	33	90-99	Tokyo	B
Ako[35]	125	R	Duke	Pos	46	70	6	45		6		25	0	16	80-90	Japan	B
Allal[36]	101	R	Other	N/A	56	70	18	11		9	17			4	66-82	France	C
Al-Tawfiq[37]	54	R	Mod Duke	Def	60	68	43	17	7	22		29		19	95-08	Saudi Arabia	B
Auger[38]	50	R	Pelletier	Pos	43		6	28			14				69-77	Canada	C
Avanekar[39]	600	P	Mod Duke	NR	63	67	22	32	7	10				34	80-98	USA	B
Bailey[40]	210	R	Hickie	N/A	43	70	14	25			30	31	0	8	62-71	Australia	C
Barrau[41]	170	P	Mod Duke	Def	65	74	13	18	7	10	11		3	41	14-00	France	A
Bennis[42]	157	R	Other	N/A	28	63	4		11		22			4	83-94	Morocco	C
Bishara[43]	252	R	Mod Duke	Pos	62	54	24	32	11	6	25	16	0	23	87-96	Israel	B
Borer[44]	71	R	Duke	Pos	50	55	4	18		18	8	17	1	27	80-94	Israel	B
Bouramoue[45]	32	R	Von Reyn	Pos			19				41				76-89	Congo	B
Bouza[46]	109	P	VReyn/Steckelberg/Duke	Pos	50	73	45	9	14	9	10		36	17	94-96	Spain	B
Braun[47]	261	P	Von Reyn/Duke	Pos	49	69	18	31		10	23	16		28	80-99	Chile	B
Buchholtz[48]	235	P	Mod Duke	Pos	61	70	22		9	18	12	15	6	25	02-05	Denmark	B
Cabell[49]	329	P	Duke	Pos	57	54	40	11	9	10	10		8	27	93-99	USA	B
Casabe[50]	294	P	Duke	Pos	51	70	26	31	2	11	20	24	14	9	92-93	Argentina	B
Cecchii[51]	147	P	Mod Duke	Def			19	18	8		25	14	10	25	00-01	Italy	A
Cetinkaya[52]	189	R	Mod Duke/Von Reyn	NR	36	66	12	8	5	6	50		0	20	74-99	Turkey	B
Chao[53]	88	R	Duke	Pos	41	67	32	17	2	3	20	25	24	8	90-97	Taiwan	B
Chen[54]	58	R	Duke	Def	41	79	21	55	9	3	5				87-98	Taiwan	B
Chen[55]	178	R	Von Reyn	Pos	62		39	27		6				25	79-91	Australia	B
Cheng[56]	101	R	Other	Pos	39		8	53		4	14				79-87	Taiwan	C
Choudhury[57]	190	R	Other	N/A	25	70	17	8	3	2	54	25		1	81-91	India	C
Chu[58]	65	R	Duke	Pos	68	29	31	25	2	5	23	20		23	97-02	NZ	B
Cicalini[59]	151	R	Duke	Def	44	69	42	19	8	7	17		60	11	92-03	Italy	B
Cicalini[59]	132	R	Duke	Def	36	65	44	23	6	5	15		58	12	80-91	Italy	B
Corral[60]	550	R	Mod Duke	Pos	51	73	44	15	12	5	8		41		85-02	Spain	B
Couturier[61]	66	R	Duke/Von Reyn	Def	57	65	26			6	20		5	14	92-98	France	B
Deprele[62]	80	R	Duke	NR	65	70	7	21	6	11	11			10	95-01	France	B
Di Salvo[63]	178	R	Duke	Def	57	75				5	12	11	3	26	93-00	France	B
Durack[64]	204	R	Duke	Def	48	51	37	23	7	7	3	21	28	31	85-92	USA	B
Dwyer[65]	193	R	Von Reyn	Pos	51	65	39	26	5	5	10		9	22	79-92	Australia	B

Slipczuk L, et al PLoS One. 2013;8(12):e82665

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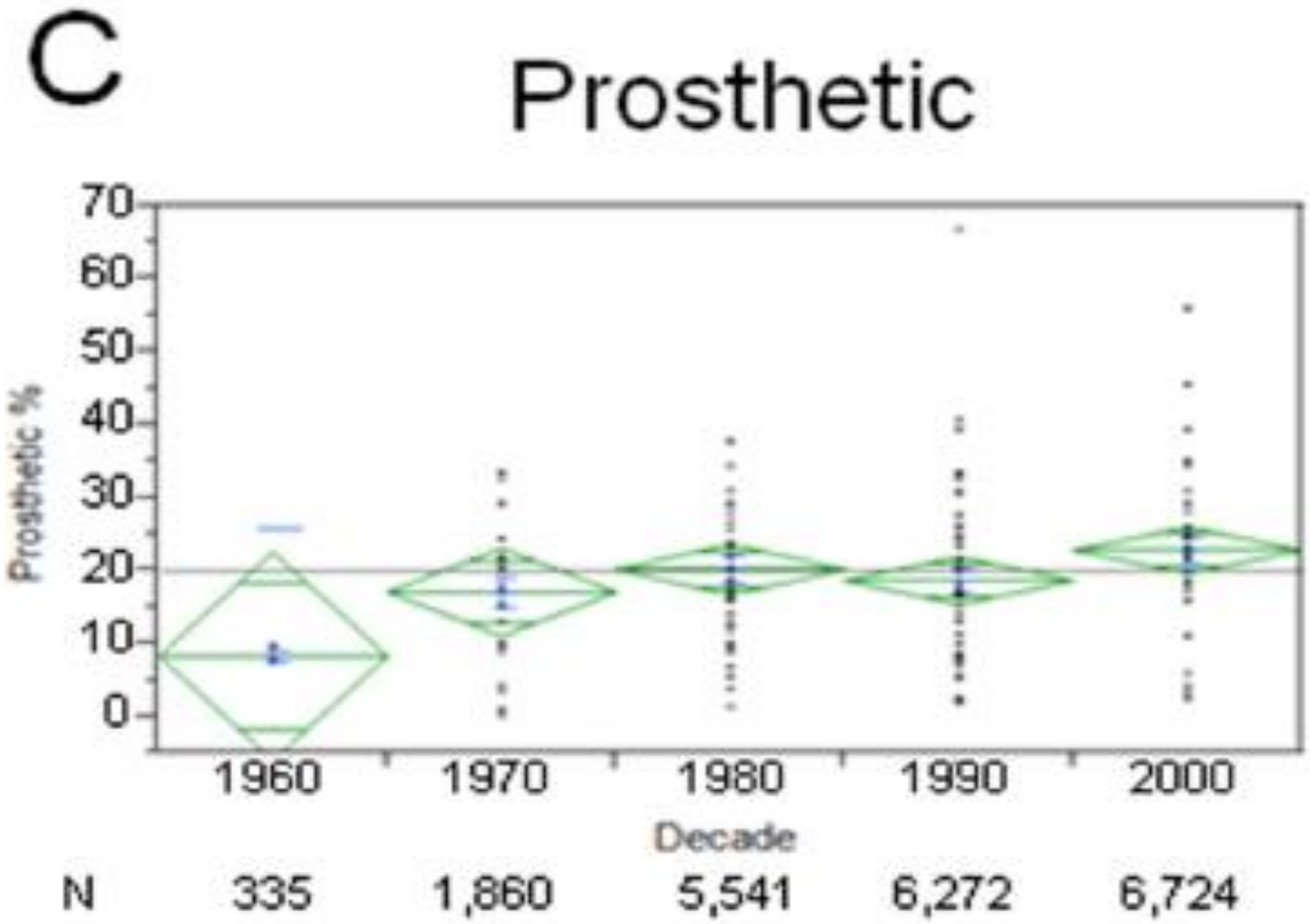
26 : Kültürnegatif

