Antibakteriyel Direnç ve Epidemiyoloji:

Son Bir Yılda Ne Oldu?

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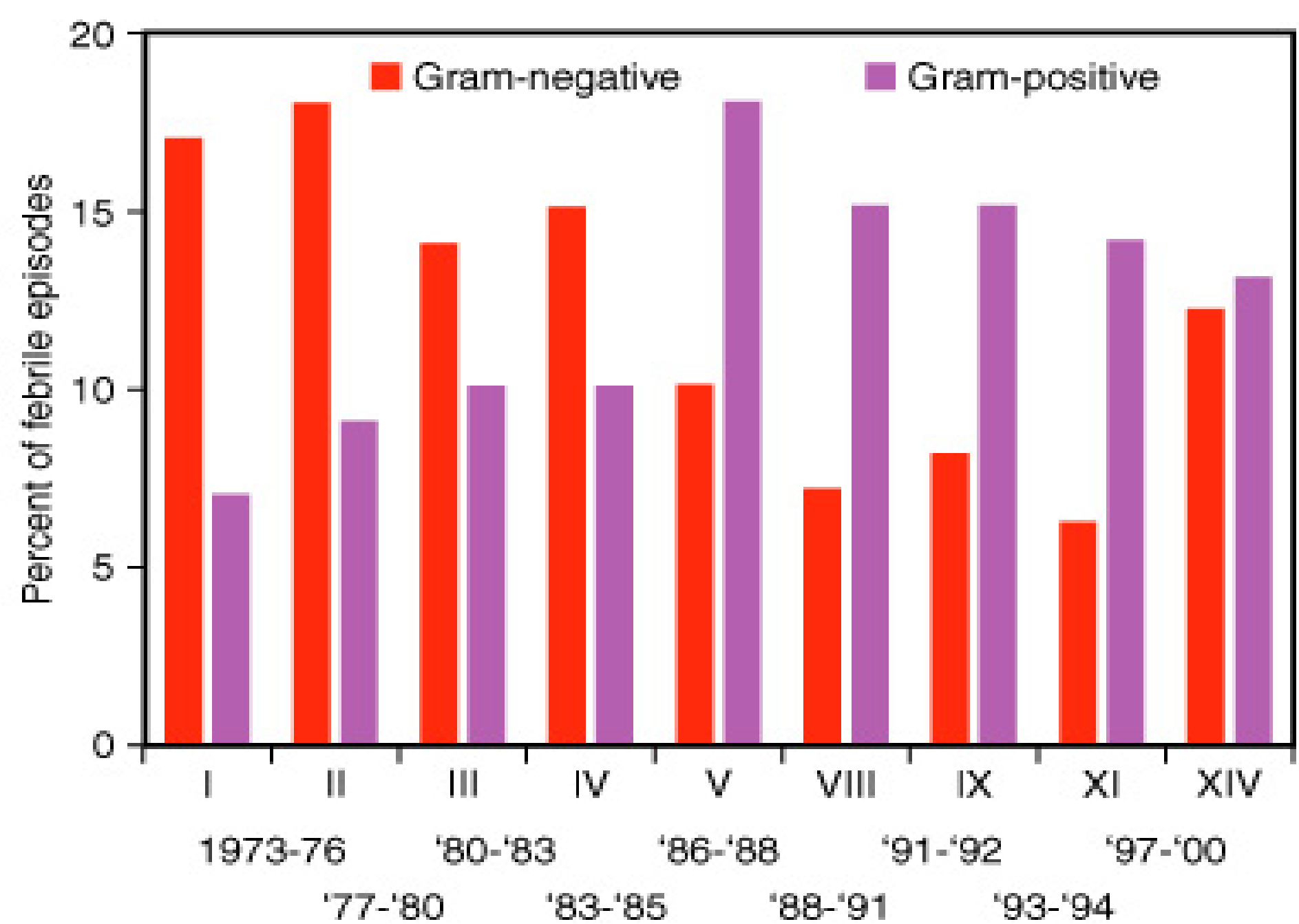

