Erişkinde Zona Epidemiyolojisi

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Gaziantep Üniversitesi Tıp Fakültesi

Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji ABD

Varisella-zoster virüsü enfeksiyonu:

- Primer Enfeksiyon: Suçiçeği

- Sekonder Enfeksiyon: Zona

Herpes zoster

Patogenez:

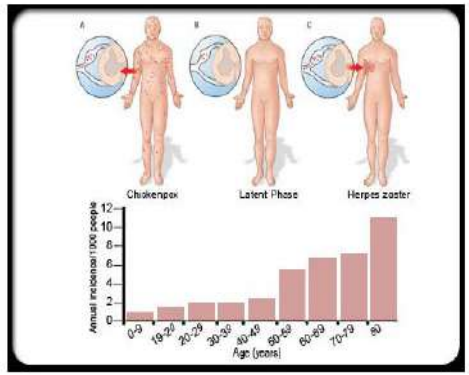
- Varicella-Zoster Virüsü (VZV), duyarlı konakta
- Damlacık yoluyla
- Nazofaringeal lenfoid dokuyu enfekte eder
- Viremi
- Tüm dokula

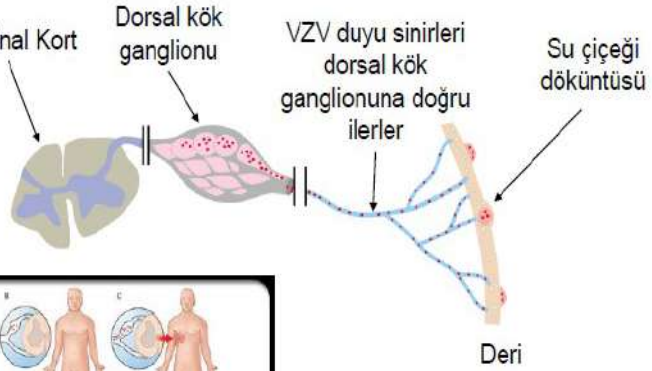
Suçiçeği

Veziküllerde bulunan hücre dışı virüsün,
derideki sinir uçları ile bölgesel ganglionlarda
yaşam boyu latent olarak için duyusal aksonlar boyunca geriye doğru hareket eder

- Duyusal ganglialara yaşam boyu yerleşim (latent)
- Kraniyal sinirler veya dorsal kök ganglialarda reaktivasyon
- Duyusal dermatomlar üzerinde yayılım

Zona





- Reaktivasyon geliştiğinde sınırlandırılamazsa, enfeksiyöz VZV ganglion içinde yayılarak birden fazla duyu nöronunu etkileyebilir ve daha sonra duyu siniri boyunca ileriye doğru yayılarak deride enfeksiyon oluşturabilir ve tipik döküntüye neden olabilir.

Torasik bölge %50-62
Oftalmik zoster %12-21
Lumbar %10-14
Servikal %11-14
Sakral bölge %2-8

Oxman MN. Neurology. 1995;45(12 Suppl 8):S41.
Cohrs RJ, Gilden. J Virol. 2007;81(6):2950.

Herpes Zoster - Klinik

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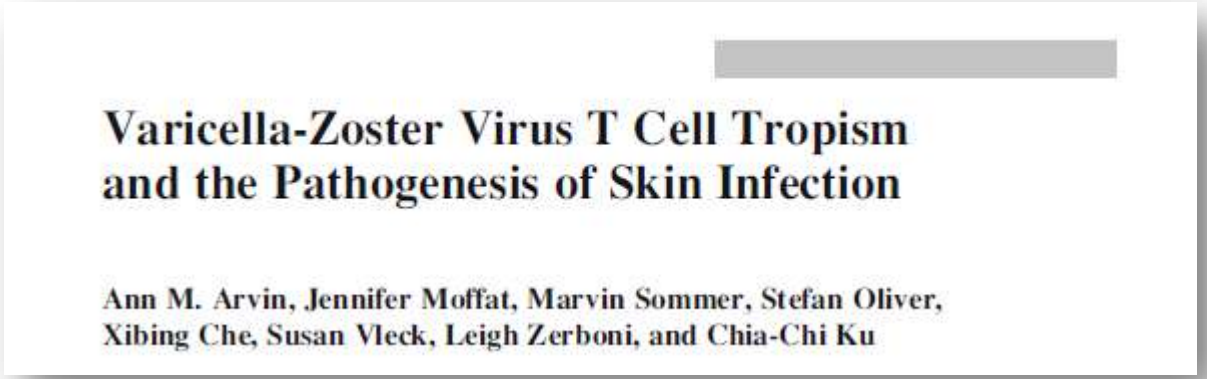
Prodromal dönem	Akut HZ Döküntü dönemi	Döküntülerin gelişmesi	Komplikasyonlar dönemi
Cilt hassasiyeti Başağrısı Fotofobi Kırıklık	Tek taraflı döküntü Makülopapül/vezikül Hissiyet farkı Aşırı kaşıntı	Vezikül oluşumu yok Püstül oluşumu Kabuklaşma Derinin iyileşmesi	Nörolojik Deri Oftalmik İç organ tutulumu (nadir)

Ağrı
(Acı verici, yakıcı, keskin, aniden gelen)

HZ=herpes zoster.

1. Oxman MN. In: Arvin AM et al, eds. *Varicella-Zoster Virus: Virology and Clinical Management*. Cambridge University Press; 2000:246–275. 2. Harpaz R et al. *MMWR Recomm Rep*. 2008;57(RR–5):1–30. 3. Weaver BA. *J Am Osteopath Assoc*. 2009;109(6 suppl 2):S2–S6.

- Suçiçeği sırasında gelişen VZV'ye özgü hücre aracılı immün yanıt enfeksiyonu sonlandırmak için gereklidir.



Varicella-Zoster Virus T Cell Tropism and the Pathogenesis of Skin Infection

Ann M. Arvin, Jennifer Moffat, Marvin Sommer, Stefan Oliver, Xibing Che, Susan Vleck, Leigh Zerboni, and Chia-Chi Ku

- Primer enfeksiyon sırasındaki spesifik immün yanıt VZV lantliğinin kontrol edilmesinde ve herpes zoster reaktivasyon potansiyelinin sınırlandırılmasında da kritik bir rol oynar

Current Topics in Microbiology and Immunology, DOI 10.1007/82_2010_29

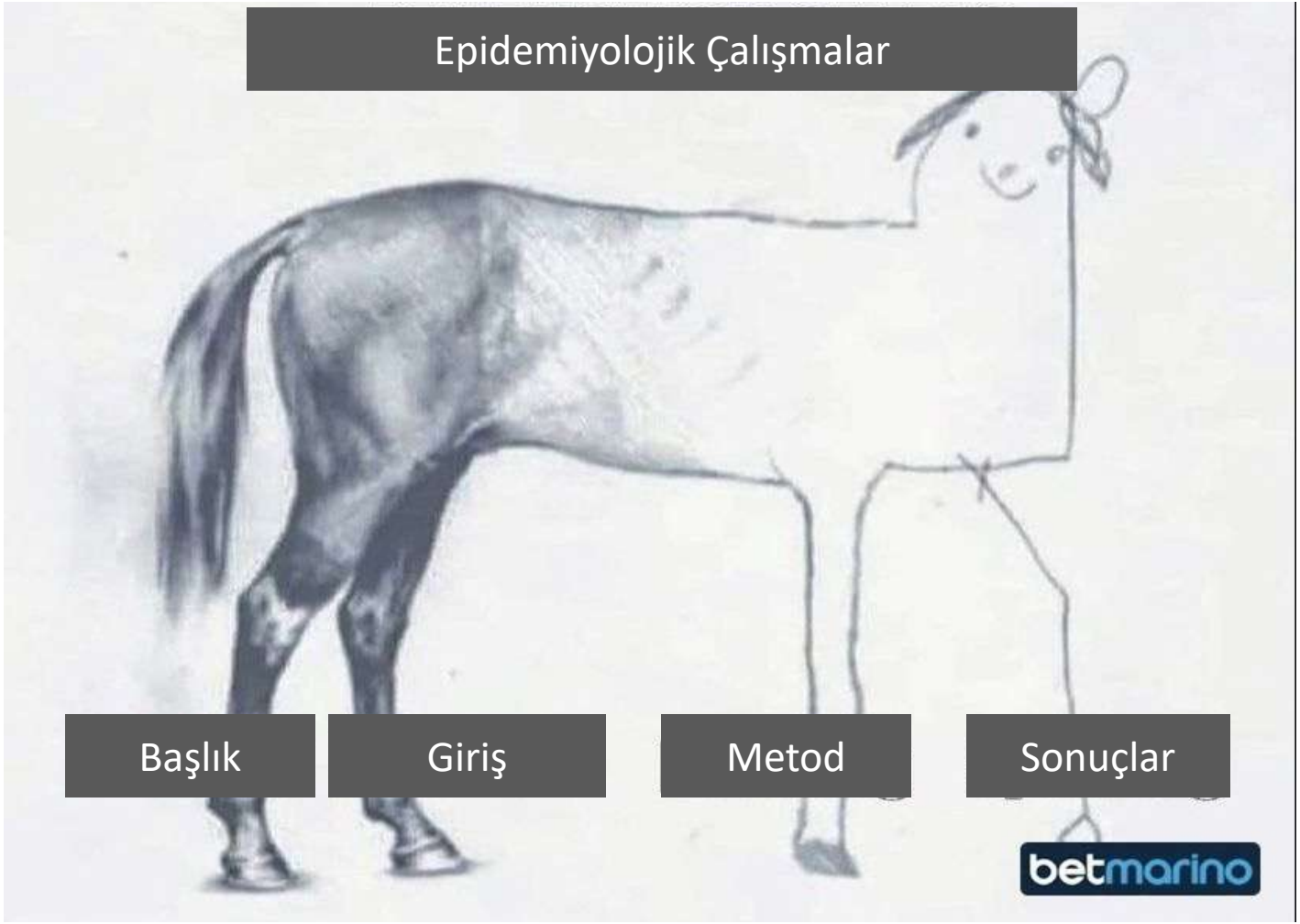
- VZV, majör doku uyumluluk kompleksi (MHC) sınıf I ekspresyonunun down regülasyonu ve interferon yanıt genlerinin inhibisyonu gibi çoklu konak savunmasını inhibe ederek enfeksiyonu artırır