Visible: 26 of 26 Variables

	Araştırmacı	YılB	YılS	Kurumadı	Şehir	Olgusayısı	Yaşortalamsı	Erkek	ARA	Protez kapak	İVDU	CİED	Diyaliz	Staf	Saureus	MR	Strep	Enterokok	Brusella	Kültürnegatif	Ameliyat	Nozokomiyal	Dukekesin	Mortalite
1	Zencir C	2012,0	2015,0	Adnan Mend...	Aydın	59,0	59,0	43,0	.	32,0	.	.	.	.	39,0	.	.	.	.	.	27,0	.	100,0	27,0
2	Gürsül NC	2006,0	2013,0	Atatürk EAH	İzmir	80,0	51,0	70,0	.	12,0	,0	25,0	7,5	4...	27,0	...	20,0	17,0	12,0	51,0	56,0	.	.	15,0
3	Elbey MA	2005,0	2012,0	Çok Merk	Çok	248,0	47,0	55,0	28,0	30,0	.	6,0	.	2...	21,0	...	11,0	11,0	5,0	37,5	54,0	.	100,0	33,0
4	Leblebici H	2002,0	2004,0	Çok Merk	Çok	112,0	45,0	50,0	18,0	17,0	8,0	.	5,4	5...	35,0	.	29,0	16,0	.	16,0	13,0	.	90,0	29,0
5	Akıl	2005,0	2012,0	Çok Merk	Çok	158,0	47,0	51,0	39,0	,0	.	.	.	2...	.	...	11,0	11,0	6,0	34,0	51,0	.	.	31,0
6	Kocabaş U	2000,0	2012,0	Ege Tıp	İzmir	194,0	48,0	66,0	22,0	12,0	.	3,1	6,0	3...	.	.	16,0	6,0	.	43,0	52,0	.	100,0	20,0
7	İnanç T	2005,0	2007,0	Erciyes Tıp	Kayseri	27,0	47,0	63,0	67,0	41,0	.	.	.	3...	11,0	.	4,0	11,0	4,0	45,0	19,0	.	.	15,0
8	Tuğcu A	1997,0	2007,0	Florance	İstanbul	68,0	51,0	59,0	40,0	56,0	.	3,0	12,0	4...	28,0	...	25,0	1,5	,0	21,0	59,0	28,0	84,0	25,0
9	Sucu M	2004,0	2007,0	Gaziantep Tıp	Gazia...	72,0	45,0	57,0	36,0	29,0	.	.	3,0	2...	10,0	.	23,0	4,0	4,0	36,0	28,0	.	100,0	15,0
10	Çetinkaya Y	1974,0	1999,0	Hacettepe	Ankara	228,0	36,0	55,0	64,0	20,0	,0	,4	.	2...	24,0	.	14,0	6,0	5,7	50,0	37,0	12,0	53,0	23,0
11	Kaya Z	2008,0	2012,0	Harran Tıp	Urfa	24,0	41,0	50,0	.	13,0	.	4,0	8,3	2...	.	.	17,0	4,0	33,0	21,0	37,0	.	.	8,0
12	Işık S	1998,0	2001,0	İst Hst	İstanbul	14,0	41,0	70,0	61,0	23,0	.	.	.	2...	.	.	24,0	.	.	54,0	100,0	.	70,0	.
13	Küçükateş E	2001,0	2010,0	Kard Enst	İstanbul	22,0	47,0	55,0	55,0	41,0	,0	.	.	3...	.	.	27,0	9,0	9,0	50,0	100,0	.	.	18,0
14	Çaylan R	1997,0	2001,0	KATÜ	Trabzon	32,0	47,0	73,0	.	22,0	.	.	.	3...	22,0	.	19,0	9,0	.	78,0	25,0	.	.	41,0
15	Özveren O	1997,0	2004,0	Koşuyolu	İstanbul	119,0	39,0	69,0	39,0	20,0	.	2,0	.	2...	22,0	...	9,0	3,0	3,0	57,0	76,0	.	100,0	.
16	Adademir T	1985,0	2011,0	Koşuyolu	İstanbul	174,0	39,0	79,0	.	15,0	.	.	.	1...	.	...	29,0	.	6,0	47,0	100,0	.	.	16,0
17	Şimşek Yav...	2000,0	2015,0	Siyami Ersek	İstanbul	325,0	47,0	58,0	34,0	44,0	,9	5,6	3,0	3...	20,0	...	19,0	7,0	5,0	22,0	52,0	23,0	86,0	27,0
18	Erbay AR	2004,0	2008,0	Yüksek İhtisas	Ankara	107,0	45,0	71,0	.	44,0	.	.	.	.	.	.	.	.	.	34,0	.	.	.	27,0
19	Çay S	2002,0	2006,0	Yüksek İhtisas	Ankara	96,0	47,0	58,0	.	19,0	.	2,0	.	1...	4,0	.	4,0	8,0	8,3	62,0	51,0	.	100,0	12,5
20	Heper G	1995,0	1999,0	Yüksek İhtisas	Ankara	74,0	25,0	66,0	66,0	14,0	.	.	.	4...	21,0	.	29,0	15,0	7,0	11,0	.	.	.	18,0
21	Turak O	2009,0	2012,0	Yüksek İhtisas	Ankara	157,0	59,0	55,0	15,0	42,0	.	9,0	.	3...	13,0	.	22,0	7,0	6,0	29,0	39,0	.	100,0	26,0
22	Ağca FV	2009,0	2014,0	Yüksek İhtis...	Bursa	85,0	52,0	56,0	22,0	40,0	.	13,0	.	2...	8,0	...	11,0	5,0	6,0	32,0	27,0	.	100,0	36,0
23	TOPLAM	1974,0	2015,0	TÜRKİYE	TÜRKİ...	2475,0	46,0	60,0	40,0	26,0	2,0	7,0	7,0	3...	20,0	...	18,0	8,0	8,0	40,0	50,0	21,0	91,0	23,0
24																								
25																								
26																								

Türkiyeden yapılmış 22 çalışmada yer alan toplam 2475 infektif endokardit olgusunun değerlendirilmesi (1974-2015)

Parametre	Sonuç veren çalışma sayısı	Değer
Yaş ortalaması, yıl	22	46
Erkek Oranı %	22	60
ARA %	15	40
Protez kapak %	22	26
İVDU %	5	2
CİED %	11	7
Diyaliz %	7	7
Nozokomiyal %	3	21
Stafilokok %	20	31
S.aureus %	15	20
MRSA %	8	5
Streptokok %	20	18
Enterokok %	18	8
Brucella %	16	8
Kan kültürü negatif %	21	40
Duke kesin endokardit %	13	91
Mortalite %	20	23



Slipczuk L, et al PLoS One. 2013;8(12):e82665

2003-2010 arası: 88 hasta (Belçika)

Table 2 Demographic and clinical characteristics of infective endocarditis episodes (n=88) in 83 patients

Characteristics	No. (%)
Demographics	
Age, median (IQR), years	72 (59–81)
Number of patients	83
Male patients	55 (66.3)
Of whom >1 episode	3
Male episodes	59 (67.0)
Female patients	28 (33.7)
Of whom >1 episode	1
Clinical	
Modified Duke classification	
Definite	66 (75.0)
Possible	22 (25.0)
Valves involved	
Aortic	32 (36.4)
Mitral	37 (42.0)
Aortic and mitral	10 (11.4)
Right-sided or bilateral	5 (5.7)
Unknown*	4 (4.5)
Prosthetic IE	7 (8.0)

Table 3 Distribution of preexisting valve disease in episodes with infective endocarditis*

	No. (%)
Acquired (native) valve insufficiency	19 (21.6)
Left heart	17 (19.3)
Right heart	0 (0.0)
Both sides	2 (2.3)
Prosthetic valves	16 (18.2)
Mechanical	4 (4.6)
Biological	12 (13.6)
Congenital heart disease	5 (5.7)
Unspecified heart murmur	1 (1.1)
Rheumatic heart disease	2 (2.3)
Mitral valve prolapse	1 (1.1)
History of IE	8 (9.1)
Episodes without any (or unknown) preexisting valve diseases	50 (56.8)

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B-Komorbid Koşullar

5-İE Öyküsünün Olması — Önceden İE öyküsünün olması sonradan İE gelişmesi için önemli bir predispozan faktördür. İE geçiren ve yalayan hastalarda rekürran İE hastaların **%4.5'de** gelişmiştir. Diğer çalışmalarda oran **%2.5'dan %9'a** kadar bir aralıkta geliştiği bildirilmiştir.

Olguların Karakteristikleri

Demographics	
Age, median years (range)	61.5 (21 - 93)
Female gender	19 (35%)
Race (Caucasian)	54 (100%)
Diagnosis	
Definite IE	45 (85%)
Possible IE	9 (14%)
Comorbidities	
Diabetes mellitus	21 (38.8%)
HIV	1 (1.85%)
Neoplasm	6 (11.1%)
Other immunosuppressed states	2 (3.7%)
Valvular heart disease	15 (28.8%)
Heart failure	11 (20.4%)
Bicuspid aortic valve	1 (1.85%)
Atrial fibrillation	13 (24.07%)
Distant infections	12 (22.2%)
Pulmonary disease	11 (20.37%)
Renal insufficiency	13 (24.1%)
Dialysis dependent	7 (12.9%)
Predisposing factor	
Rheumatic heart disease	1 (1.85%)
Mitral valve prolapse	0
IV drug use	13 (24.1%)
Previous cardiac surgery	16 (29.6%)
Congenital heart disease	1 (2.38 %)
Previous IE	12 (22.2%)
Implantable intra-cardiac device	8 (14.8%)
Central venous line	6 (11.1%)
Affected valve	
Native valve	39 (72.2%)
Prosthetic valve	7 (12.9%)
Lead infection	8 (14.8%)
Aortic	12 (22.2%)
Mitral	26 (48%)
Tricuspid	7 (12.9%)
Pulmonary	3 (5.5%)

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2003-2010 arası: 88 hasta (Belçika)

Table 2 Demographic and clinical characteristics of infective endocarditis episodes (n=88) in 83 patients

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Modified Duke classification	
Definite	66 (75.0)
Possible	22 (25.0)
Valves involved	
Aortic	32 (36.4)
Mitral	37 (42.0)
Aortic and mitral	10 (11.4)
Right-sided or bilateral	5 (5.7)
Unknown*	4 (4.5)
Prosthetic IE	7 (8.0)

Table 3 Distribution of preexisting valve disease in episodes with infective endocarditis*

	No. (%)
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Right heart	0 (0.0)
Both sides	2 (2.3)
Prosthetic valves	16 (18.2)
Mechanical	4 (4.6)
Biological	12 (13.6)
Congenital heart disease	5 (5.7)
Unspecified heart murmur	1 (1.1)
Rheumatic heart disease	2 (2.3)
Mitral valve prolapse	1 (1.1)
History of IE	8 (9.1)
Episodes without any (or unknown) preexisting valve diseases	50 (56.8)

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B-Komorbid Koşullar

6-Damar içi Cihazın Olması:

Damar içi kateter varlığıyla veya invazif damar içi girişimi ile ilişkili bakteriyemiler sağlık bakımı ile ilişkili endokardit ile komplike olabilir. Bir kohort çalışmasında, 2781 İE hastası arasında, %23 oranında SBİİE saptanmış. Daha az görülen durum ise peritoneovenöz şantlar (assit yönetimi için) ve hidrosefali için takılan ventrikuloatrial şantlardır.

Nozokomiyal endokardit, başvuru sırasında İE tanısı olmayan 72 saat sonra gelişen veya hastaneye başvurunun 60 günü içinde gelişen bakteriyemi ve İE riski olan İE'ler olarak tanımlanmıştır.

Bazı çalışmalarda 2001-2006 arasındaki tüm İE olgularının %50 kadarının SBİİE olduğu bildirilmiştir. Bunların %7.5'u nozokomiyal ve %42.5'i toplum kökenli olarak tanımlanmıştır.

Nozokomiyal endokardit olağan dışı patojenlerle gelişebilir, örn. tbc-dışı mikobakteriler açık göğüs cerrahisi yapılan hastalarda görülmekte olduğu bildirilmiştir.