Current Trends in the Epidemiology of Nosocomial Bloodstream Infections in Patients with Hematological Malignancies and Solid Neoplasms in Hospitals in the United States

Hilmar Wisplinghoff,[1] Harald Seifert,[1] Richard P. Wenzel,[2] and Michael B. Edmond[2]

Clinical Infectious Diseases 2003; 36:1103–10

49 Hastane, 2340 Hasta, 22631 nozokomiyal bakteremi atağı

Bakteremi	1995	2000
G (+)	% 62	% 76
G (-)	% 22	% 14

Bakteremi FEN hastalarında en sık görülen enfeksiyon değil !

Table 1. Common sites of infection in patients with cancer who have hematologic malignancies and solid tumors.

Type of infection	No. (%) of infections	
	In patients with hematological malignancy	In patients with solid tumor
Pneumonia	93 (38)	99 (26)
Bloodstream	88 (35)	74 (20)
Urinary tract	27 (11)	85 (22)
Skin and soft tissue	17 (6)	65 (17)
Gastrointestinal	16 (6)	38 (10)
Other	12 (4)	17 (5)
Total	253 (100)	378 (100)

Polimikrobiyal enfeksiyonlar hesaba katılmamış!

Current Spectrum of Bacterial Infections in Patients with Cancer

Sir—We read with great interest the data presented by Wisplinghoff et al. [1] on

D. Yadegarynia,[1] J. Tarrand,[2] I. Raad,[1] and K. Rolston[1]

Clinical Infectious Diseases 2003;37:1144–5

1. sırada: %31.6 GIS,
2. sırada: %20.9 Solunum sistemi

International Journal of Infectious Diseases (2007) 11, 450—453

Trends and antimicrobial resistance of pathogens causing bloodstream infections among febrile neutropenic adults with hematological malignancy.

Chen CY, Tang JL, Hsueh PR, Yao M, Huang SY, Chen YC, Chen YC, Shen MC, Wang CH, Tsai W, Chang SC, Tien HF, Luh KT.

J Formos Med Assoc. 2004 Jul;103(7):526-32.

1996-2001, 738 bakteremi atağı

G(-): % 57, G(+): % 32

The epidemiology of bacteremia with febrile neutropenia: experience from a single center, 1988-2004.

Paul M, Gafter-Gvili A, Leibovici L, Bishara J, Levy I, Yaniv I, Shalit I, Samra Z, Pitlik S, Konigsberger H, Weinberger M.

Isr Med Assoc J. 2007 Jun;9(6):424-9

1998-2004, 462 bakteremi atağı

Bakteremi	1998	2004
G(-)/G(+)	1.7	2.3

High-risk febrile neutropenia in Auckland 2003–2004: the influence of the microbiology laboratory on patient treatment and the use of pathogen-specific therapy

S. Ritchie,[1] S. Palmer[2] and R. Ellis-Pegler[1]

Internal Medicine Journal 37 (2007) 26–31

2003-2004, 40 bakteremi atağı

G(-): % 45, G(+):%42

Bacteremia in patients with febrile neutropenia after chemotherapy at a university medical center in Malaysia

Nirmala Devi Baskaran [a], Gin Gin Gan [b,*], Kamarulzaman Adeeba [b], I-Ching Sam [c]

International Journal of Infectious Diseases (2007) 11, 513—517

2004, 73 bakteremi atağı,

G(-): %61, G(+):%39

Bloodstream infections in febrile neutropenic patients at a tertiary care center in Lebanon: a view of the past decade

Zeina A. Kanafani [a], Ghenwa K. Dakdouki [b], Khalil I. El-Chammas [c], Shaker Eid [d], George F. Araj [e], Souha S. Kanj [f,*]