- Bu, virüsün bağışıklık tepkisinden kısmen kaçmasını sağlar.

- Suçiçeğinde deri lezyonlarının başlangıcından önceki uzun inkübasyon periyodu, VZV'nin epidermal hücreler tarafından alfa interferon (IFN-a) üretimi gibi lokal immün aracılı savunmaların üstesinden gelmesi için gereken süreyi yansıtmaktadır.

Ku CC, et al. J Virol. 2005;79(5):2651.
Ku CC, et al. J Virol. 2002;76(22):11425.
Ku CC, et al. J Exp Med. 2004;200(7):917.
Abendroth A, et al. Curr Top Microbiol Immunol. 2010;342:155.

Epidemiyolojik Çalışmalar



Review Article

Epidemiology, treatment and prevention of herpes zoster: A comprehensive review

Elsam Koshy, Lu Mengting, Hanasha Kumar, Wu Jianbo

Department of Dermatology, Zhongnan Hospital of Wuhan University, Wuhan, China

Table 1: Yearly variation of herpes zoster incidence

Country	Year	Incidence 1000-person year
USA	2000-2001	3.2
USA	2011	4.47
UK	1994-2001	3.95
UK	2000-2006	5.23
Italy	1995	4.1
Italy	2004	1.74
Italy	2003-2005	6.31
The Netherlands	1998-2001	3.25
The Netherlands	2004-2008	4.75

Table 2: Risk of post-herpetic neuralgia after herpes zoster

Country	Age	Risk of PHN (%)
USA	All age	9.3
UK	≥50	13.7
UK	All age	14
Canada	≥50	22
India	All age	10.2
Italy	≥50	7.2
Italy	≥15	19.6
Korea	NA	7.4
Singapore	All age	20
The Netherlands	All age	5.8

NA: Not available, PHN: Post-herpetic neuralgia

):251-262.

Open Access Research

BMJ Open

Systematic review of incidence and complications of herpes zoster: towards a global perspective

Kosuke Kawai,[1] Berhanu G Gebremeskel,[2] Camilo J Acosta[1]

26 ülkeden 130 çalışma
İnsidans hızı:3-5/1000
Nüks: %1-6
PHN:%5->30
PHN'lerin %30'u 1 yıldan uzun
Yaşla artan insidans
Aşı sonrası…?

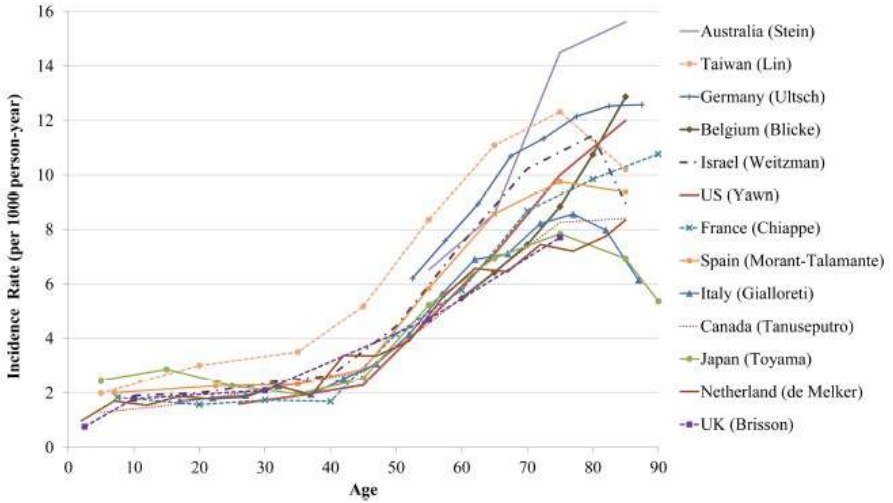


Figure 2 Age-specific incidence rate of herpes zoster in North America, Europe and Asia-Pacific.

BMJ Open 2014;4:e004833

Clinical Infectious Diseases

BRIEF REPORT

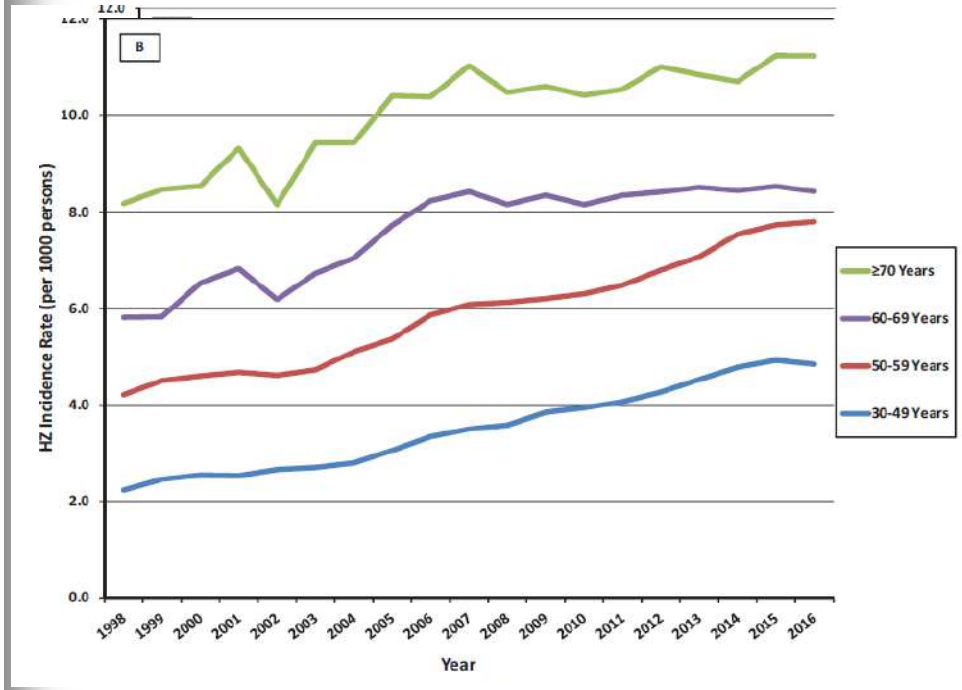
CID 2019:69 (15 July) • 341

The Epidemiology of Herpes Zoster in the United States During the Era of Varicella and Herpes Zoster Vaccines: Changing Patterns Among Older Adults

Rafael Harpaz and Jessica W. Leung

National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia

1993-2016
27 milyon popülasyon
≥35 yaş
1993– 2.5/1000 kişi-yılı
2016—7.2/1000 kişi-yılı