Predispozan Faktörler ve Klinik Bulgular

Feature	n (%)	Feature	n (%)
Predisposing conditions		*Complaints*	
Chronic rheumatic heart disease	110 (33.9)	Fever	276 (84.9)
[illegible] valve	141 (43.5)	Dyspnoea	131 (40.5)
[illegible]	18 (5.6)	Fatigue	118 (36.4)
Previous infective endocarditis	18 (5.6)	Anorexia and weight loss	33 (10.2)
Bicuspid aortic valve	18 (5.6)	Arthralgia	19 (5.9)
Other congenital heart defects	26 (8.0)	Headache and change in consciousness	15 (4.6)
Structural heart valve disease	12 (3.3)	*Physical investigation and laboratory findings*	
Degenerative heart valve disease	19 (5.9)	Fever	307 (94.4)
Intravenous drug user	3 (0.9)	New murmur	145 (44.8)
Other features		Skin rashes	8 (2.5)
Left-sided endocarditis	284 (87.3)	Roth spot	5 (1.5)
Aortic valve	124 (38.2)	Splenomegaly	55 (16.9)
Mitral valve	124 (38.2)	Peripheral arterial emboli	17 (5.2)
Aortic and mitral valve	36 (11.0)	Central nervous system emboli	52 (16.6)
Right-sided endocarditis	41 (12.7)	Pulmonary emboli	8 (2.5)
Tricuspid valve	21 (6.5)	Splenic abscess	15 (4.6)
Pulmonary valve	2 (0.6)	Congestive heart failure	104 (32.1)
Place of infection acquisition		Vegetation on echocardiography	253 (78.1)
Community-acquired	250 (76.9)	Abscess on echocardiography	48 (14.8)
Healthcare-associated	75 (23.1)	Haematuria	121 (38.6%)
Nosocomial	33 (10.2)	Elevated rheumatoid factor	28 (8.9%)
Non-nosocomial	42 (12.9)	Elevated C-reactive protein level	295 (91)
		Elevated erythrocyte sedimentation rate	276 (85)

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Olguların Karakteristikleri

Demographics	
Age, median years (range)	61.5 (21 - 93)
Female gender	19 (35%)
Race (Caucasian)	54 (100%)
Diagnosis	
Definite IE	45 (85%)
Possible IE	9 (14%)
Comorbidities	
Diabetes mellitus	21 (38.8%)
HIV	1 (1.85%)
Neoplasm	6 (11.1%)
Other immunosuppressed states	2 (3.7%)
Valvular heart disease	15 (28.8%)
Heart failure	11 (20.4%)
Bicuspid aortic valve	1 (1.85%)
Atrial fibrillation	13 (24.07%)
Distant infections	12 (22.2%)
Pulmonary disease	11 (20.37%)
Renal insufficiency	13 (24.1%)
Dialysis dependent	7 (12.9%)
Predisposing factor	
Rheumatic heart disease	1 (1.85%)
Mitral valve prolapse	0
IV drug use	13 (24.1%)
Previous cardiac surgery	16 (29.6%)
Congenital heart disease	1 (2.38 %)
Previous IE	12 (22.2%)
Implantable intra-cardiac device	8 (14.8%)
Central venous line	6 (11.1%)
Affected valve	
Native valve	39 (72.2%)
Prosthetic valve	7 (12.9%)
Lead infection	8 (14.8%)
Aortic	12 (22.2%)
Mitral	26 (48%)
Tricuspid	7 (12.9%)
Pulmonary	3 (5.5%)

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	1960s	1970s	1980s	1990s	2000s	p
SA	38 % [-1%-77%]	22% [12%-31%]	21% [15%-26%]	21% [14%-27%]	19% [13%-24%]	0.82
SV	43% [-9%-95%]	37% [24%-50%]	34% [27%-42%]	23% [14%-31%]	27% [19%-33%]	0.14
Entero		56% [-3%-14%]	13% [8%-19%]	8% [3%-13%]	9% [5%-13%]	0.33

Cases	261
Time frame	2000-2010
Age	59.8
Male	49.4%
In-hosp mort	25.3%
Prosthetic	10.7%
IVDA	14.6%
Staph aureus	48.3%
MSSA	25.3%
MRSA	23.0%
Enterococci	19.2%
Strep viridans	9.6%
Coag Neg Staph	6.9%
Culture neg	3.8%

Conclusion

The present study represents the largest systematic review of IE epidemiology to date. Important findings include an increase in staphylococcal IE frequency over the last half-century, particularly in North America, and a worldwide decrease in SV IE percentage. In the last decade SA IE and enterococci IE frequencies have increased while culture negative IE has decreased. Patients with IE are getting older and the male to female ratio is increasing. Mortality has changed little in the last four decades.

Slipczuk L, et al PLoS One. 2013;8(12):e82665

Türkiyeden yapılmış 22 çalışmada yer alan toplam 2475 infektif endokardit olgusunun değerlendirilmesi (1974-2015)

Parametre	Sonuç veren çalışma sayısı	Değer
Yaş ortalaması, yıl	22	46
Erkek Oranı %	22	60
ARA %	15	40
Protez kapak %	22	26
İVDU %	5	2
CİED %	11	7
Diyaliz %	7	7
Nozokomiyal %	3	21
Stafilokok %	20	31
S.aureus %	15	20
MRSA %	8	5
Streptokok %	20	18
Enterokok %	18	8
Brucella %	16	8
Kan kültürü negatif %	21	40
Duke kesin endokardit %	13	91
Mortalite %	20	23

B-Komorbid Koşullar

7-Kronik Hemodiyaliz— Kronik hemodiyaliz hastaları İE açısında yüksek risklidir. Predispozan faktörler; damar içi girişimler, kalsifik damar hastalıkları, immünite bozukluğu.

İnsidansı 308/100 000 hasta-yıl

Temel Karakteristikler

Features	Total cohort ($N=325^b$)	Patients who died ($n=234$)	Patients who survived ($n=87$)	Statistical analysis			
				Univariate analysis *p*-Value	Multivariate analysis		
					p-Value	HR	95% CI
Age, years	46.94 ± 17.11	44.54 ± 17.40	54.04 ± 14.37	<0.001			
Sex, male	187	134	53	0.582			
Left-sided IE	284	202	78	0.420			
Aortic valve endocarditis	156	108	48	0.160			
History of previous endocarditis	18	12	6	0.541			
Prosthetic valve endocarditis	141						
Early prosthetic valve endocarditis	52	25	27	<0.001			
Late prosthetic valve endocarditis	89	62	26	0.559			
Chronic renal failure	19	9	10	0.010			
Coronary heart disease	49	27	22	0.002	0.012	2.09	1.17–3.73
Hypertension	46	34	12	0.864			
Diabetes mellitus	31	16	15	0.005			
Congestive heart failure before endocarditis	20	13	7	0.412			
Chronic obstructive lung disease	4	4	0	0.220			
Chronic haemodialysis	11	3	8	0.001	0.001	4.13	1.83–9.30
Healthcare-associated endocarditis	75	45	30	0.005			
Central nervous system emboli	52	23	29	<0.001	0.002	2.33	1.35–4.03
Peripheral arterial emboli	25	14	11	0.049			
Splenic abscess	15	8	7	0.082			
Paravalvular abscess	48	29	19	0.036			
Congestive heart failure	102	55	47	<0.001	0.003	2.15	1.29–3.56
Blood leukocyte count, $\times 10^9$/l	12.02 ± 6.13	10.98 ± 4.67	14.75 ± 8.42	<0.001			
Blood thrombocyte count, $\times 10^9$/l	244.950 ± 111.51	261.920 ± 113.73	198.810 ± 91	<0.001	0.09	0.996	0.994–0.998
Blood haemoglobin level, g/dl	10.57 ± 2.04	10.81 ± 2.15	9.92 ± 1.53	<0.001	0.047	0.87	0.76–0.99
Serum CRP level, mg/l	79.53 ± 68.93	71.32 ± 61.69	101.05 ± 81.53	0.002			
Serum creatinine level, mg/dl	1.33 ± 1.38	1.07 ± 0.78	1.83 ± 0.21	<0.001			
Serum blood sugar level, mg/dl	118.70 ± 46.43	113.70 ± 40.73	131.99 ± 57.24	0.011			
Serum ALT level, U/l	43.94 ± 91.50	38.36 ± 77.15	59.04 ± 120.92	0.096			
ESR, mm/h	63.98 ± 31.01	61.23 ± 30.10	71.24 ± 32.41	0.009			
Vegetation area, cm^2	1.35 ± 1.41	1.23 ± 1.17	1.45 ± 1.65	0.346			
Staphylococcus aureus IE	65	38	25	0.013			
Enterococcus spp IE	21	12	9	0.095			
Viridans Streptococcus IE	63	55	8	0.004			
Cardiac surgery for IE	168	139	29	<0.001	<0.001	0.33	0.19–0.56
Total length of hospital stay, days	36.59 ± 22.79	38.60 ± 17.29	31.65 ± 33.32	<0.001			

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Olguların Karakteristikleri

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Atrial fibrillation	13 (24.07%)
Distant infections	12 (22.2%)
Pulmonary disease	11 (20.37%)
Renal insufficiency	13 (24.1%)
Dialysis dependent	7 (12.9%)
Predisposing factor	
Rheumatic heart disease	1 (1.85%)
Mitral valve prolapse	0
IV drug use	13 (24.1%)
Previous cardiac surgery	16 (29.6%)
Congenital heart disease	1 (2.38 %)
Previous IE	12 (22.2%)
Implantable intra-cardiac device	8 (14.8%)
Central venous line	6 (11.1%)
Affected valve	
Native valve	39 (72.2%)
Prosthetic valve	7 (12.9%)
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Mitral	26 (48%)
Tricuspid	7 (12.9%)
Pulmonary	3 (5.5%)

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B-Komorbid Koşullar

8-HIV İnfeksiyonu — HİV infeksiyonu olan hatalarda çok sayıda İE bildirilmiştir. Olağan dışı patojenler Salmonella ve Listeria gibi etkenler ile infekte oldukları bildirilmiştir. Özellikle HİV pozitif olan ve IV madde bağımlısı olan hastalar İE için bağımsız risk faktörüdür.