International Journal of Infectious Diseases (2007) 11, 450—453

2001-2003, 33 bakteremi atağı

G(-): % 71, G(+): % 29

bakteremi	1995-1997	1998	2001-2003
G(-)/G(+)	1.5	1.8	2.4

Piperacillin–tazobactam monotherapy in high-risk febrile and neutropenic cancer patients

C. Viscoli[1], A. Cometta[2], W. V. Kern[3], R. De Bock[4], M. Paesmans[5], F. Crokaert[5], M. P. Glauser[2] and T. Calandra[2] on behalf of the International Antimicrobial Therapy Group of the European Organization for Research and Treatment of Cancer

Clin Microbiol Infect 2006; 12: 212–216

218 Bakteremi atağı

G(-): %42, G(+): %44

Recent changes in bacterial epidemiology and the emergence of fluoroquinolone-resistant *Escherichia coli* among patients with haematological malignancies: results of a prospective study on 823 patients at a single institution

C. Cattaneo[1]*, G. Quaresmini[1], S. Casari[2], M. A. Capucci[1], M. Micheletti[1], E. Borlenghi[1], L. Signorini[2], A. Re[1], G. Carosi[2] and G. Rossi[1]

Journal of Antimicrob Chemother 2008 Mar;61(3):721-8

2004-2005, 137 mikrobiyolojik olarak kanıtlı enf.

G(-): % 55, G(+): % 45

A study of incidence and characteristics of infections in 476 patients from a single center undergoing autologous blood stem cell transplantation.

Puig N, de la Rubia J, Jarque I, Salavert M, Montesinos P, Sanz J, Martín G, Sanz G, Cantero S, Lorenzo I, Sanz MA.

Int J Hematol. 2007 Aug;86(2):186-92.

1990-2005, otolog KHN yapılan hastalarda 454 atak

En sık izole edilen bakteri KNS (%25) ve *E.coli* (%25)

Çalışmanın ilk 5 yılında G(+)'ler daha sık.

A multi-centre prospective study of febrile neutropenia in Norway: Microbiological findings and antimicrobial susceptibility

KATRIN SIGURDARDOTTIR[1], ASBJØRN DIGRANES[2], STIG HARTHUG[1], INGERID NESTHUS[1], JON-MAGNUS TANGEN[3], BRITT DYBDAHL[4], PETER MEYER[5], GUNNAR HOPEN[6], TURID LØKELAND[7], KJELL GRØTTUM[8], WENCHE VIE[2] & NINA LANGELAND[1]

Scandinavian Journal of Infectious Diseases, 2005; 37: 455/464

1998-2000, 282 FEN epizodu, 95 bakteremi

G(-): % 41 G(+): % 40

Epidemiology of bacteremia and factors associated with multi-drug-resistant gram-negative bacteremia in hematopoietic stem cell transplant recipients

AL Oliveira[1], M de Souza[2], VMH Carvalho-Dias[3], MA Ruiz[4,14], L Silla[5], P Yurie Tanaka[6], BP Simões[7], P Trabasso[8], A Seber[9], CJ Lotfi[10], MA Zanichelli[11], VR Araujo[12], C Godoy[13], A Maiolino[1], P Urakawa[2], CA Cunha[3], CA de Souza[8], R Pasquini[3] and M Nucci[1]

Bone Marrow Transplantation (2007) 39, 775–781

2004, 411 KHN hastası, 91 bakteremi atağı

G(-):% 37, G(+): %47 Polimikrobiyal: % 16

118 kan kültür izolatı: 59'u: G(-), 59'u: G(+)

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Bone Marrow Transplantation (2007) 39, 775–781

Önceden 3. kuşak sefalosporin kullanımı:

OR: 10.65 (3.75–30.27) p<0.001

A Hastanesine yatış:

OR: 9.47 (2.60–34.40) p= 0.001

MDR G(-) riskini artırıyor!!!