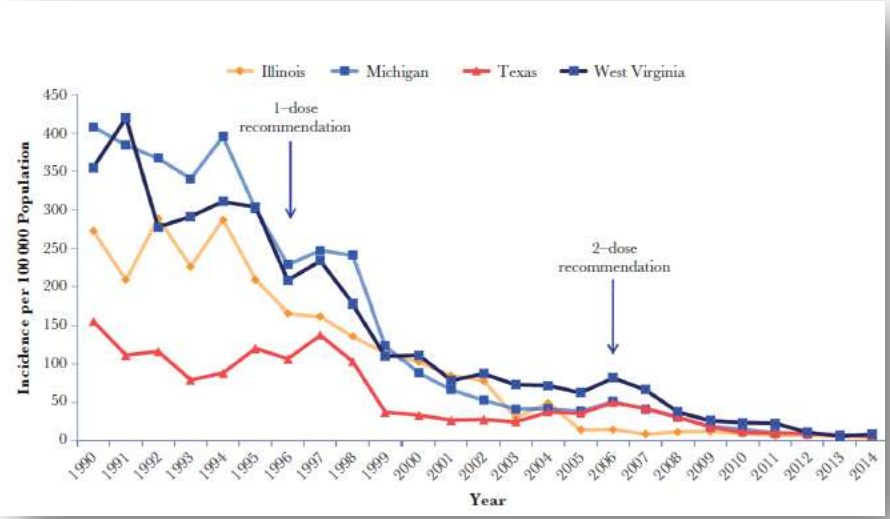
The Journal of Infectious Diseases

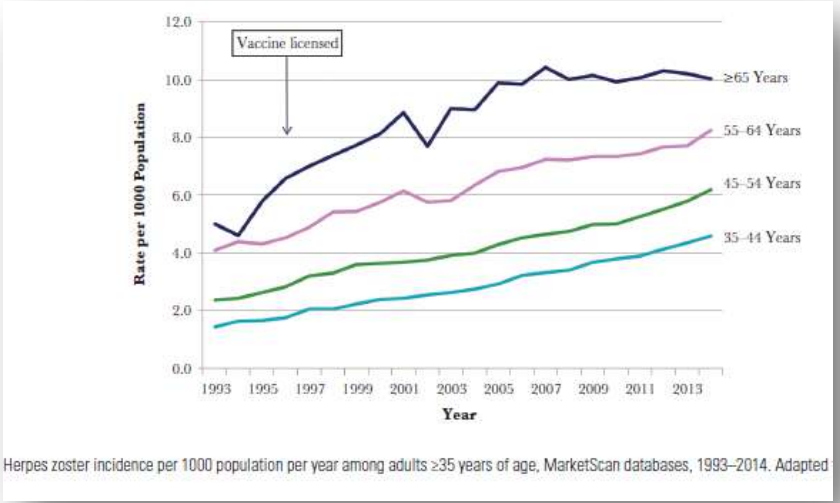
SUPPLEMENT ARTICLE

Point–Counterpoint: The Hope-Simpson Hypothesis and Its Implications Regarding an Effect of Routine Varicella Vaccination on Herpes Zoster Incidence

Rafael Harpaz,[1] and Albert J. van Hoek[2]

[1]Division of Viral Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia; and [2]Faculty of Epidemiology and Population Health, London School of Hygiene and Tropical Medicine, United Kingdom





Herpes zoster incidence per 1000 population per year among adults ≥35 years of age, MarketScan databases, 1993–2014. Adapted

Yaş-Zona İlişkisi

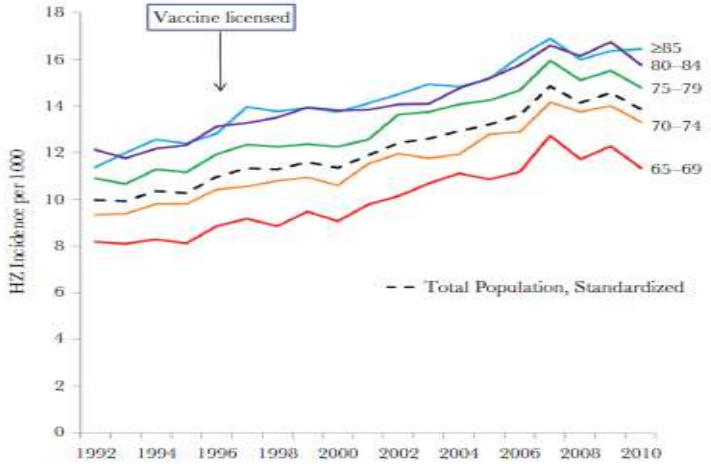
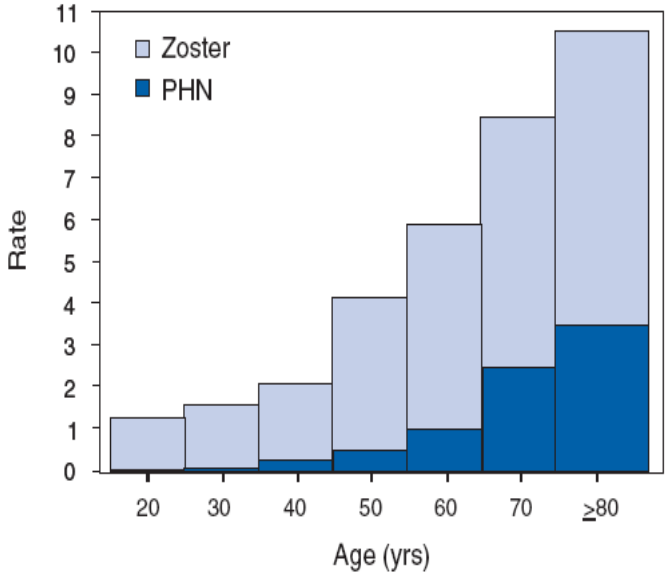
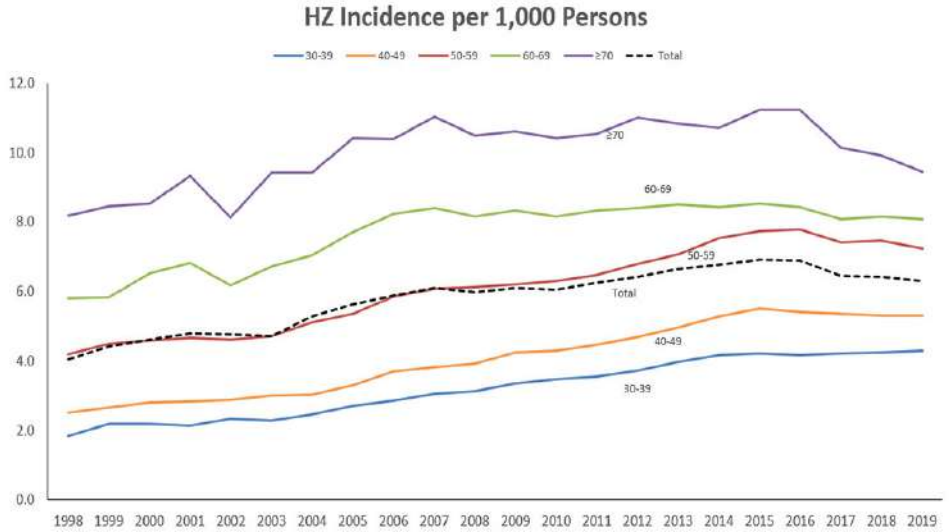


Figure 3. Herpes zoster (HZ) incidence among Medicare beneficiaries aged ≥65 years, by age group, 1992–2010. Total population curve standardized by age and sex. Adapted from [27].





https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5705a1.htm
https://academic.oup.com/jid/article/226/Supplement_4/S470/6764830

- Endemik su çiçeğine maruz kalmanın yetişkinlerde VZV spesifik b
- Toplumda su çiçeği hastalığının azalmasının, nöronlar
  korumak için gereken T hücresi aracılı bağışıklıkta bir
- İmmünsüresif tedavilerin kullanımı
- Yaşam beklentisindeki artış

Aksini söyleyen bir çok makale var…

Harder T, et al. Clin Infect Dis 2019; 69:1329.
Carryn S, et al. J Infect Dis 2022; 225:413.
Kawai K, et al. Clin Infect Dis 2016; 63:221.

Risk Faktörleri:

- İmmünsüpresyon
- Cinsiyet K>E
- Irk
- Fiziksel travma
- Majör depresyon
- Komorbid hastalık/durumlar
  - Malignite
  - Kemoterapi
  - Hücre aracılı bağışıklık bozuklukları
  - Kronik akciğer hastalığı
  - Kronik böbrek hastalığı

Mc Donald JR, et al. Clin Infect Dis. 2009;48(10):1364.
Kuo CC, et al. Am J Kidney Dis. 2012;59(3):428.
Lin SY, et al. Am J Nephrol. 2012;36(1):27.

- Konağın bağışıklık statüsü
  - Yaşa bağlı
  - Hastalığa bağlı
  - İatrojenik olarak

Bağışıklığın azalması

Yaş…

- En önemli risk faktörü

- >50 yaş dramatik bir artış

  50-59yaş → %20

  ≥60 yaş → %40

- 85 yaşına kadar yaşayan kişilerin %50'si en az bir kez **zona atağı**

- Yaşla komplikasyon riski
  - Post Herpetik Nevralji (PHN)
  - Zona sonrası PHN %18
  - >50 yaş PHN riski yüksek
  - PHN'lerin 1/3 ü >79 yaş

Yawn BP, et al. Mayo Clin Proc 2007; 82:1341.