JAMA | Original Investigation

Trends in Infective Endocarditis in California and New York State, 1998-2013

Nana Toyoda, MD; Joanna Chikwe, MD; Shinobu Itagaki, MD, MS; Annetine C. Gelijns, PhD; David H. Adams, MD; Natalia N. Egorova, PhD

Characteristic	No. (%) Overall (N = 75 829)	1998-2001 (n = 16 511)	2002-2005 (n = 18 887)	2006-2009 (n = 19 611)	2010-2013 (n = 20 820)	Annual Percentage Change, % (95% CI)	P Value[a]
Demographic							
Age, mean (SD), y	62.3 (18.9)	61.0 (19.4)	61.9 (19.0)	63.0 (18.5)	63.3 (18.5)		<.001[b]
Male	44 804 (59.1)	9550 (57.8)	10 971 (58.1)	11 672 (59.5)	12 611 (60.6)	0.5 (0.2 to 0.7)	<.001
Race							
White	52 776 (69.6)	11 750 (71.2)	13 262 (70.2)	13 534 (69.0)	14 230 (68.3)	−0.3 (−0.5 to −0.2)	<.001
Black	10 074 (13.3)	2189 (13.3)	2547 (13.5)	2714 (13.8)	2624 (12.6)	−0.4 (−0.8 to 0.03)	.07
Other	12 979 (17.1)	2572 (15.6)	3078 (16.3)	3363 (17.1)	3966 (19.0)	1.7 (1.3 to 2.1)	<.001
Comorbidities							
Hypertension	47 604 (62.8)	8176 (49.5)	11 495 (60.9)	13 189 (67.3)	14 744 (70.8)	2.8 (2.6 to 3.0)	<.001
Complicated diabetes	11 165 (14.7)	1921 (11.6)	2632 (13.9)	3097 (15.8)	3515 (16.9)	3.0 (2.6 to 3.4)	<.001
Coronary artery disease	30 326 (40.0)	5589 (33.9)	7433 (39.4)	8303 (42.3)	9001 (43.2)	2.0 (1.7 to 2.2)	<.001
Peripheral vascular disease	11 763 (15.5)	2246 (13.6)	3295 (17.4)	3145 (16.0)	3077 (14.8)	0.3 (−0.1 to 0.7)	.11
Chronic obstructive pulmonary disease	19 185 (25.3)	3327 (20.2)	4675 (24.8)	5450 (27.8)	5733 (27.5)	2.5 (2.2 to 2.8)	<.001
Chronic kidney disease	22 308 (29.4)	3059 (18.5)	4397 (23.3)	6776 (34.6)	8076 (38.8)	6.3 (6.0 to 6.6)	<.001
Dialysis dependent	13 989 (18.4)	2459 (14.9)	3797 (20.1)	4000 (20.4)	3733 (17.9)	1.0 (0.6 to 1.3)	<.001
Liver disease	15 477 (20.4)	2544 (15.4)	3625 (19.2)	4108 (20.9)	5200 (25.0)	3.9 (3.5 to 4.3)	<.001
Cancer	13 121 (17.3)	2480 (15.0)	3157 (16.7)	3538 (18.0)	3946 (19.0)	1.9 (1.5 to 2.3)	<.001
Human immunodeficiency virus[c]	715 (1.7)	182 (2.0)	203 (1.9)	178 (1.6)	152 (1.3)	−3.4 (−4.9 to −1.8)	<.001

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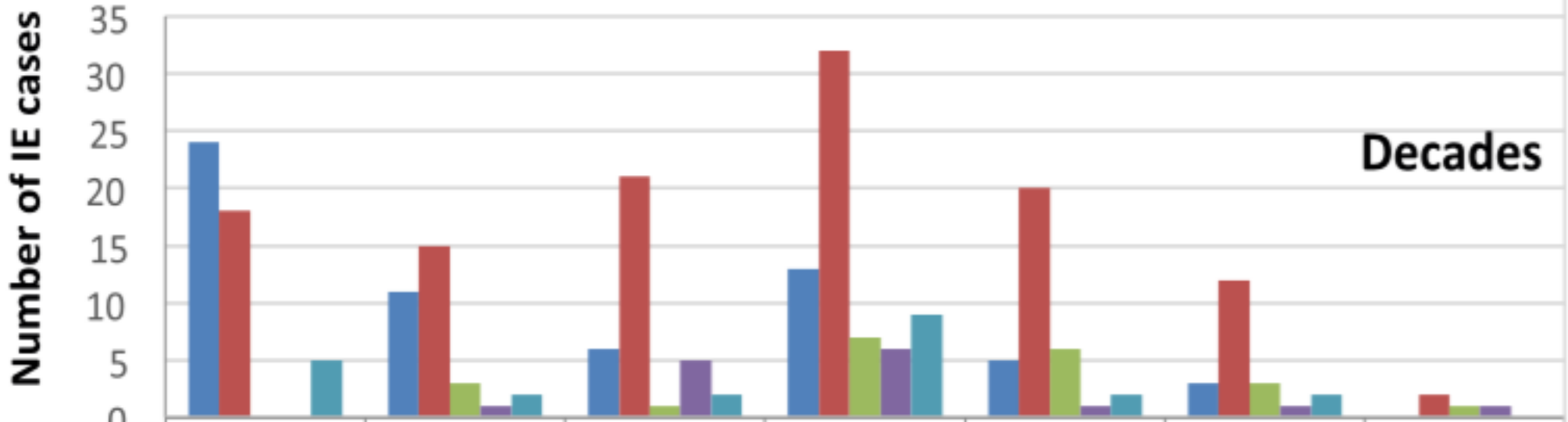
Mikrobiyoloji

Bir çok patojen İE'ye neden olabilir; stafilokoklar ve streptokoklar olguların çoğunluğunu oluşturmaktadır. **Stafilokoksik İE** sağlık bakımı ile ilişkili İE'in en yaygın etkenidir. **Streptokoklar** ise toplum kökenli İE'de yaygın etkendir.

- ***Staphylococcus aureus* – %31**
- **Viridans grup streptokoklar – %17**
- Enterokoklar – %11
- Koagulaz-negatif stafilokoklar – %11
- *Streptococcus bovis* – %7
- Diğer streptokoklar – %5
- HACEK dışı Gram-negatif bakteri – %2
- Mantarlar – %2

HACEK – %2 ; ***H****aemophilus aphrophilus* (sonradan *Aggregatibacter aphrophilus ve Aggregatibacter paraphrophilus diye adlandırıldı*); ***A****ctinobacillus actinomycetemcomitans* (sonradan *Aggregatibacter actinomycetemcomitans diye adlandırıldı*) ; ***C****ardiobacterium hominis*; ***E****ikenella corrodens*; ve ***K****ingella kingae*

Yaşlar ve Etkenler



	18-29	30-39	40-49	50-59	60-69	70-79	80-90
Streptococcus spp.	24	11	6	13	5	3	0
Staphylococcus spp.	18	15	21	32	20	12	2
Enterococcus spp.	0	3	1	7	6	3	1
Brucella spp.	0	1	5	6	1	1	1
Gram-negative rods	5	2	2	9	2	2	0

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Olguların Karakteristikleri

Affected valve	
Native valve	39 (72.2%)
Prosthetic valve	7 (12.9%)
Lead infection	8 (14.8%)
Aortic	12 (22.2%)
Mitral	26 (48%)
Tricuspid	7 (12.9%)
Pulmonary	3 (5.5%)
Site of acquisition	
Community acquired	43 (79.6%)
Nosocomial	2 (3.7%)
Healthcare associated	9 (16.7%)
Causative organism	
S. aureus	21 (38.3%)
MSSA	14 (66.6%)
MRSA	7 (33.3%)
Coagulase negative Staph	6 (11%)
Streptococcus species	9 (16.6%)
Enterococcus	9(16.6%)
Culture negative	6 (11%)
Others	3 (5.5%)
Outcomes	
Median length of stay	11
In-hospital death	3 (5.5%)
6-month mortality	5 (9.2%)
Valve surgery indicated (within 6 weeks)	15 (27.7%)
Valve surgery indicated (6 week to 1 year)	3 (5.5%)
Valve surgery performed (within 6 weeks)	8 (14.8%)
Valve surgery performed (6 week to 1 year)	4 (7.4%)

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2003-2010 arası: 88 hasta

Table 4 Distribution of causative microorganisms in blood of cases with infective endocarditis

Microorganism	No. (%)
Streptococcaceae	
Oral streptococci	20 (22.7)
Viridans streptococci	17
S. pneumoniae	3
S. gallolyticus	13 (14.8)
Pyogenic streptococci	4 (4.6)
Granulicatella adjacens	1 (1.1)
Gemella morbillorum	1 (1.1)
Staphylococci	
Staphylococcus aureus	15 (17.1)
Coagulase-negative	4 (4.6)
Enterococci	9 (10.2)
E. faecalis	8
E. faecium	1
Listeria monocytogenes	1 (1.1)
HACEK	1 (1.1)
Gram-negative rods*	4 (4.6)
Propionibacterium species	2 (2.3)
Candida glabrata	1 (1.1)
Two microorganisms	3 (3.4)
Negative blood cultures	9 (10.2)

Table 5 Comparison of main characteristics of infective endocarditis across the three main groups of causative microorganisms

	No. (%)			
Characteristics	Oral streptococci (n=20)	*S. gallolyticus* (n=13)	*S. aureus* (n=15)	*P* value
Age, median, IQR, years	74 (58–81)	73 (57–81)	72 (62–82)	
Women	5 (25.0)	0 (0.0)	9 (60.0)	0.0020
Men	15 (75.0)	13 (100)	6 (40.0)	
History of IE	3 (15.0)	1 (7.7)	1 (6.7)	0.68
Preexisting prosthetic valve	5 (25.0)	2 (15.4)	3 (20.0)	0.80
Nosocomial	6 (30.0)	2 (15.4)	6 (40.0)	0.36
Valve surgery	7 (35.0)	5 (38.5)	5 (33.3)	0.96
Mortality	1 (5.0)	1 (7.7)	3 (20.0)	0.33