Recent changes in bacterial epidemiology and the emergence of fluoroquinolone-resistant *Escherichia coli* among patients with haematological malignancies: results of a prospective study on 823 patients at a single institution

C. Cattaneo[1]*, G. Quaresmini[1], S. Casari[2], M. A. Capucci[1], M. Micheletti[1], E. Borlenghi[1], L. Signorini[2], A. Re[1], G. Carosi[2] and G. Rossi[1]

Journal of Antimicrob Chemother 2008 Mar;61(3):721-8

KNS, *S. aureus* 'tan daha az görülüyor.

KNS bakteremisi, kateterle ilişkili değil! ?

Kateter takan ve bakımını yapan ekip kurulmuş!

Etken Dağılımı:

1. KNS
2. Viridans Streptokoklar
3. *Staphylococcus aureus*
4. *Corynebacterium spp.*

1. *E.coli*
2. *Klebsiella spp.*
3. *Pseudomonas spp.*
4. *Enterobacter spp*

Antibakteriyel Direnç:

A multi-centre prospective study of febrile neutropenia in Norway: Microbiological findings and antimicrobial susceptibility

KATRIN SIGURDARDOTTIR[1], ASBJØRN DIGRANES[2], STIG HARTHUG[1], INGERID NESTHUS[1], JON-MAGNUS TANGEN[3], BRITT DYBDAHL[4], PETER MEYER[5], GUNNAR HOPEN[6], TURID LØKELAND[7], KJELL GRØTTUM[8], WENCHE VIE[2] & NINA LANGELAND[1]

Scandinavian Journal of Infectious Diseases, 2005; 37: 455/464

FEN ampirik tedavisi: penisilin G + aminoglikozit

A Hastanesine yatış:

OR: 9.47 (2.60–34.40) p= 0.001

Bone Marrow Transplantation (2007) 39, 775–781

Polymicrobial Infection in Patients with Cancer: An Underappreciated and Underreported Entity

Kenneth V. I. Rolston, Gerald P. Bodey, and Amar Safdar
The University of Texas, M. D. Anderson Cancer Center, Houston

Clinical Infectious Diseases 2007; 45:228–33

Polimikrobiyal enfeksiyonların morbidite ve mortalitesi yüksek!

Farklı çalışmalarda polimikrobiyal bakteremi: %8-32

Pnömonilerin %15'i polimikrobiyal!

Solid tm hastalarında üriner enfeksiyon sıklığı: %12-39.

Tiflit sıklığı %0.8-26. Mortalitesi: %50

Akut lösemi hastalarında perirektal enfeksiyon: %10

Table 2. Current distribution of monomicrobial and polymicrobial infections in patients with hematological malignancies and solid tumors.

Type of infection	Percentage of infections	
	In patients with hematological malignancy	In patients with solid tumor
Monomicrobial		
Gram-positive	47	42
Gram-negative	30	27
Polymicrobial	23	31

1970'ten günümüze polimikrobiyal enfeksiyon oranı 2 katına çıktı

Clinical Infectious Diseases 2003;37:1144–5

Infection site, diagnosis	Suggested diagnostic criteria
Bloodstream[a]	
Definite	>1 Organism isolated from blood culture specimens obtained within 24 h
Probable	>1 Organism isolated from blood culture specimens obtained within 48–72 h
Lung	
Definite	>1 Pathogenic organism isolated from sterile BAL fluid
Probable	>1 Pathogenic organism isolated from nonsterile bronchial wash or adequate sputum samples, excluding the organism associated with endogenous oropharyngeal flora; OR ⩾1 microorganism isolated from sterile BAL fluid that is considered to be of low pathogenicicty occurring in severely immunosuppressed patients, such as CoNS, diphteriods, *Bacillus* species, *Candida* species, and saprohytic molds
Biopsy specimens	
Definite	>1 Organism isolated from a sterile tissue sample; organisms such as CoNS, enterococci, and *Candida* species would be considered, provided that the other organism(s) are known pathogens
Probable	>1 Organism isolated from nonsterile tissue samples, excluding the local microflora, unless heavy growth of an otherwise-normal commensal organism is noted
Neutropenic enterocolitis	Because tissue cultures are generally not accessible, it is reasonable to presume that most infections are probably polymicrobial
Perianal infection	Because of the difficulties of obtaining uncontaminated specimens from this area, all of these infections should be considered to be polymicrobial
Skin and soft-tissue infection	Skin cultures and cultures of samples obtained from draining lesions are difficult to interpret, and unless heavy growth of a normal colonizing organism is isolated, only noncutaneous flora may be considered to be disease-associated pathogens, such as *Pseudomonas* species, *Stenotrophomonas* species, *Staphylococcus aureus* (including multidrug-resistant strains), *Aspergillus* species, *Fusarium* species, *Scedosporium* species, and other opportunistic molds in severely immunosuppressed neutropenic patients with cancer