İmmünsüprese Hasta

- Transplantasyon alıcıları
- Otoimmün hastalığı olanlar
- HIV ile enfekte bireyler

İmmünsüprese Hasta

- Transplantasyon alıcıları
- Otoimmün h
- HIV ile enfe

HSCT ve SOT alıcıları normal popülasyona oranla artmış risk

-<u>En yüksek risk</u>: Kök hücre ve kemik iliği alıcıları

-Düşük yoğunluklu rejim alanlarda dahi

Infection (2014) 42:325–334
DOI 10.1007/s15010-013-0550-8

CLINICAL AND EPIDEMIOLOGICAL STUDY

Incidence of herpes zoster in patients with altered immune function

S.-Y. Chen · J. A. Suaya · Q. Li · C. M. Galindo · D. Misurski · S. Burstin · M. J. Levin

Received: 26 July 2013 / Accepted: 26 October 2013 / Published online: 10 Novemb

Abstract

Purpose To estimate the incidence of herpes zoster (HZ) and rates of post-zoster pain in both the total study population and separately in patients with selected conditions/treatments associated with altered immune function.

Methods The health administrative claims databases for commercially insured, Medicare, and Medicaid populations, together accounting for approximately 51 million insured individuals, were analyzed between 2005 and 2009 in a retrospective cohort study. Incidence of HZ episodes per 1,000 person-years (PY) was estimated in all study populations as well as within nine potentially immune-altering conditions. Among patients with HZ, the 6-month rate of persistent post-zoster pain was estimated.

Table 1 Characteristics of the study sample

Characteristics of the study sample	Number of persons	Age (years)		Age group (%)				Sex		Use of immunosuppressants/ chemotherapy (%)
		Mean	SD	18–49 years	50–59 years	60–64 years	65+ years	Male	Female	
Total study population	51,022,838	43.1	15.8	66.0	19.2	6.2	8.6	46.0	54.0	N/A
Bone marrow or stem cell transplant	14,679	49.3	12.8	42.8	35.3	15.5	6.5	52.4	47.6	58.6
Solid organ transplant	61,189	49.7	12.5	44.5	34.0	13.1	8.4	59.2	40.8	67.4
Human immunodeficiency virus infection	121,956	41.8	10.6	76.8	18.8	3.2	1.2	69.8	30.2	N/A
Systemic lupus erythematosus	144,137	46.9	13.2	56.7	27.5	8.7	7.1	12.2	87.8	47.0
Rheumatoid arthritis	571,555	52.7	13.9	39.4	31.8	12.7	16.1	26.7	73.3	49.4
Cancer	1,462,356	59.5	13.8	21.8	30.1	16.6	31.5	45.1	54.9	28.7
Inflammatory bowel disease	345,565	47.0	15.0	55.5	25.1	9.2	10.2	43.5	56.5	37.8
Multiple sclerosis	146,261	46.3	12.1	60.1	27.5	7.2	5.2	24.1	75.9	33.0
Psoriasis	536,770	46.2	14.7	57.2	24.8	9.1	8.9	45.6	54.4	30.3

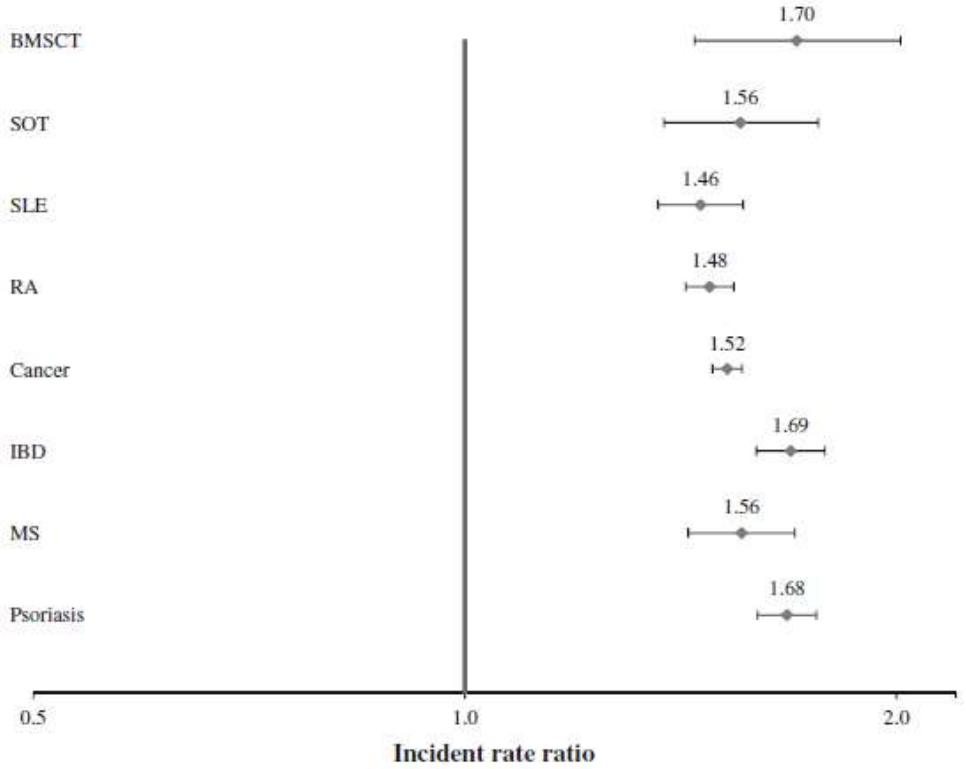
SD, Standard deviation; N/A, not available

Table 2 Incidence of herpes zoster by various immune-altering conditions

Characteristics of the study sample	Number of herpes zoster cases	Person-years	Incidence[a]	95 % Confidence interval	Incidence by use of immunosuppressants or chemotherapy			
					Users		Non-users	
					Incidence[a]	95 % CI	Incidence[a]	95 % CI
Total study population	435,378	90,236,779	4.82	4.81–4.84	N/A	–	N/A	–
Bone marrow or stem cell transplant	726	16,870	43.03	39.96–46.28	51.50	(47.18–56.11)	30.23	26.21–34.68
Solid organ transplant	1,673	98,173	17.04	16.23–17.88	18.85	(17.86–19.89)	12.11	10.82–13.52
Human immunodeficiency virus infection	3,207	184,198	17.41	16.81–18.01	N/A	–	N/A	–
Systemic lupus erythematosus	3,540	233,096	15.19	14.69–15.69	17.85	(17.11–18.61)	12.23	11.58–12.90
Rheumatoid arthritis	11,446	934,811	12.24	12.02–12.47	14.28	(13.96–14.61)	9.64	9.34–9.94
Cancer	29,698	2,538,706	11.70	11.57–11.83	15.63	(15.33–15.93)	10.25	10.11–10.40
Inflammatory bowel disease	5,257	564,563	9.31	9.06–9.56	12.07	(11.64–12.51)	7.15	6.86–7.45
Multiple sclerosis	2,146	249,551	8.60	8.24–8.96	11.00	(10.35–11.68)	7.05	6.64–7.49
Psoriasis	6,927	862,544	8.03	7.84–8.22	10.85	(10.49–11.23)	6.47	6.26–6.68

HZ, Herpes zoster; CI, confidence interval

[a] Incidence presented as number of cases per 1,000 person-years (PY)



BMSCT: bone marrow or stem cell transplant; SOT: solid organ transplant; SLE: systemic lupus erythematosus; RA: rheumatoid arthritis; IBD: inflammatory bowel disease; MS: multiple sclerosis

Fig. 1 Incidence rate ratio of herpes zoster (HZ) for users of immunosuppressants or chemotherapy (users vs. non-users). *BMSCT* Bone marrow or stem cell transplant, *SOT* solid organ transplant, *SLE* systemic lupus erythematosus, *RA* rheumatoid arthritis, *IBD* inflammatory bowel disease, *MS* multiple sclerosis

Table 3 Incidence and rate ratio of herpes zoster by age group

Characteristics of the study population	Incidence[a, b] (95 % CI)				Incidence rate ratio (95 % CI)		
	18–49 years	50–59 years	60–64 years	65+ years	50–59 vs. 18–49	60–64 vs. 18–49	65+ vs. 18–49
Total study population	3.37 (3.35–3.38)	6.43 (6.40–6.47)	7.71 (7.64–7.79)	8.43 (8.37–8.49)	1.91 (1.90–1.92)	2.29 (2.27–2.31)	2.50 (2.48–2.52)
Bone marrow or stem cell transplant	40.20 (35.6–45.12)	43.22 (38.2–48.65)	50.71 (41.8–60.92)	44.73 (33.2–58.97)	1.08 (0.91–1.27)	1.26 (1.01–1.57)	1.11 (0.81–1.51)
Solid organ transplant	13.30 (12.2–14.43)	19.41 (17.9–20.91)	19.76 (17.2–22.56)	23.15 (19.9–26.76)	1.46 (1.30–1.63)	1.49 (1.27–1.74)	1.74 (1.46–2.06)
Human immunodeficiency virus infection	17.83 (17.1–18.55)	16.42 (15.1–17.75)	16.02 (12.8–19.78)	10.70 (6.62–16.35)	0.92 (0.84–1.01)	0.90 (0.72–1.11)	0.60 (0.37–0.92)
Systemic lupus erythematosus	13.39 (12.7–14.04)	15.40 (14.5–16.35)	20.01 (18.0–22.18)	23.39 (21.0–25.91)	1.15 (1.07–1.24)	1.49 (1.33–1.67)	1.75 (1.56–1.96)
Rheumatoid arthritis	8.32 (8.02–8.63)	12.75 (12.3–13.15)	15.31 (14.5–16.08)	18.34 (17.6–19.04)	1.53 (1.46–1.61)	1.84 (1.73–1.96)	2.20 (2.09–2.32)
Cancer	8.39 (8.15–8.64)	10.94 (10.7–11.17)	13.05 (12.6–13.42)	14.14 (13.8–14.40)	1.30 (1.26–1.35)	1.55 (1.49–1.62)	1.68 (1.63–1.74)
Inflammatory bowel disease	6.89 (6.59–7.19)	11.02 (10.5–11.55)	11.67 (10.7–12.69)	15.48 (14.4–16.53)	1.60 (1.50–1.71)	1.69 (1.54–1.86)	2.25 (2.08–2.43)
Multiple sclerosis	6.83 (6.42–7.27)	10.75 (10.0–11.52)	11.91 (10.2–13.75)	12.35 (10.4–14.50)	1.57 (1.43–1.73)	1.74 (1.48–2.04)	1.81 (1.51–2.15)
Psoriasis	5.28 (5.08–5.49)	9.46 (9.08–9.86)	13.11 (12.2–13.99)	15.39 (14.5–16.27)	1.79 (1.69–1.90)	2.48 (2.30–2.68)	2.91 (2.72–3.12)