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Author	N	De	Definition	Cert	Age	Male	SA	SV	CNS	Ent	CN	Mort	IVDA	Prosthetic	Year	Country	Quality
Agüero[33]	25	R	Pelletier	NR	NR	NR	12	40			12				77-80	Chile	C
AIPEI[34]	390	P	Duke	Def	60	71	23	16	6	7	5	17	6	16	99	France	A
Ako[35]	69	R	Duke	Pos	55	72	15	38		10	25	19	0	33	90-99	Tokyo	B
Ako[35]	125	R	Duke	Pos	46	70	6	45		6		25	0	16	80-90	Japan	B
Allal[36]	101	R	Other	N/A	56	70	18	11		9	17			4	66-82	France	C
Al-Tawfiq[37]	54	R	Mod Duke	Def	60	68	43	17	7	22		29		19	95-08	Saudi Arabia	B
Auger[38]	50	R	Pelletier	Pos	43		6	28			14				69-77	Canada	C
Avanekar[39]	600	P	Mod Duke	NR	63	67	22	32	7	10				34	80-98	USA	B
Bailey[40]	210	R	Hickie	N/A	43	70	14	25			30	31	0	8	62-71	Australia	C
Barrau[41]	170	P	Mod Duke	Def	65	74	13	18	7	10	11		3	41	14-00	France	A
Bennis[42]	157	R	Other	N/A	28	63	4		11		22			4	83-94	Morocco	C
Bishara[43]	252	R	Mod Duke	Pos	62	54	24	32	11	6	25	16	0	23	87-96	Israel	B
Borer[44]	71	R	Duke	Pos	50	55	4	18		18	8	17	1	27	80-94	Israel	B
Bouramoue[45]	32	R	Von Reyn	Pos			19				41				76-89	Congo	B
Bouza[46]	109	P	VReyn/Steckelberg/Duke	Pos	50	73	45	9	14	9	10		36	17	94-96	Spain	B
Braun[47]	261	P	Von Reyn/Duke	Pos	49	69	18	31		10	23	16		28	80-99	Chile	B
Buchholtz[48]	235	P	Mod Duke	Pos	61	70	22		9	18	12	15	6	25	02-05	Denmark	B
Cabell[49]	329	P	Duke	Pos	57	54	40	11	9	10	10		8	27	93-99	USA	B
Casabe[50]	294	P	Duke	Pos	51	70	26	31	2	11	20	24	14	9	92-93	Argentina	B
Cecchii[51]	147	P	Mod Duke	Def			19	18	8		25	14	10	25	00-01	Italy	A
Cetinkaya[52]	189	R	Mod Duke/Von Reyn	NR	36	66	12	8	5	6	50		0	20	74-99	Turkey	B
Chao[53]	88	R	Duke	Pos	41	67	32	17	2	3	20	25	24	8	90-97	Taiwan	B
Chen[54]	58	R	Duke	Def	41	79	21	55	9	3	5				87-98	Taiwan	B
Chen[55]	178	R	Von Reyn	Pos	62		39	27		6				25	79-91	Australia	B
Cheng[56]	101	R	Other	Pos	39		8	53		4	14				79-87	Taiwan	C
Choudhury[57]	190	R	Other	N/A	25	70	17	8	3	2	54	25		1	81-91	India	C
Chu[58]	65	R	Duke	Pos	68	29	31	25	2	5	23	20		23	97-02	NZ	B
Cicalini[59]	151	R	Duke	Def	44	69	42	19	8	7	17		60	11	92-03	Italy	B
Cicalini[59]	132	R	Duke	Def	36	65	44	23	6	5	15		58	12	80-91	Italy	B
Corral[60]	550	R	Mod Duke	Pos	51	73	44	15	12	5	8		41		85-02	Spain	B
Couturier[61]	66	R	Duke/Von Reyn	Def	57	65	26			6	20		5	14	92-98	France	B
Deprele[62]	80	R	Duke	NR	65	70	7	21	6	11	11			10	95-01	France	B
Di Salvo[63]	178	R	Duke	Def	57	75				5	12	11	3	26	93-00	France	B
Durack[64]	204	R	Duke	Def	48	51	37	23	7	7	3	21	28	31	85-92	USA	B
Dwyer[65]	193	R	Von Reyn	Pos	51	65	39	26	5	5	10		9	22	79-92	Australia	B

Slipczuk L, et al PLoS One. 2013;8(12):e82665

Trends in Infective Endocarditis Incidence, Microbiology, and Valve Replacement in the United States From 2000 to 2011

Sadip Pant, MD,* Nileshkumar J. Patel, MD,† Abhishek Deshmukh, MD,‡ Harsh Golwala, MD,* Nilay Patel, MD,§ Apurva Badheka, MD,‖ Glenn A. Hirsch, MD, MHS,* Jawahar L. Mehta, MD, PhD¶

457 052 İE

TABLE 1 Incidence of IE, Microbiology, and Valve Replacement From 2000 to 2011

Year	Total No. of IE Cases	Incidence of IE per 100,000 Population	Valve Replacement per 1,000 IE Cases	Staphylococcal IE per 1 Million Population	Streptococcal IE per 1 Million Population	Gram-Negative IE per 1 Million Population	Fungal IE per 10 Million Population
2000	29,820	11	14	35	26	6	6
2001	31,526	11	16	38	28	5	11
2002	32,229	11	19	38	29	6	11
2003	35,190	12	18	42	29	7	12
2004	36,660	13	19	46	29	7	11
2005	37,508	13	23	46	31	8	15
2006	40,573	14	23	50	32	8	14
2007	38,207	12	30	46	32	8	17
2008	41,143	14	19	51	35	8	17
2009	43,502	14	27	57	38	12	16
2010	43,560	14	27	55	38	12	17
2011	47,134	15	26	61	42	12	20

JACC VOL. 65, NO. 19, 2015 Pant et al. 2 0 1 5 : 2 0 7 0 – 6

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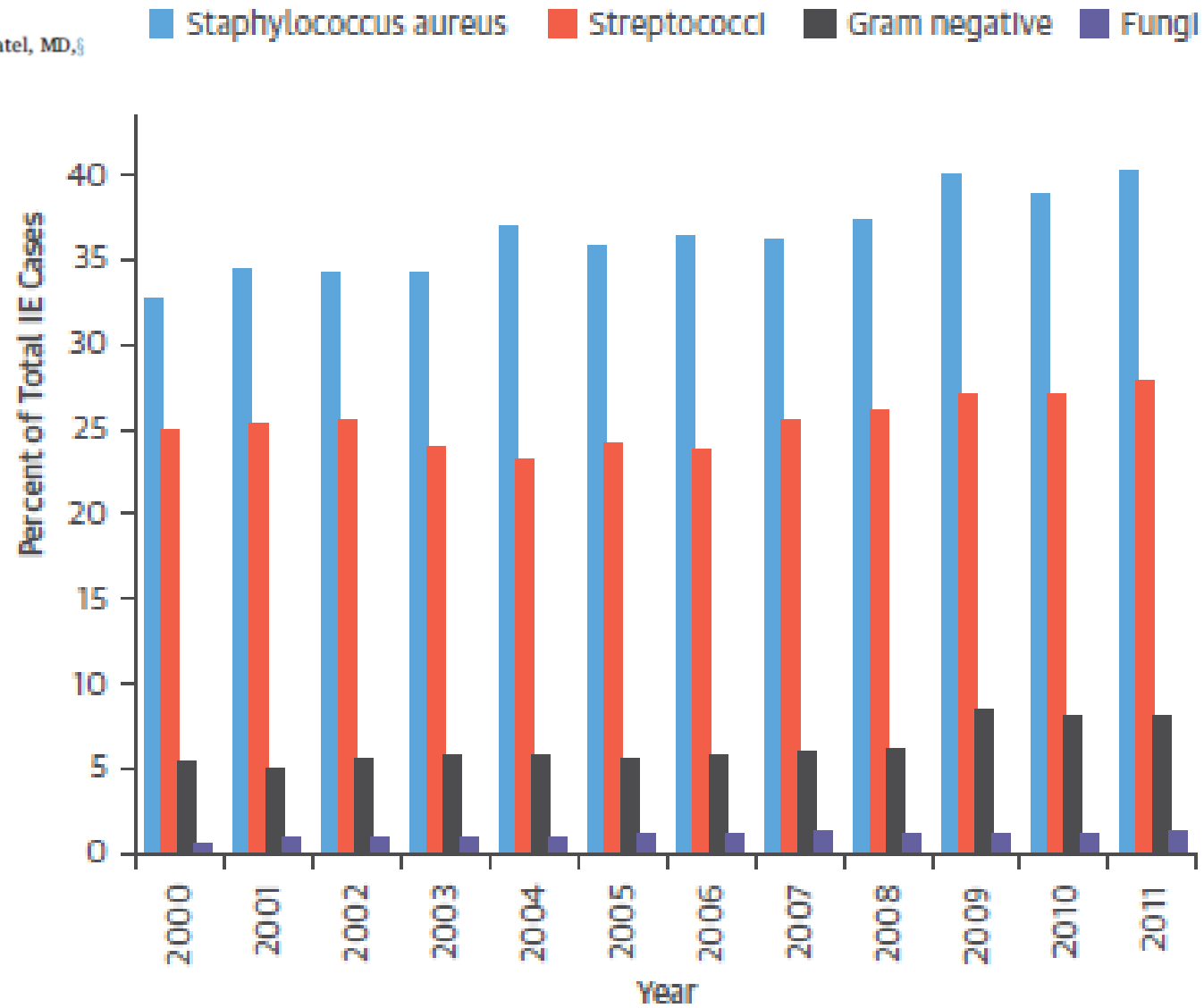
Etkenler (2000-2011)