Antimikrobiyal profilaksinin epidemiyolojiye etkisi:

Bacteraemia in febrile neutropenic cancer patients

J. Klastersky, L. Ameye, J. Maertens, A. Georgala, F. Muanza, M. Aoun, A. Ferrant, B. Rapoport, K. Rolston, M. Paesmans *

Data Centre, Institut Jules Bordet, Rue Héger-Bordet, 1B – 1000 Brussels, Belgium

International Journal of Antimicrobial Agents 30S (2007) S51–S59

1994-1997 ve 1997-2005 yıllarını kapsayan iki çalışma;

Toplam 2142 hasta, 499 bakteremi atağı.

%57 G(+), %34 G(-), %10 Polimikrobiyal

Bakteremi	1994-1997	1997-2005
G(+)/G(-)	1.96	1.37

Hematolojik malignitesi olanlarda bakteremi daha fazla } Hematolojik/solid tm= 2.7

hastalık	ölüm oranı	
	non-bakteremik	bakteremik
solid tm	%3	%13
hematolojik	%4	%9

bakteremi	komplikasyon	ölüm
G(-)	%40	%18
G(+)	%25	%5
polimikrobiyal	%35	%13

bakteremi	profilaksi	
	VAR	YOK
G(-)	%25	%52
G(+)	%75	%48

MASCC skoru, bakteremik hastalarda da işe yarıyor!:

	≥21	15-20	<15
Komplikasyon	%18	%40	%79
Ölüm	%3	%14	%36

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2004-2005, 823 hasta, prospektif izlem, levofloksasin profilaksisi

177 FUO,

50 klinik (%26.7),

137 mikrobiyolojik kanıtlı (%73) enf

148 bakteri: %55 G(-), %45 G(+):

G(-): % 67 Enterobacteriacea (*E.coli* %47)

% 16 *Pseudomonas spp.*

%53.1 Florokinolon dirençli

G(+): % 34.3 *S.aureus*

% 28.4 KNS

% 66.7 metisilin dirençli

bakteri	profilaksi	
	VAR	YOK
G(-)	%67	%50
G(+)	%33	%50

Profilaksi	FQR E.coli	FQR bakteri	MR Stafilokok
Var	%96.5	%78.5	%91.7
Yok	%44.4	%26.5	%33.3

Çok değişkenli analiz sonuçları;

Florokinolon kullanımı FQR bakteri ve MR bakteri ile enfeksiyon riskini artıran bağımsız değişken.

Florokinolon direnci mortaliteyi artırmıyor.