[a] Incidence rate presented as number of cases per 1,000 PY

[b] Linear trend of incidence rate was significant at $P < 0.01$ except for bone marrow or stem cell transplant ($P = 0.08$)

Table 4 Six-month rate of persistent post-zoster pain among patients with herpes zoster

Characteristics of the study population	Herpes zoster cases (*n*)	Rate of persistent post-zoster related pain (%)	95 % CI
Total study population	322,877	4.29	4.22–4.36
Bone marrow or stem cell transplant	501	10.18	7.83–13.14
Solid organ transplant	1,205	6.72	5.44–8.28
Human immunodeficiency virus infection	2,311	6.10	5.20–7.15
Systemic lupus erythematosus	2,593	6.44	5.56–7.45
Rheumatoid arthritis	8,294	7.22	6.68–7.80
Cancer	21,620	7.03	6.70–7.38
Inflammatory bowel disease	3,793	5.85	5.15–6.65
Multiple sclerosis	1,563	5.57	4.53–6.82
Psoriasis	4,978	5.08	4.51–5.73

İmmünsüprese Hasta

- Transplantasyon alıcıları
- Otoimmün hastalığı olanlar
- HI

Başta RA ve İBH olmak üzere otoimmün hastalıklar:
Glukokortikoidler,
Biyolojik olmayan hastalık modifiye edici antiromatizmal ilaçlar (DMARDs),
Tümör nekroz faktörü (TNF) -alfa inhibitörleri,
Sfingozin 1-fosfat (S1P) reseptör inhibitörleri,
Janus kinaz (JAK) inhibitörleri gibi immünosüpresif tedavileri sıkça gerektirir

Clin Infect Dis. 2009 May 15; 48(10): 1364–1371. doi:10.1086/598331.

Herpes zoster risk factors in a national cohort of veterans with rheumatoid arthritis

Jay R. McDonald, MD[1,2], **Angelique L. Zeringue, MS**[1,2], **Liron Caplan, MD**[3,4], **Prabha Ranganathan, MD**[2], **Hong Xian, PhD**[1,2], **Thomas E. Burroughs, PhD**[5], **Victoria J Fraser, MD**[2], **Fran Cunningham, PharmD**[6], and **Seth A. Eisen, MD, MSc**[1,2]

[1]St. Louis Veterans Affairs Medical Center, St. Louis, MO

[2]Washington University, St. Louis, MO

[3]Denver Veterans Affairs Medical C

[4]University of Colorado at Denver a

[5]St. Louis University, St. Louis, MO

[6]VA Pharmacy Benefits Manageme

Background—Herpes zoster occurs more commonly in patients taking immunosuppressive medications, though the risk associated with different medications is poorly understood.

Methods—Retrospective cohort study including 20,357 patients who were followed in the Veterans Affairs healthcare system and treated for rheumatoid arthritis from October 1998 through June 2005. Cox proportional hazards regression was used to determine risk factors for herpes zoster, and herpes zoster-free survival. Chart review was performed to validate the diagnosis of herpes zoster.

Results—The incidence of herpes zoster was 9.96 per 1000 patient-years. In time-to-event analysis, patients receiving medications used to treat mild rheumatoid arthritis were less likely to have an episode of herpes zoster than patients receiving medications used to treat moderate and severe rheumatoid arthritis ($p<0.001$). Independent risk factors for herpes zoster included older age, prednisone use, medications used to treat moderate and severe rheumatoid arthritis, malignancy, chronic lung disease, renal failure, and liver disease. Among patients receiving tumor necrosis factor-alpha antagonists, etanercept (HR 0.62) and adalimumab (HR 0.53) were associated with lower risk of herpes zoster. There was excellent agreement between ICD-9-CM diagnosis of herpes zoster and diagnosis by chart review (kappa = 0.92).

CLINICAL GASTROENTEROLOGY AND HEPATOLOGY 2006;4:1483–1490

Incidence and Risk Factors for Herpes Zoster Among Patients With Inflammatory Bowel Disease

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*Center for Clinical Epidemiology and Biostatistics, ‡Centers for Education and Research on Thera
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Background & Aims: An increased risk of herpes zoster in patients with inflammatory bowel disease (IBD) is hypothesized based on altered immune function, especially among patients receiving immunosuppressive medications. **Methods:** We performed a retrospective cohort study and a retrospective nested case-control study using 1988–1997 data from the General Practice Research Database. In the cohort study, 7823 Crohn's disease (CD) and 11,930 ulcerative colitis (UC) patients were matched on age, sex, and primary care practice to 79,563 randomly selected controls without CD or UC. In the nested case-control study, 185 CD patients with zoster and 266 UC patients with zoster were matched on sex and year of birth to 1787 IBD patients without zoster. **Results:** In the cohort study, the incidence of zoster was higher in patients with CD and UC compared with their matched controls (UC incidence rate ratio, 1.21; 95% confidence interval [CI], 1.05–1.40; CD incidence rate ratio, 1.61; 95% CI, 1.35–1.92). In the nested case-control study, receipt of a prescription for corticosteroids (adjusted odds ratio, 1.5; 95% CI, 1.1–2.2) or azathioprine/6-mercaptopurine (adjusted odds ratio, 3.1; 95% CI, 1.7–5.6) were both associated with zoste h

Arthritis Rheumatol. 2016 September ; 68(9): 2328–2337. doi:10.1002/art.39670.

Risk of Herpes Zoster in Auto-immune and Inflammatory diseases: Implications for Vaccination

Huifeng Yun, PhD[1], **Shuo Yang, MS**[2], **Lang Chen, PhD**[2], **Fenglong Xie, MS**[2], **Kevin Winthrop, MD, MPH**[3], **John William Baddley, MD**[4], **Kenneth G Saag, MD, MSc**[2], **Jasvinder Singh, MD**[2], and **Jeffrey R Curtis, MD, MS, MPH**[2]

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[4]Division of Infectious

Results—We identified 8,395 SLE, 7,916 IBD, 50,646 RA, 2,629 PsA, 4,299 PsO, 1,019 AS, 58,934 gout, 214,631 diabetes and 330,727 enrollment periods without AI and diabetic conditions. Highest to lowest, the IRs ranged from 19.9 per 1,000 pys for SLE cohort to 6.8 for gout cohort, versus 5.3 in patients without AI and diabetic conditions. The age-specific IRs of HZ for RA and SLE patients aged ≥40 were 1.5–2 times greater than those observed in healthy adults for whom the vaccine is currently recommended (8.5/1000).

Conclusions—SLE, IBD and RA are associated with higher risks of HZ compared to older adults recommended for vaccination, suggesting that individuals with these conditions as young as age 40 could potentially benefit from vaccination.

İmmünsüprese Hasta

- Transplantasyon alıcıları
- Otoimmün hastalığı olanlar
- HIV ile enfekte bireyler

HIV ile enfekte yetişkinler, HIV olmayanlara kıyasla
Zona geliştirme riski daha yüksektir

Bunchbinder SP, et al. J Infect Dis. 1992;166(5):1153.
Veenstra J, et al. AIDS. 1995;9(10):1153.

- Bu durum, etkin antiretroviral tedavinin (ART) kullanıma sunulmasından önce, erkeklerle seks yapan 966 erkek üzerinde yapılan prospektif bir çalışmada, HIV'li erkeklerde HIV olmayan erkeklere göre daha yüksek herpes zoster insidansının tespit edilmesiyle açıkça ortaya konulmuştur.
- 51,51/1000 vs 3,31/1000

CD4<200: 97,5/1000
CD4 200-500: 47,2/1000
CD4>500: 31,2/1000

Veenestra J, et al. AIDS. 1995;9(10):1153.