JACC VOL. 65, NO. 19, 2015 Pant et al. 2 0 1 5 : 2 0 7 0 – 6

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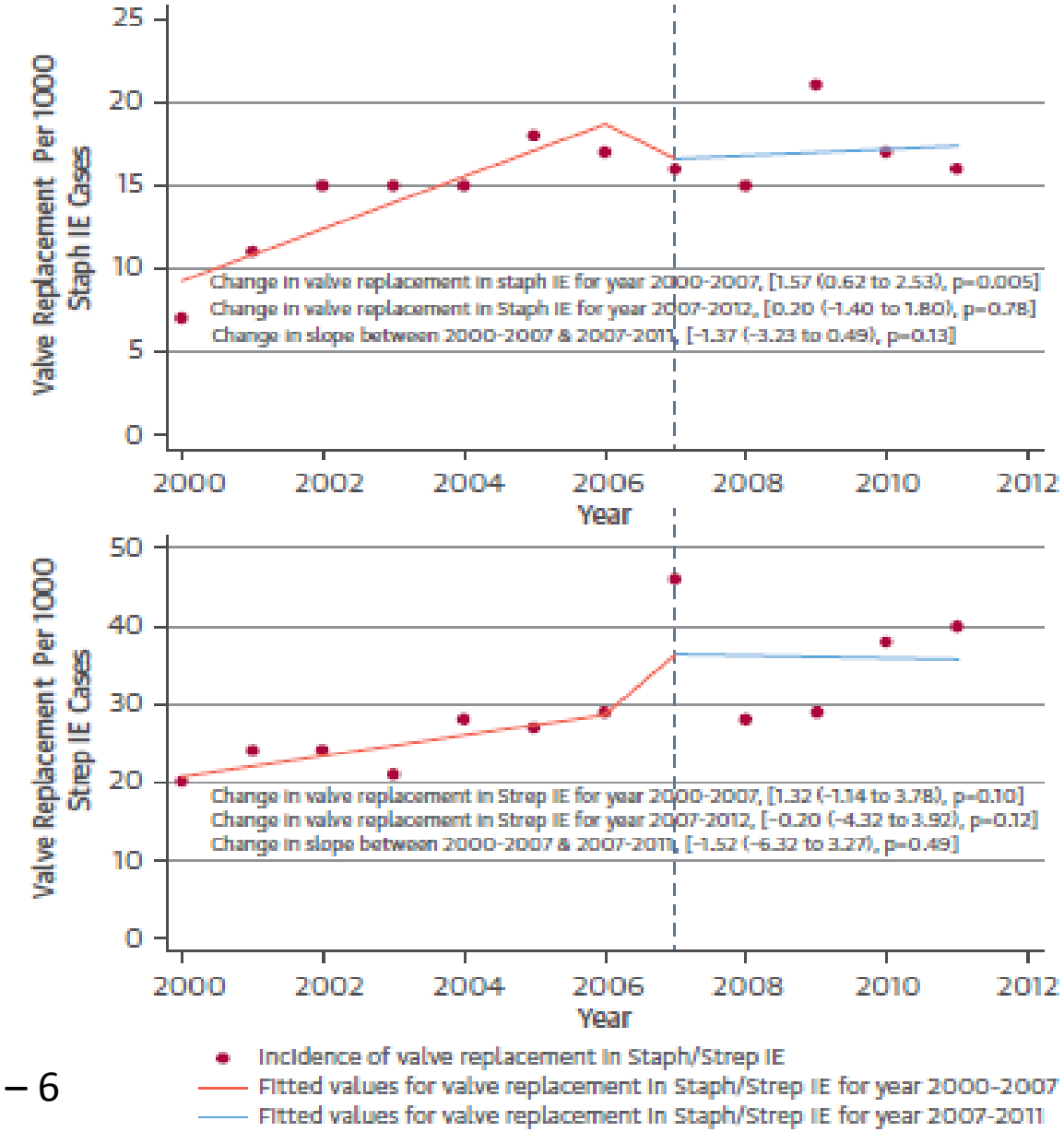
Stafilokok ve Streptokoklarda Kapak Replasman Hızları (1000 IE Olgusu Oranı ile) (2000-2011)



JACC VOL. 65, NO. 19, 2015 Pant et al. 2 0 1 5: 2 0 7 0 – 6

Cases of active infective endocarditis in a university hospital during a 10-year period

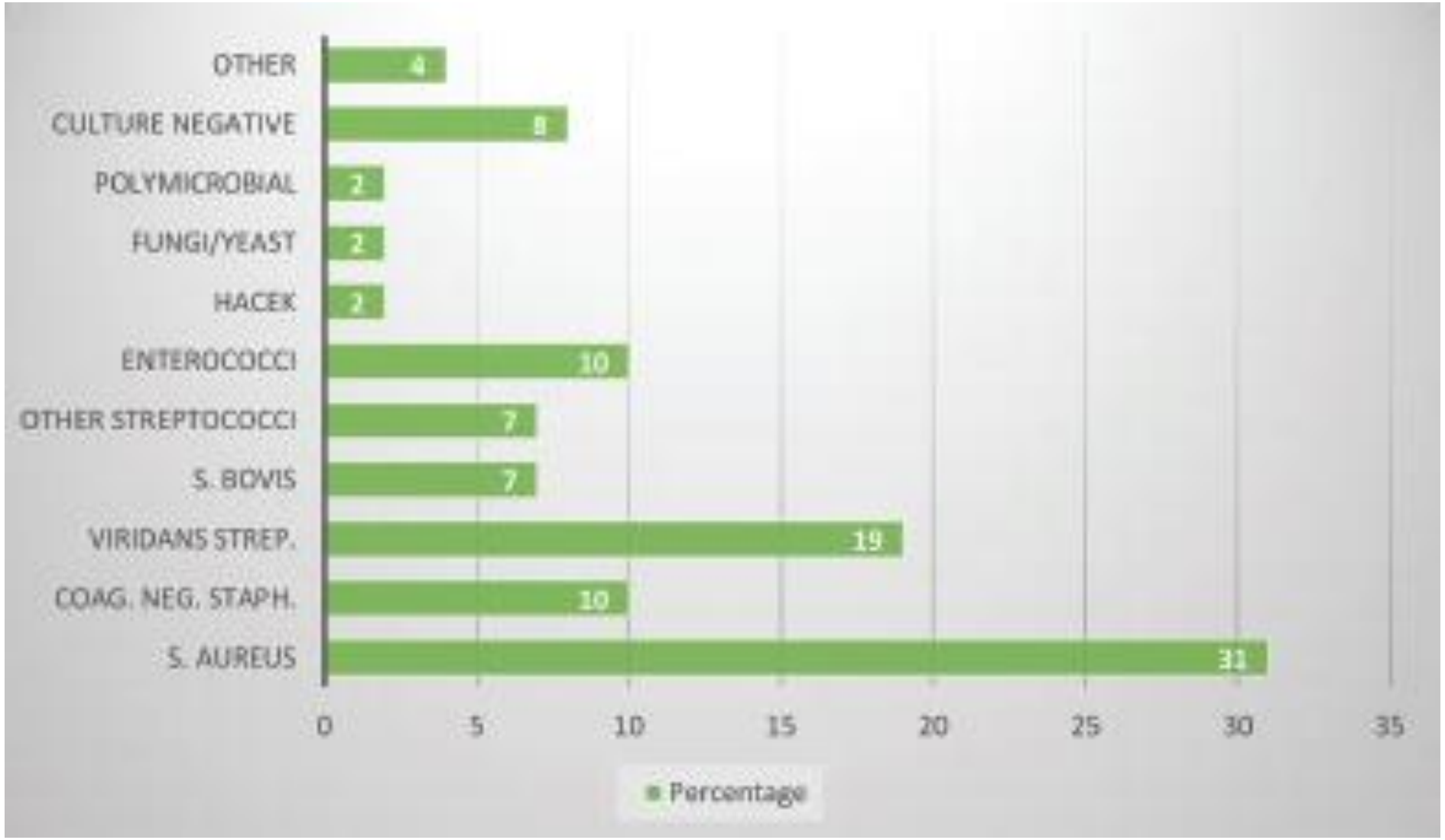
Emine Kucukates,[1] Nazmi Gultekin,[2] Yasar Bagdatli[3]

Etkenlerin Dağılımı (n=11)

Microorganism	NVE (n=7)	PVE (n=4)	Total
Viridans Streptococci	3 (27.27%)		3 (27.27%)
Enterococcus spp.		1 (9.1%)	1 (9.1%)
Staphylococcus aureus		1 (9.1%)	1 (9.1%)
Staphylococcus epidermidis	3 (27.27%)		3 (27.27%)
Brucella spp.	1 (9.1%)		1 (9.1%)
Stenotrophomonas maltophilia		1 (9.1%)	1 (9.1%)
Candida albicans		1 (9.1%)	1 (9.1%)

JPMA 63: 1163; 2013

2000-2005
25 ülke
1558 İE hastası
***STAPHYLOCOCCUS AUREUS*!**
V.Streptococcus
KNS
ENTEROCOCCUS SPP.



Arch Intern Med. 2009;169(5):463.

Erken ve Geç PVE Etkenleri

PATHOGEN	EARLY PVE* (%) $N = 53$	LATE PVE* (%) $N = 331$
Staphylococcus aureus	36	18
Coagulase-negative Staphylococci	17	20
Enterococcus	8	13
Viridans streptococci	2	10
Streptococcus bovis	2	7
HACEK	0	2
Fungi	9	3
Other	6	14
Culture negative	17	12

JAMA. 2007;297(12):1354-61.
Arch Intern Med. 2009;169(5):463.

JAMA | Original Investigation

Trends in Infective Endocarditis in California and New York State, 1998-2013

Nana Toyoda, MD; Joanna Chikwe, MD; Shinobu Itagaki, MD, MS; Annetine C. Gelijns, PhD; David H. Adams, MD; Natalia N. Egorova, PhD

Causative organism							
Staphylococcus	29 172 (38.5)	6011 (36.4)	7424 (39.3)	7520 (38.3)	8217 (39.5)	0.6 (0.3 to 0.8)	<.001
Staphylococcus aureus	24 179 (31.9)	4786 (29.0)	6170 (32.7)	6272 (32.0)	6951 (33.4)	1.0 (0.7 to 1.3)	<.001
Methicillin-resistant	9161 (12.1)	878 (5.3)	2399 (12.7)	2886 (14.7)	2998 (14.4)	6.3 (5.8 to 6.8)	<.001
Methicillin-sensitive	15 018 (19.8)	3908 (23.7)	3771 (20.0)	3386 (17.3)	3953 (19.0)	-2.0 (-2.3 to -1.6)	<.001
Streptococcus	20 157 (26.6)	4321 (26.2)	4761 (25.2)	5257 (26.8)	5818 (27.9)	0.7 (0.4 to 1.0)	<.001
Oral streptococci	7640 (10.1)	1759 (10.7)	1970 (10.4)	2019 (10.3)	1892 (9.1)	-1.2 (-1.7 to -0.8)	<.001
Gram-negative bacilli	4235 (5.6)	897 (5.4)	1022 (5.4)	1186 (6.0)	1130 (5.4)	0.1 (-0.5 to 0.8)	.68
Fungus	1316 (1.7)	285 (1.7)	356 (1.9)	365 (1.9)	310 (1.5)	-1.0 (-2.2 to 0.2)	.10
Other	1745 (2.3)	386 (2.3)	389 (2.1)	456 (2.3)	514 (2.5)	0.8 (-0.2 to 1.9)	.12
Unspecified	19 204 (25.3)	4611 (27.9)	4935 (26.1)	4827 (24.6)	4831 (23.2)	-1.5 (-1.9 to -1.2)	<.001