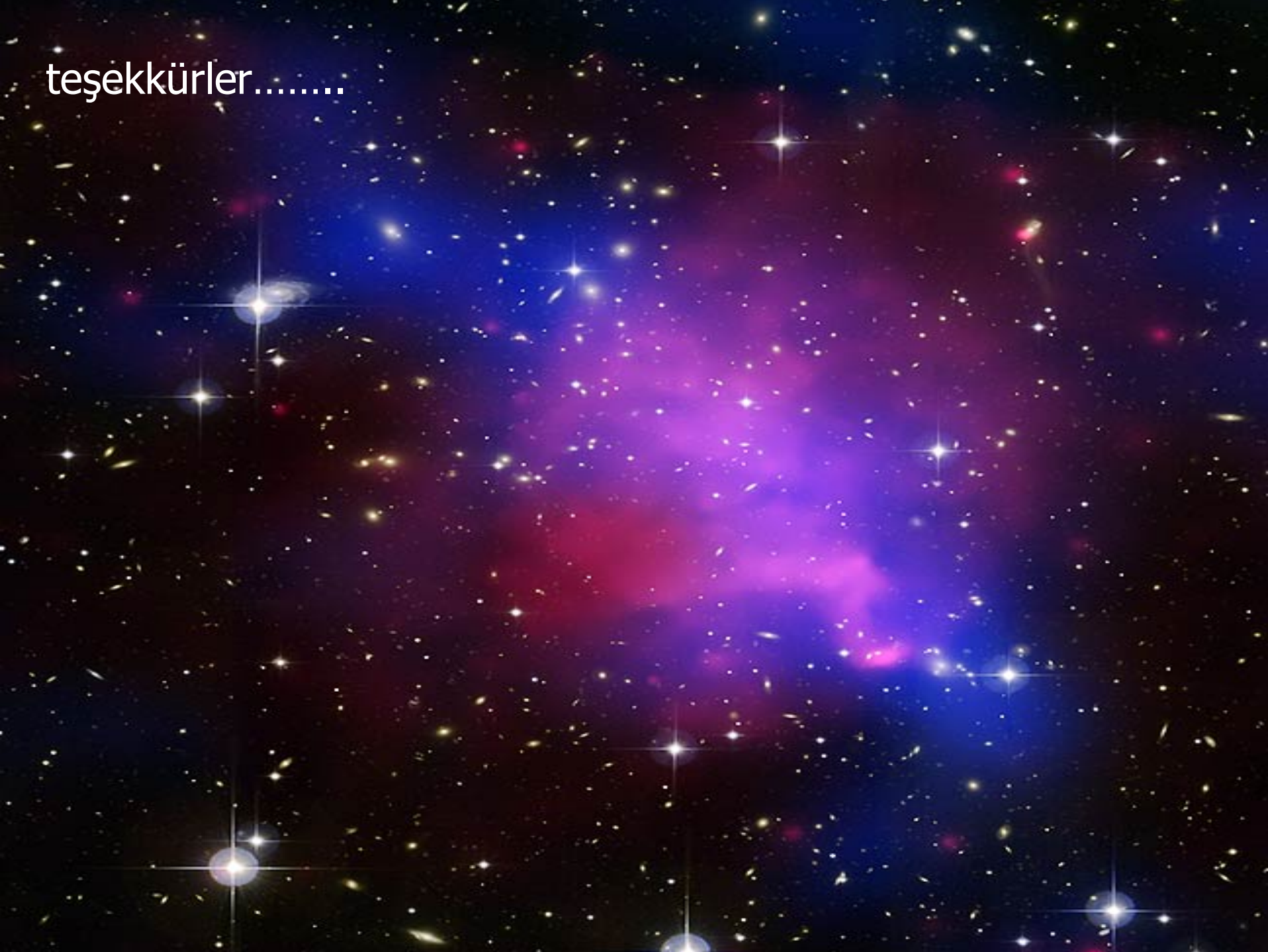
SONUÇ:

1. Bakteremi dışındaki enfeksiyonlarda ilk sırada G(-)ler etken.
   Bakteremi etkenleri arasında G(-)'lerin oranı artıyor

2. Epidemiyoloji bölgeler ve merkezler arasında farklıdır.
   Her ünite kendi etken ve direnç durumunu bilmeli.

3. Polimikrobiyal enfeksiyonlar sanılandan daha sıktır.
   Ancak tanımlamalar ile ilgili belirsizlikler vardır.

4. Kinolon profilaksisi, bakteriyel epidemiyolojiyi etkilemektedir.
   Ampirik FEN tedavisinde dikkate alınmalı!


teşekkürler.....