Table 1 Characteristics of the study sample

Characteristics of the study sample	Number of persons	Age (years)		Age group (%)				Sex		Use of immunosuppressants/ chemotherapy (%)
		Mean	SD	18–49 years	50–59 years	60–64 years	65+ years	Male	Female	
Total study population	51,022,838	43.1	15.8	66.0	19.2	6.2	8.6	46.0	54.0	N/A
Bone marrow or stem cell transplant	14,679	49.3	12.8	42.8	35.3	15.5	6.5	52.4	47.6	58.6
Solid organ transplant	61,189	49.7	12.5	44.5	34.0	13.1	8.4	59.2	40.8	67.4
Human immunodeficiency virus infection	121,956	41.8	10.6	76.8	18.8	3.2	1.2	69.8	30.2	N/A
Systemic lupus erythematosus	144,137	46.9	13.2	56.7	27.5	8.7	7.1	12.2	87.8	47.0
Rheumatoid arthritis	571,555	52.7	13.9	39.4	31.8	12.7	16.1	26.7	73.3	49.4
Cancer	1,462,356	59.5	13.8	21.8	30.1	16.6	31.5	45.1	54.9	28.7
Inflammatory bowel disease	345,565	47.0	15.0	55.5	25.1	9.2	10.2	43.5	56.5	37.8
Multiple sclerosis	146,261	46.3	12.1	60.1	27.5	7.2	5.2	24.1	75.9	33.0
Psoriasis	536,770	46.2	14.7	57.2	24.8	9.1	8.9	45.6	54.4	30.3

SD, Standard deviation; N/A, not available

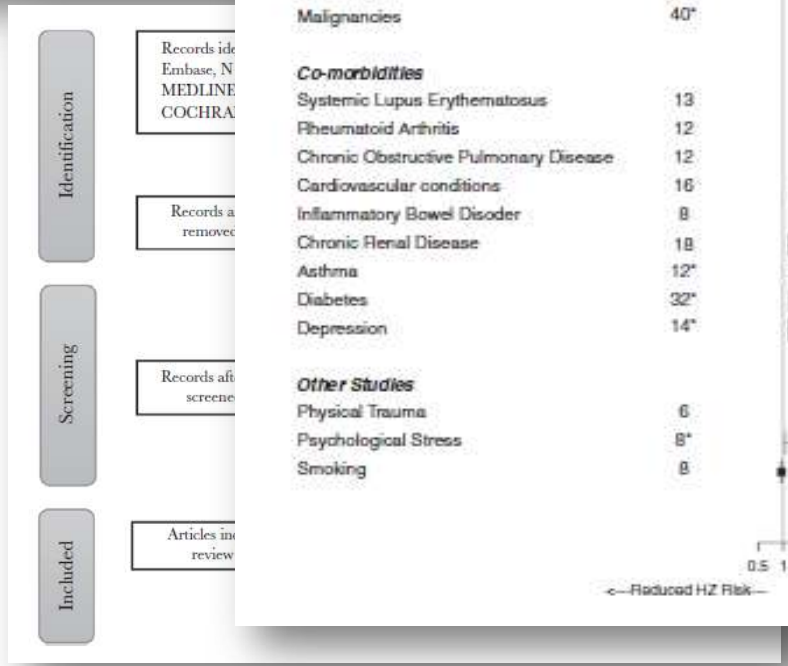
Open Forum Infectious Diseases

REVIEW ARTICLE

Risk Factors for He

Fawziah Marra, Kamalpreet Parhar, Bill Huang, a

Faculty of Pharmaceutical Sciences, University of British Colum



Risk Factor	No. of Studies	Effect Estimate	Pooled Effect Estimate with 95% CI	I^2	*P* Value
Innate Characteristics					
Family History	9		OR: 2.48 (1.70–3.60)	94.40%	<0.0001
Age	39		RR: 1.65 (1.37–1.97)	100.00%	<0.0001
Sex (Women)	56*		RR: 1.19 (1.14–1.24)	99.40%	<0.0001
Race (Black)	17*		RR: 0.69 (0.56–0.85)	97.90%	<0.0001
Immunosuppression					
HIV/AIDS	16*		RR: 3.22 (2.40–4.33)	98.10%	<0.0001
Malignancies	40*		RR: 2.17 (1.86–2.53)	99.60%	<0.0001
Co-morbidities					
Systemic Lupus Erythematosus	13		RR: 2.08 (1.56–2.78)	98.00%	<0.0001
Rheumatoid Arthritis	12		RR: 1.51 (1.31–1.75)	99.10%	<0.0001
Chronic Obstructive Pulmonary Disease	12		RR: 1.41 (1.28–1.55)	99.10%	<0.0001
Cardiovascular conditions	16		RR: 1.34 (1.17–1.54)	97.50%	<0.0001
Inflammatory Bowel Disoder	8		RR: 1.32 (1.24–1.40)	83.00%	<0.0001
Chronic Renal Disease	18		RR: 1.29 (1.10–1.51)	99.50%	<0.0001
Asthma	12*		RR: 1.24 (1.16–1.31)	97.30%	<0.0001
Diabetes	32*		RR: 1.24 (1.14–1.35)	99.50%	<0.0001
Depression	14*		RR: 1.23 (1.11–1.36)	98.40%	<0.0001
Other Studies					
Physical Trauma	6		RR: 2.01 (1.39–2.91)	92.50%	<0.0001
Psychological Stress	8*		RR: 1.47 (1.03–2.10)	99.50%	<0.0001
Smoking	8		RR: 0.96 (0.95–0.97)	36.40%	0.0057

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REVIEW

Herpes zoster and COVID-19 infection: a coincidence or a causal relationship?

Salim Ali Algaadi[1]

Received: 22 July 2021 / Accepted: 5 October 2021 / Published online: 22 November 2021

Özellikle lenfopenik COVID hastaları…
Yetersiz kanıt düzeyi
Nedensel ilişki araştırmaya muhtaç

Öneri:
Özellikle kırılgan hastalar, komorbid hastalıkları olanlar ve yaşlıların aşılanması…


BULGARIA
Istanbul
GEORGIA
ARMENIA
Ankara
GREECE
TURKEY
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SYRIA
Sea

Journal of Infection and Public Health (2013) 6, 115–119

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Seroprevalence of varicella-zoster virus in prevaccine era: A population-based study i Turkey

Sükran Kose[a], Aliye Mandiracioglu[b,*], Süheyla Serin Senger[a], Yıldız Ulu[a], Gulsun Cavdar[a], Basak Gol[a], Ilhan Gurbuz[c], Senol Sariavci[c], Nese Nohutcu[c]

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Table 1 Demographic features and seropositivity distributions.

	Total		Seropositive	
	N	%	*N*	%
Gender				
Male	806	38.2	767	95.2
Female	1304	61.8	1223	93.8
Age groups				
15–19 years	135	6.5	126	93.3
20–29 years	340	16.3	321	94.4
30–39 years	427	20.5	401	93.9
40+ years	1180	56.7	1114	94.4
Education				
Illiterate	236	11.3	223	94.5
Primary school	921	43.9	867	94.1
Secondary school	220	10.5	211	95.9
High school	425	20.3	397	93.4
University	294	14.0	278	94.6
Occupation				
Housewife	865	41.7	810	93.6
Retired	353	17.1	340	96.3
Student	121	5.8	112	92.6
Public employee	105	5.1	98	93.3
Worker	190	9.2	180	94.7
Other	438	21.1	413	94.3
Monthly income TL				
<1000	1280	64.1	1211	94.6
1000–2000	517	25.9	482	93.2
>2000	201	10.0	193	96.0
Marital status				
Married	1610	77.1	1519	94.3
Single	385	18.4	358	93.0
Separated/divorced	94	4.5	92	97.9
Living area				
Rural	706	33.4	641	90.8
Urban	1406	66.6	1351	96.1
Household size				
1–4 individuals	632	78.4	1537	94.2
5–9 individuals	430	20.7	406	94.4
10+ individuals	19	0.9	19	100.0

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Vaccine 20 (2002) 1425–1428

Vaccine

www.elsevier.com/locate/vaccine

Varicella seroprevalence in a random sample of the Turkish population

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[c] *Department of Microbiology, Faculty of Medicine, Istanbul University, Istanbul, Turkey*

9 bölge-merkez
30 yaş altı polpülasyon

Table 1
Distribution of subjects selected for sampling, interviewed and underwent blood sampling in nine provinces (Turkey 1998)

Provinces	Number of sampled subjects	Positive seroprevalence	Number of interviewed subjects		Number of subjects undergoing blood analysis	
			Number	Percentage[a]	Number	Percentage[b]
Istanbul	600	79.8	563	93.8	554	98.4
Ankara	600	78.2	636	106.0	606	95.3
Izmir	600	73.2	627	104.5	612	97.6
Adana	600	80.9	570	95.0	543	95.3
Diyarbakir	600	83.6	540	90.0	468	86.7
Samsun	450	75.8	430	95.6	312	72.6
Erzurum	450	76.9	387	86.0	568	99.8
Trabzon	450	78.2	387	86.0	371	95.9
Edirne	450	69.7	379	84.2	353	93.1
Total	4800	77.8	4701	97.9	4387	93.3

[a] Percentages calculated for the number of sampled subjects in each city.
[b] Percentages calculated for the number of interviewed subjects in each city.