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Türkiyeden yapılmış 22 çalışmada yer alan toplam 2475 infektif endokardit olgusunun değerlendirilmesi (1974-2015)

Parametre	Sonuç veren çalışma sayısı	Değer
Yaş ortalaması, yıl	22	46
Erkek Oranı %	22	60
ARA %	15	40
Protez kapak %	22	26
İVDU %	5	2
CİED %	11	7
Diyaliz %	7	7
Nozokomiyal %	3	21
Stafilokok %	20	31
S.aureus %	15	20
MRSA %	8	5
Streptokok %	20	18
Enterokok %	18	8
Brucella %	16	8
Kan kültürü negatif %	21	40
Duke kesin endokardit %	13	91
Mortalite %	20	23

Staphylococcus aureus Bakteriyemisi Olan Hastalarda Endokarditin Klinik Ön Belirteçleri

Risk Factors Positive test Negative test	Number of studies [ref] Number of patients included	Odds Ratio (95% CI)	Sensitivity % (95% CI)	Specificity % (95% CI)	Likelihood ratios PLR (95% CI) NLR (95% CI)
Positive: Community acquired Negative: Nosocomial or healthcare associated	6 [6,7,30,39,40,43] N = 4143 patients	3.1 (2.5-3.7)	52 (45-59)	73 (59-78)	Positive LR = 2.0 (1.8-2.2) Negative LR = 0.65 (0.58-0.72)
Positive: Hemodialysis Negative: No hemodialysis	5 [6,7,31,32,43] N = 2251 patients	1.5 (1.0-2.1)	13 (9-19)	91 (88-92)	Positive LR = 1.4 (1.0-2.0) Negative LR = 0.96 (0.90-1.00)
Positive: Previous IE Negative: No previous IE	3 [6,30,32] N = 978 patients	8.8 (3.2-24.3)	6	99	Positive LR = 8.2 (3.1-22.0) Negative LR = 0.94 (0.91-0.98)
Positive: Intravenous drug use Negative: No intravenous drug use	6 [6,30,33,39,40,45] N = 3917 patients	6.0 (4.2-8.5)	16 (9-27)	97 (95-98)	Positive LR = 5.2 (3.8-6.9) Negative LR = 0.86 (0.76-0.93)
Positive: Prosthetic valve Negative: No prosthetic valve	8 [6,7,29-32,40,47] N = 5427 patients	7.2 (3.7-12.7)	22 (16-29)	96 (94-97)	Positive LR = 5.7 (3.2-9.5) Negative LR = 0.82 (0.74-0.88)
Positive: Valvular disease Negative: No valvular disease	5 [30,32,35,40,45] N = 2742 patients	3.0 (1.8-4.7)	29 (18-44)	87 (71-95)	Positive LR = 2.4 (1.5-3.9) Negative LR = 0.81 (0.74-0.88)
Positive: ICED Negative: No ICED	5 [6,7,30,31,40] N = 4202 patients	4.2 (2.5-6.7)	22 (13-34)	94 (89-96)	Positive LR = 3.5 (2.2-5.3) Negative LR =0.83 (0.73-0.91)
Positive: Pacemaker Negative: No pacemaker	4 [7,29,32,35] N = 1346 patients	11.7 (4.4-25.5)	19 (12-27)	98 (94-99)	Positive LR = 9.7 (3.7-21.2) Negative LR = 0.83 (0.76-0.89)
Positive: Unknown source Negative: Known infectious source	6 [6,30,32,40,43,45] N = 3214 patients	2.1 (1.6-2.7)	45 (30-60)	72 (62-80)	Positive LR = 1.6 (1.4-1.8) Negative LR = 0.77 (0.64-0.89)
Positive: Not catheter related Negative: Catheter related infection	5 [6,35,39,40,45] N = 3410 patients	3.1 (1.4-6.1)	86 (78-91)	26 (15-41)	Positive LR = 1.2 (1.1-1.4) Negative LR =0.57 (0.41-0.79)
Positive: Osteomyelitis Negative: No osteomyelitis	3 [7,31,40] N = 2988 patients	1.9 (0.4-8.3)	1	100	Positive LR = 1.9 (0.5-7.5) Negative LR =1.00 (0.91-1.01)
Positive: Embolic event Negative: No embolic event	3 [30,40,45] N = 2377 patients	21.1 (8.5-52.2)	33	98	Positive LR = 12.7 (9.2-17.7) Negative LR =0.69 (0.55-0.87)
Positive: Prolonged bacteremia >48h Negative: Clearance of bacteremia in 48h	5 [6,32,39,40,43] N = 3073 patients	3.9 (3.0-5.0)	44 (30-59)	83 (72-90)	Positive LR = 2.6 (2.0-3.4) Negative LR = 0.67 (0.55-0.78)
Positive: Prolonged bacteremia >72h Negative: Clearance of bacteremia in 72h	2 [7,29] N = 981 patients	5.3-17.3	73-80	57-87	Positive LR = 1.9-5.4 Negative LR = 0.32-0.35
Positive = Prolonged bacteremia >96h Negative = Clearance of bacteremia in 96h	2 [31,39] N = 1310 patients	2.1-3.5	70-85	38-48	Positive LR = 1.3-1.4 Negative LR =0.40-0.64

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Her Klinik Öngörü Kuralı İçin Yüksek Riskli Hasta Grubu Tanımlamaları

	Gow 2015 [39]	Joseph 2013 [41]	Showler 2015 [6]	Kaasch 2011 [31]	Heriot 2015 [26]	Khatib 2013 [28]	Palraj 2015 [7]	Rasmussen 2011 [30]	Incani 2013 [27]
Community acquired			Yes						Yes
Community acquired or healthcare associated	Yes			Yes	Yes		Yes		
Hemodialysis				Yes					
Previous IE			Yes						
Intravenous drug use			Yes					Yes	Yes
Prosthetic valve	Yes	Yes	Yes	Yes				Yes	Yes
Valvular disease			Yes					Yes	Yes
Congenital heart disease			Yes						
Implantable cardiac electronic devices	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Cardiac transplant			Yes						
Unknown source								Yes	
Not central line associated	Yes	Yes							
Osteomyelitis				Yes					
Complicated bacteremia						Yes			
Metastatic infection						Yes			
Fever									Yes
Embolic event								Yes	Yes
New murmur								Yes	Yes
Immune phenomenon									Yes
Prolonged bacteremia	Yes			Yes	Yes		Yes		
Indeterminate or positive TTE			Yes						

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Yeni Bir Salgın Kapıda Mı?

A

B

Figure 1. Heater-cooler device hose portals (*A*) were constructed in all operating rooms (ORs) where cardiopulmonary bypass is performed, with all heater-cooler

Table 1. Clinical Experience for 52 Reported Cases of Heater-Cooler Device–Associated *Mycobacterium chimaera* Infection

Patient Characteristics	No.
Total No. of cases	52
Earliest sentinel surgery	2008
Male, No. (%)	43 (83)
Age, y, mean (range)	60 (1–83)
Duration from surgery to clinical presentation, mo, mean (range)	17 (1–72)
Site of index positive culture[a]	
Blood	14
Bone marrow	5
Cardiac tissue or device	5
Sternal wound	3
Pleural space	3
Liver	2
Urine	2
LVAD pocket	1
Presumed source	
Prosthetic valve or ring	32
Aortic graft	9
LVAD	6
Sternal wound	5
Crude mortality at time of publication of cases, No. (%)	25 (48)

Protez Kapak Endokarditi

Protez Kapak Endokarditi (n=44)

	All patients (n=44)	Mortality		p
		Alive (n=27)	Died (n=17)	
Demographics and predisposing conditions				
Female gender, n (%)	19 (43)	12 (44)	7 (41)	0.83
Age (years), Mean±SD	49.3±12.1	47.5±11.5	52.2±12.8	0.21
Early-onset PVE, n (%)	7 (16)	2 (7)	5 (29)	0.09
Nosocomial infection, n (%)	2 (5)	0 (0)	2 (12)	0.14
Previous infective endocarditis, n (%)	7 (16)	5 (19)	2 (12)	0.69
Hemodialysis, n (%)	1 (2)	0 (0)	1 (6)	0.38
Immunosuppression, n (%)	1 (2)	1 (4)	0 (0)	1
Prior antibiotic use, n (%)	10 (22.7)	9 (33.3)	1 (5.9)	0.06
Affected valve				
Aortic, n (%)	21 (48)	11 (41)	10 (59)	0.24
Mitral, n (%)	22 (50)	15 (56)	7 (41)	0.35
Multiple, n (%)	1 (2)	1 (4)	0 (0)	1
Echocardiography				
Cardiac abscess, n (%)	7 (16)	1 (4)	6 (35)	0.009
Severe valvular regurgitation, n (%)	14 (32)	4 (15)	10 (59)	0.002
Vegetation ≥10 mm, n (%)	27 (61)	13 (48)	14 (82)	0.02
Dehiscence, n (%)	13 (30)	5 (19)	8 (47)	0.04
Pulmonary artery pressure (mmHg)	50 (41–65)	40 (33–45)	50 (40–62.5)	0.008
Left ventricular ejection fraction (%)	56.5 (40–60)	58 (40–60)	50 (37.5–60)	0.5
Clinical characteristics and in-hospital outcome				
NYHA >2, n (%)	17 (39)	6 (22)	11 (65)	0.005
Heart failure, n (%)	15 (34)	5 (33)	10 (67)	0.006
Renal failure, n (%)	18 (41)	7 (26)	11 (65)	0.01
Anemia, n (%)	32 (73)	17 (63)	15 (88)	0.09
Cerebrovascular events, n (%)	8 (18)	5 (33)	3 (18)	1
Complete heart block, n (%)	4 (9)	2 (7)	2 (12)	0.63
Embolic events (excluding cerebral), n (%)	10 (23)	7 (26)	3 (18)	0.72
Surgery, n (%)	14 (32)	8 (30)	6 (35)	0.69
Spleen abscess, n (%)	4 (9)	4 (15)	0 (0)	0.15
Brain abscess, n (%)	1 (2)	1 (4)	0 (0)	1

Turk Kardiyol Dern Ars 2016;44(2):105-113

Protez Kapak Endokarditi (n=44)

	All patients (n=44)	Mortality		p
		Alive (n=27)	Died (n=17)	
Laboratory parameters on admission				
Hemoglobin (g/dL)	10.8±2	11.5±1.8	9.7±2	0.005
Sedimentation (mm/hr)	34 (23–67.8)	38 (23v67)	34 (26–78.5)	0.81
C-reactive protein (mg/L)	33.3 (10.4–77.2)	36.7 (8.9–77)	19.5 (13–114.2)	0.9
Creatinine (mg/dL)	1.04 (0.77–1.47)	0.94 (0.7–1.1)	1.38 (1.11–2.22)	0.002
Glucose (mg/dL)	101 (89–120.8)	97 (88–120)	106 (95.5–131.5)	0.21
White blood cell count ($x10^3/\mu L$)	9.95 (7.25–12.6)	10.3 (7.4–14.7)	9.8 (6.7–11)	0.47
Platelet count ($x10^3/\mu L$)	224.5 (133.8–298)	226 (141–302)	192 (126–292.5)	0.48
Microorganism				
Staphylococcus aureus	11 (25%)	4 (15%)	7 (41%)	0.08
Coagulase-negative *Staphylococcus*	2 (5%)	1 (4%)	1 (6%)	1
Streptococci	3 (7%)	2 (7%)	1 (6%)	1
Brucella spp	5 (11%)	4 (15%)	1 (6%)	0.63
Enterococci	2 (5%)	0 (0%)	2 (12%)	0.14
Gram-negative bacilli	1 (2%)	1 (4%)	0 (0%)	1
Fungi	1 (2%)	0 (0%)	1 (6%)	0.39
Culture-negative	18 (41%)	14 (52%)	4 (24%)	0.06

Turk Kardiyol Dern Ars 2016;44(2):105-113

Protez Kapak Endokarditi (n=44)

	Univariate analysis			Multivariate analysis		
	HR	(95% CI)	*p*	HR	(95% CI)	*p*
Nosocomial infection	4.30	(0.10–18.80)	0.06			
NYHA >2	4.44	(1.63–12.11)	0.004	3.70	(1.16–11.80)	0.03
Early onset PVE	3.98	(1.39–11.45)	0.01	4.23	(1.10–16.42)	0.04
Dehiscense	2.80	(1.10–7.30)	0.04			
Severe valvular regurgitation	4.11	(1.54–10.92)	0.004			
Vejetasyon ≥10 mm	3.46	(0.99–12.18)	0.05	3.94	(1.10–14.75)	0.04
Systolic pulmonary artery pressure	1.04	(1.01–1.07)	0.003			
Cardiac abscess	3.99	(1.45–10.96)	0.007			
Enterecoccus infection	7.30	(1.50–35.50)	0.02			
Creatinine	1.40	(1.10–1.79)	0.006			
Hemoglobin	0.73	(0.57–0.94)	0.01			
Heart failure	3.96	(1.48–10.65)	0.006	4.18	(1.36–12.80)	0.01
Renal failure	3.32	(1.22–9.00)	0.02			

Turk Kardiyol Dern Ars 2016;44(2):105-113

Sağkalım Hızları

JAMA | Original Investigation

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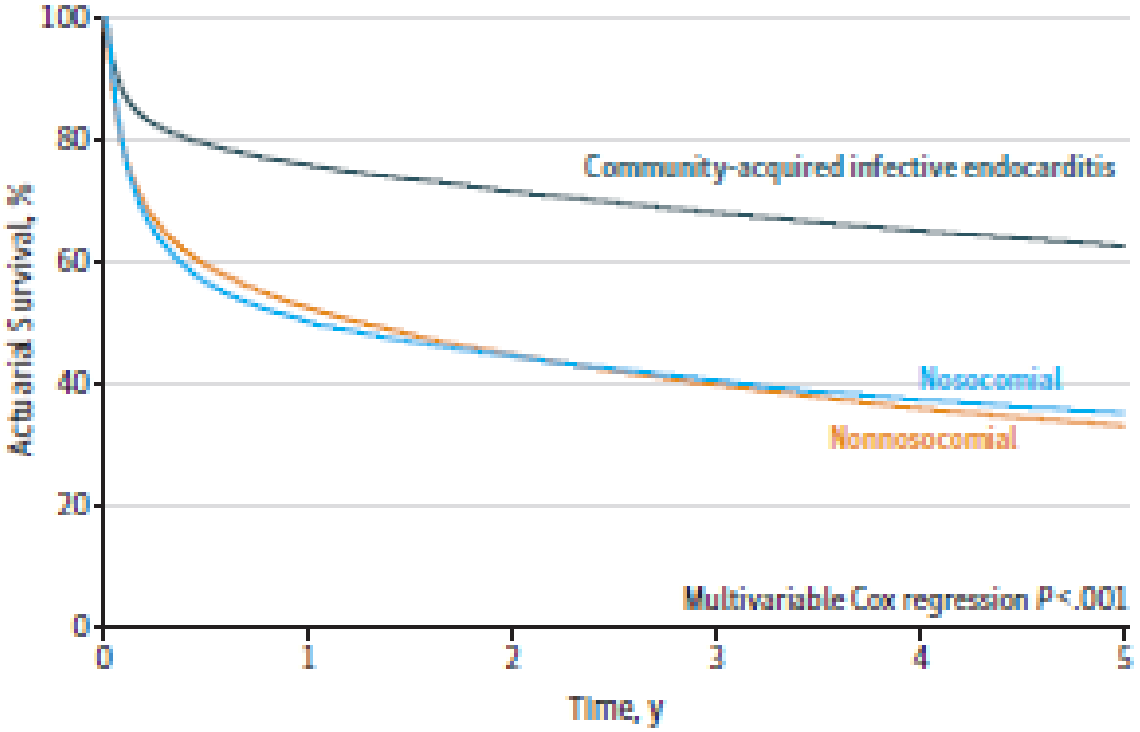
5 Yıllık Sağkalım Oranları-Endokardit Türüne Göre



No. at risk						
Community-acquired infective endocarditis	30361	21966	19715	17959	15958	13883
Health care-associated infective endocarditis						
Nosocomial	11771	5688	4892	4261	3650	3103
Nonnosocomial	23077	11496	9323	7898	6595	5402

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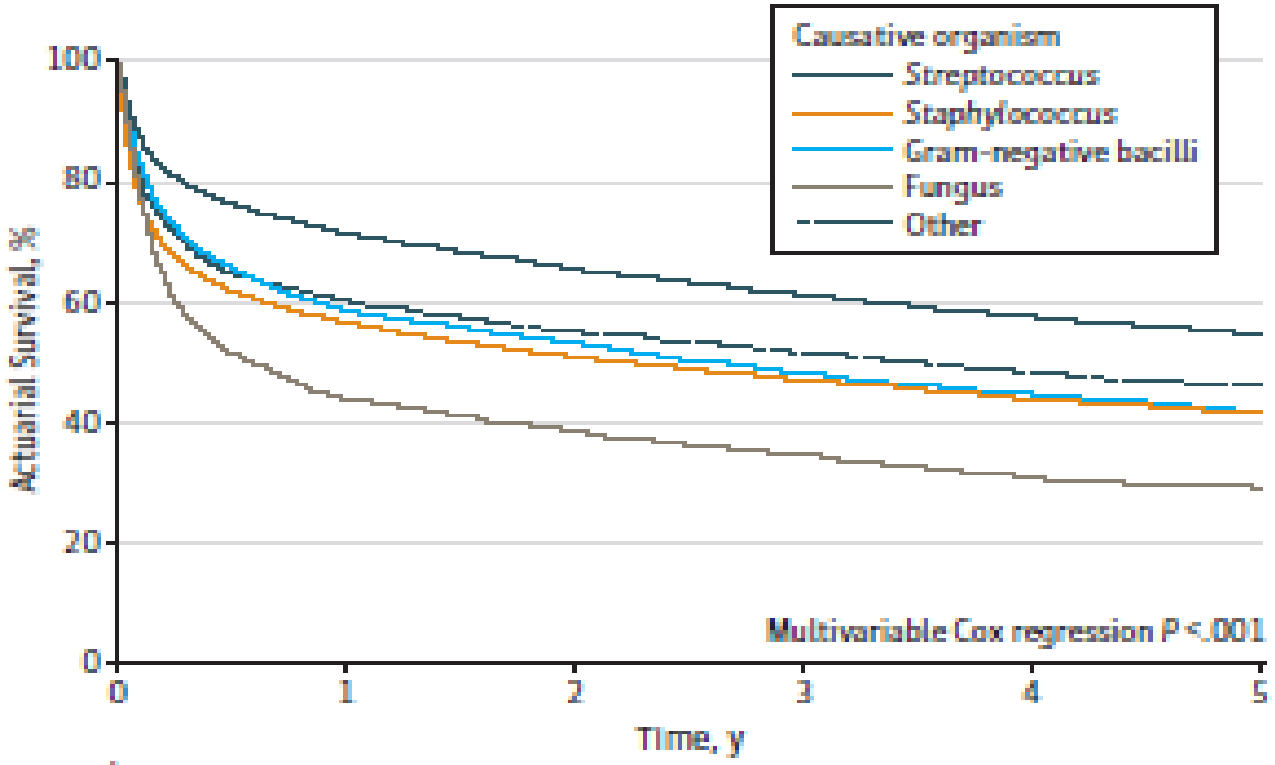
5 Yıllık Sağkalım Oranları-Patojenlere Göre



No. at risk by causative organism						
Streptococcus	17178	11653	10176	9027	7835	6613
Staphylococcus	24887	13419	11433	10016	8657	7346
Gram-negative bacilli	3713	2061	1786	1543	1306	1088
Fungus	1166	491	408	347	276	240
Other	1475	850	748	678	582	509

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Teşekkürler