Table 2
Several characteristics of subjects participating in VZV seroprevalence study in nine provinces, Turkey (1998)

Characteristic	Number	Percentage
Age		
0	57	1.3
1–3	495	11.3
4–6	503	11.5
7–9	513	11.7
10–14	864	19.7
15–19	746	17.0
20–24	611	13.9
25–29	546	12.5
Unknown	52	1.1
Total	4387	100
Sex		
Male	2076	47.3
Female	2259	51.5
Unknown	52	1.2
Total	4387	100
Family size		
Five and less	2819	64.3
Six and more	1518	34.6
Unknown	50	1.1
Total	4387	100
Location		
Urban area	2863	65.3
Suburb	279	6.3
Rural area	1245	28.4
Total	4387	100

Table 3
Positive VZV seroprevalence for population under age 30 by several socio-demographic characteristics in nine cities of Turkey (1998)

Characteristic	Number	Positive seroprevalence (%)
Age ($n = 4335$)		
0	57	19.3
1–3	495	32.5
4–6	503	59.4
7–9	513	81.1
10–14	864	88.1
15–19	746	90.2
20–24	611	91.2
25–29	546	91.9
Sex ($n = 4335$)		
Male	2076	76.0
Female	2259	79.7
Family size ($n = 4387$)		
Five and less	2819	78.1
Six and more	1518	80.6
Location		
Urban area	2863	79.0
Suburb	279	74.8
Rural area	1245	76.3
Total	4387	77.8

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https://doi.org/10.1080/21645515.2020.1788861

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RESEARCH PAPER

Incidence of varicella and herpes zoster after inclusion of varicella vaccine in national immunization schedule in Turkey: time trend study

Ahmet Soysal[a], Erdem Gönüllü[a], İsmail Yıldız[b], and Metin Karaböcüoğlu[a]

[a]Clinic of Pediatrics, Ataşehir Memorial Hospital, Istanbul, Turkey; [b]Clinic of Pediatrics, Şişli Memorial Hospital, Istanbul, Turkey

2011-2019 yılları
1.090.803 başvuru
1 aylık-18 yaş
684 Suçiçeği
2049 Zona

Table 2. Varicella vaccine immunization status of study population with respect to age stratas.

Year	Children age ≤ 5 years	Children age 6–17 years	Patient age ≥ 18 years
2011	None	None	None
2012	None	None	None
2013*	Yes for children age ≤ 12 months	None	None
2014	Yes for children age ≤ 24 months	None	None
2015	Yes for children age ≤ 36 months	None	None
2016	Yes for children age ≤ 48 months	None	None
2017	Yes for children age ≤ 60 months	None	None
2018	All	Yes for children age ≤ 12 months	None
2019	All	Yes for children age ≤ 24 months	None

*Varicella vaccination introduced Turkish national immunization program in year 2013. World Health Organization (WHO) reported a national coverage for the Varicella vaccine 97% in 2013, 96% in 2014, 97% in 2015, 98% in 2016, 96% in 2017 and in 2018

Table 1. Incidence of varicella with respect to age stratas and years.

YEAR	No of total patient population	No. of children age ≤ 5 years admitted	No. (%) children diagnosis with varicella age ≤ 5 years	Incidence of varicella per 100000 children age ≤ 5 years	No. of children age 6–17 years admitted	No. (%) children diagnosis with varicella age 6–17 years	Incidence of varicella per 100000 children age 6–17 years	No. of patient age > 17 years admitted	No. (%) patient diagnosis with varicella age > 17 years	Incidence of varicella per 100000 patient age > 17 years
2011	91965	10323	30	290	5038	43	853	76604	4	52
2012	110205	11844	43	363	5646	41	726	92715	8	8
2013	112785	14489	52	358	6897	67	971	91403	21	22
2014	118248	15491	30	193	8906	35	392	93851	5	5
2015	122183	15613	28	179	8205	48	585	98365	13	13
2016	128305	16122	21	130	9571	52	543	102612	7	6
2017	136317	17906	12	67	10479	36	343	107932	15	13
2018	132831	18140	4	22	11558	25	216	103133	9	8
2019	138254	16029	4	24	15280	26	170	106975	5	4

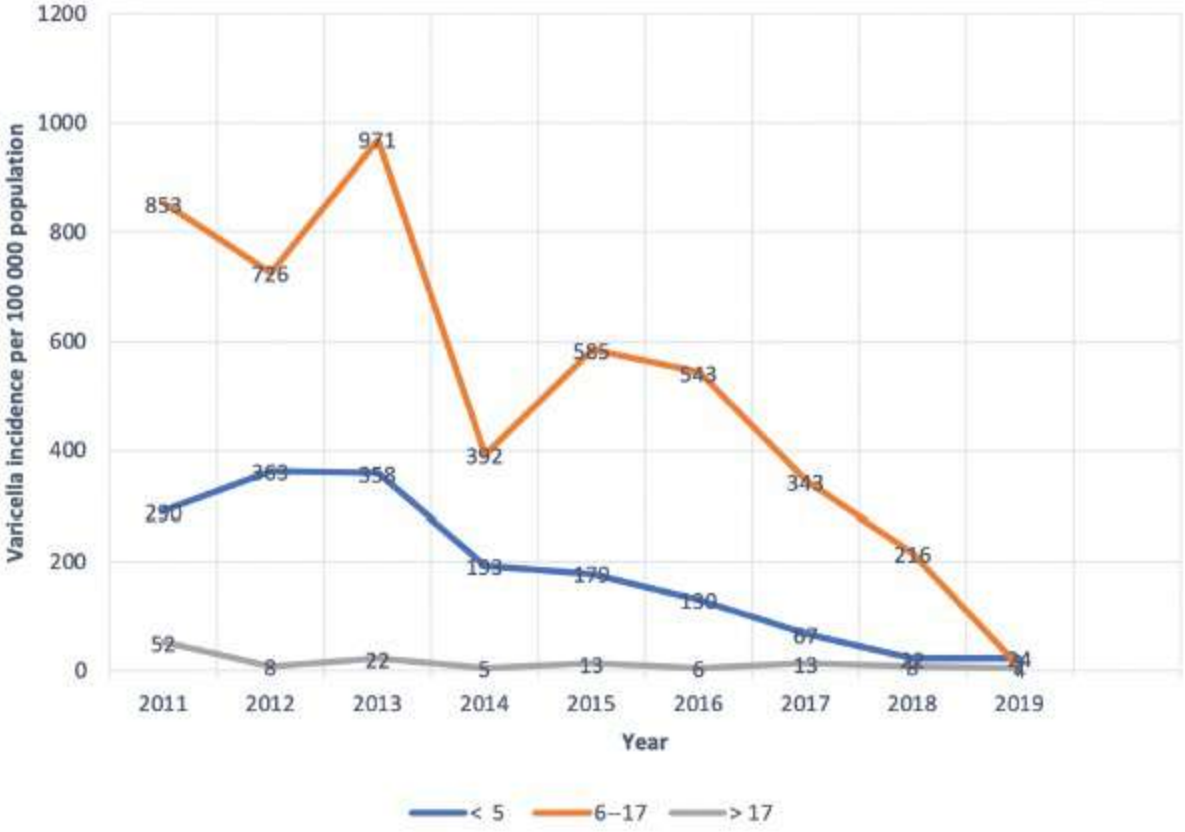


Figure 1. The incidences of varicella with respect to age stratas (year) by calendar year 2011–2019.

Table 3. Incidence of Herpes Zoster with respect to age stratas and years.

YEAR	No. of children age ≤ 5 years admitted	No. (%) children diagnosis with zoster age ≤ 5 years	Incidence of zoster per 100000 children age ≤ 5 years	No. of children age 6–17 years admitted	No. (%) children diagnosis with zoster age 6–17 years	Incidence of zoster per 100000 children age 6–17 years	No. of patient age > 17 years admitted	No. (%) patient diagnosis with zoster age > 17 years	Incidence of zoster per 100000 patient age > 17 years
2011	10323	1	9	5038	1	19	76604	140	182
2012	11844	4	33	5646	8	141	92715	184	198
2013	14489	0	0	6897	4	57	91403	186	203
2014	15491	1	6	8906	3	33	93851	184	196
2015	15613	0	0	8205	3	36	98365	223	226
2016	16122	3	18	9571	4	41	102612	235	229
2017	17906	3	16	10479	3	28	107932	244	226
2018	18140	5	27	11558	5	43	103133	249	241
2019	16029	6	37	15280	9	58	106975	305	285

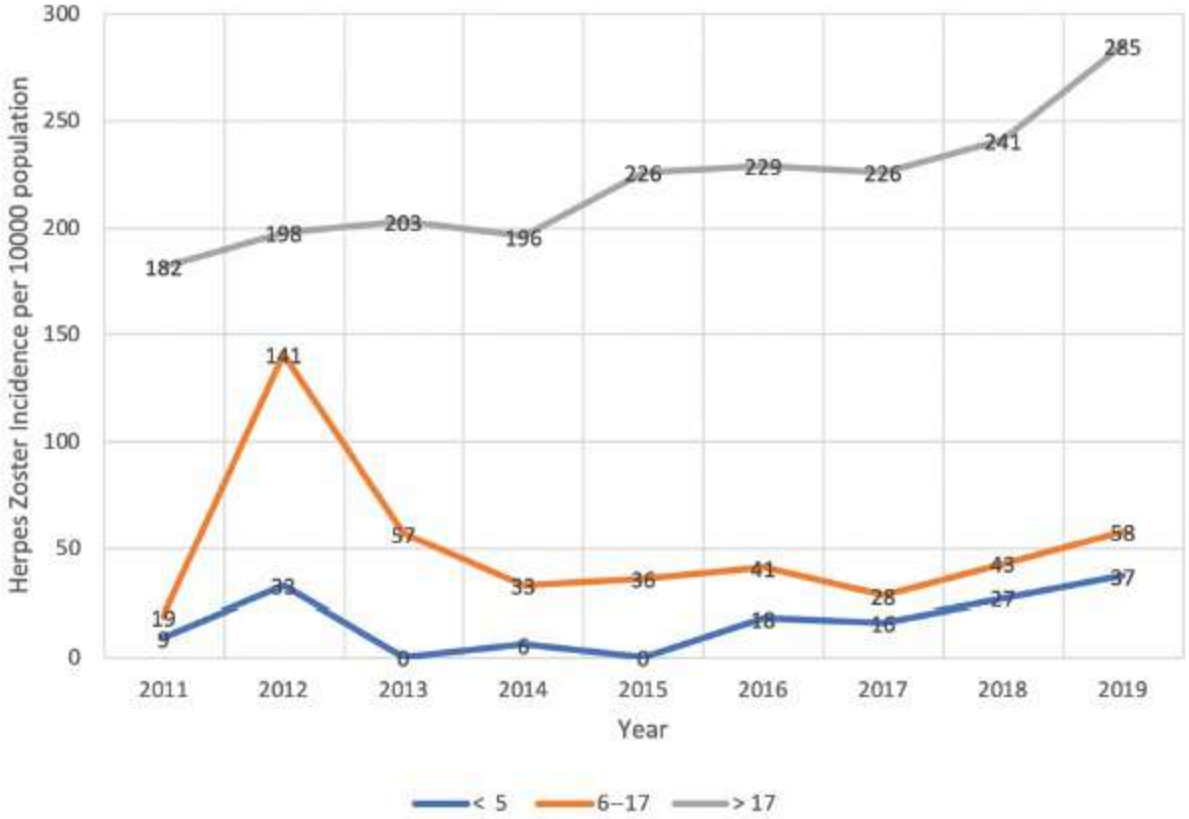


Figure 2. The incidences of Herpes Zoster with respect to age stratas by calendar year 2011–2019.

Table 4. Incidences of Herpes Zoster with respect to adulthood age stratas by calendar year.

YEAR	No. of patients age 18–44 years admitted	No. (%) patients diagnosis with zoster age 18–44 years	Incidence of zoster per 100000 patients age 18–44 years	No. of patients age 45–64 years admitted	No. (%) patients diagnosis with zoster age 45–64 years	Incidence of zoster per 100000 patients age 45–64 years	No. of patient age > 65 years admitted	No. (%) patient diagnosis with zoster age ≥ 65 years	Incidence of zoster per 100000 patient age ≥ 65 years
2011	39756	83	208	24758	35	141	12090	22	181
2012	52849	119	225	26922	41	152	12944	22	169
2013	62403	120	192	15757	52	330	13243	16	120
2014	51795	118	227	28921	40	138	13135	28	213
2015	54544	128	234	30233	62	205	13588	33	242
2016	61785	151	244	26393	60	227	14434	28	193
2017	64431	149	231	28340	57	201	15161	38	250
2018	63361	158	249	23720	62	261	16052	32	199
2019	62012	188	303	28281	89	314	16682	34	203

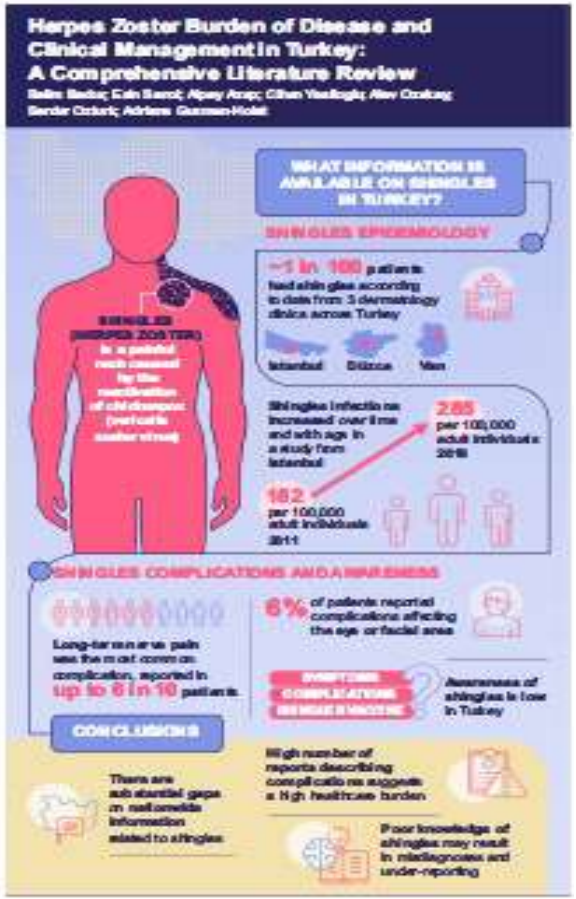
Infect Dis Ther
https://doi.org/10.1007/s40121-023-00849-3

REVIEW

Herpes Zoster Burden of Disease and Clinical Management in Turkey: A Comprehensive Literature Review

Selim Badur · Esin Senol · Alpay Azap · Cihan Yesiloglu · Alev Ozakay · Serdar Ozturk · Adriana Guzman-Holst

Results: No studies reported VZV or HZ epidemiological data at a national level. One large retrospective study in Istanbul reported that HZ incidence rates significantly increased in adults 18–44 years of age between 2011 and 2019. Four



Received: May 24, 2023 / Accepted: July 14, 2023

Table 2 Studies reporting the prevalence of HZ complications in Turkey

References	Year	*N*	Mean age, years	Patients with complications (%)			
				Any	PHN	Ophthalmic involvement	Ramsay Hunt syndrome
Acar et al. [53]	2019–2020	19	68.5	NR	31.6	63.2	NR
Çeltek and Ünlü[a] [32]	2009–2019	100	64.1	NR	8	NR	NR
Acer et al. [54]	2015–2016	166	51.48	NR	27.7	6.02	NR
Atış et al. [26]	2015–2016	53	72.92	13.2	5.7	5.7	NR
Dogan et al. [29]	2016	35	42.45	14.3[b]	NR	NR	NR
Özkol et al. [27]	2007–2010	115	42.21	13	NR[c]	NR	NR
Küçükçakır et al. [28]	1999–2010	312	49.6	21.4	21.47	NR	0.64
Yürük et al. [55]	NR	90	58.8	NR	58.9	NR	NR

HZ herpes zoster, *NR* not reported, *PHN* postherpetic neuralgia

[a]Cohort was exclusively patients with cancer

[b]May be related to treatment only; statistic was calculated on the basis of the reported 85.7% of patients recovering from HZ infection without any complications with treatment

[c]PHN was the most common reported complication; no statistic was provided

Fig. 1 Demographics of Turkey and the provinces with reports on HZ epidemiology, including studies of HZ in the general population and among patients with comorbidities; provinces with only case reports or series identified were not included. The locations of 8 centers in the VARICOMP study were not reported [35]; therefore, may not be represented in this figure. HZ incidence was only reported in Istanbul [21]. [a]Reported by Worldometer in 2023 [11]. [b]Reported by the Turkish Statistical Institute in 2021 [106]. *HZ* herpes zoster


COMING
Soon

Sabrınız için teşekkürler...

Varisella-zoster virüsü enfeksiyonu:

- Primer Enfeksiyon: Farklı aşamalarında eritematöz bir temelde veziküler lezyonlarla karakterize edilen varisella (suçiçeği)
  - Lezyonlar en çok yüz ve gövdede yoğunlaşmıştır.

- Sekonder Enfeksiyon: Zona olarak da bilinen herpes zoster, su çiçeği sırasında duyusal ganglionlara ulaşan latent VZV'nin yeniden aktivasyonundan kaynaklanır.
  - Genellikle tek veya iki bitişik dermatomda meydana gelen ağrılı, tek taraflı veziküler döküntü ile karakterizedir