Böbrek Yetmezlikli ve Hemodiyaliz Hastalarında KHB Yönetimi

Olgu Sunumları

Dr. Öğretim Üyesi Caner Öksüz

Sivas Cumhuriyet Üniversitesi

Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Anabilim Dalı

Olgu-1

- 60 yaş kadın hasta
- HBsAg + tetkik sonucu ile yönlendirildi
- 3 yıldır Hepatit B hastalığı olduğu söyleniyor
- Takipte değil
- Karaciğer biyopsisi ve tedavi öyküsü yok

Özgeçmiş

- Diabetes mellitus (5 yıldır)
- Hipertansiyon (10 yıldır)
- Kalp yetmezliği ve ritim bozukluğu (3 yıldır) tanıları mevcut

Soygeçmiş

- Ailede bildiği kadarıyla karaciğer kanseri ya da siroz olan yok

Kullandığı İlaçlar

- Furosemid
- Benidipin hidroklorür
- Apiksaban
- Metoprolol
- Digoksin
- Domperidon
- Pantoprazol
- İnsülin aspart + protamin kristalize insülin aspart

Fizik Muayene

- Bilateral akciğer bazallerinde solunum seslerinde hafif azalma

- Bilateral pretibial minimal ödem tespit edildi

Laboratuvar Sonuçları

Seroloji-ELISA	Sonuç
HBsAg	**Pozitif**
Anti-HBs	Negatif
Anti-HBc IgM	Negatif
Anti-HBc Total	**Pozitif**
HBeAg	Negatif
Anti-HBe	**Pozitif**
HBV DNA	**4 476 000 IU/mL**

Seroloji-ELISA	Sonuç
Anti-HCV	Negatif
Anti-HİV	Negatif

Hemogram	Sonuç
WBC (10^3/µl)	10,5
HB (g/dL)	14,9
PLT (10^3/µl)	255

Koagülasyon	Sonuç
INR	**1,63**
Aptt (sn)	32,3
PT (sn)	**18,8**

Biyokimya	Sonuç
AKŞ (mg/dL)	**178**
BUN (mg/dL)	**51**
Kreatinin (mg/dL)	**1,66**
eGFR (mL/dk/1,73 m2)	**38**
Total protein (g/dL)	6,96
Albumin (g/dL)	4,01
ALP (U/L)	110
ALT (U/L)	**47**
AST (U/L)	34
LDH (U/L)	243
GGT (U/L)	42
T. Bilirubin (mg/dL)	1,2
D. Bilirubin (mg/dL)	0,3

Laboratuvar Sonuçları

Tam İdrar Tetkiki (Stripli İdrar Testi)	Sonuç
pH	7
Glukoz	Normal
Keton	Negatif
Bilirubin	Negatif
Protein	Negatif
Dansite	1005

Spot İdrar	Sonuç
İdrar kreatinin (mg/dL)	52
Mikroalbumin (mg/dL)	39
Albumin/kreatinin (mg/g)	110

Görüntüleme Sonuçları

Hepatobilier USG	Sonuç
Hepatobilier USG	**Karaciğer boyutu 161 mm olup parankim kaba heterojen ve granüle görünümdedir, karaciğer konturları karaciğer hilus düzeyinde mikrolobülasyon göstermektedir. Kronik karaciğer hastalığı yönünden klinik laboratuvar korelasyon ve ileri tetkik önerilir.**

Bu hastada siroz düşünülmeli mi ?

AST-to-platelet ratio index (APRI)

$$\text{APRI} = \frac{\dfrac{\text{AST Level}}{\text{AST (Upper Limit of Normal)}}}{\text{Platelet Count } (10^9/\text{L})} \times 100$$

- AST upper limit of normal: Use 40 IU/L if none specified
- Platelet count: expressed in terms of X1000/microLitre

APRI online calculator:
https://www.hepatitisc.uw.edu/page/clinical-calculators/apri

0.381

FIB-4

$$\text{FIB-4} = \frac{\text{Age (years)} \times \text{AST (U/L)}}{\text{Platelet Count } (10^9/\text{L}) \times \sqrt{\text{ALT (U/L)}}}$$

- AST/ALT upper limit of normal: use 40 IU/L if none specified
- Platelet count: expressed in terms of X1000/microLitre

- Calculation needs a calculator, a phone app or an online tool example FIB-4 calculator:

https://www.hepatitisc.uw.edu/page/clinical-calculators/apri

1.265

Staging liver fibrosis and cirrhosis using non-invasive tests in people with chronic hepatitis B to inform WHO 2024 guidelines: a systematic review and meta-analysis

Antonio Liguori*, Mirko Zoncapè*, Giovanni Casazza, Philippa Easterbrook, Emmanuel A Tsochatzis

Interpretation These findings have informed new thresholds of APRI and FibroScan for diagnosis of significant fibrosis and cirrhosis in the 2024 WHO guidelines on chronic hepatitis B, with an APRI score greater than 0·5 or a FibroScan value greater than 7·0 kPa considered to identify most adults with significant fibrosis (≥F2) and an APRI score greater than 1·0 or a FibroScan value greater than 12·5 kPa to identify most adults with cirrhosis (F4). These patients are a priority for antiviral treatment.

METAVIR stage	F0	F1	F2	F3	F4
Definition	No fibrosis	Portal fibrosis without septa	Portal fibrosis with septa	Numerous septa without cirrhosis	Cirrhosis

Performance of APRI and FIB-4

	APRI (low cut-off)	APRI (high cut-off)	FIB-4 (low cut-off)	FIB-4 (high cut-off)
Significant fibrosis (METAVIR ≥F2)	0.5	1.5	1.45	3.25
Cirrhosis (METAVIR F4)	1.0	2.0	–	–

		APRI (low cut-off)	APRI (high cut-off)	FIB-4 (low cut-off)	FIB-4 (high cut-off)	Transient elastography
Significant fibrosis (METAVIR ≥F2)	Sensitivity (95% CI)	82 (77–86)	39 (32–47)	89 (79–95)	59 (43–73)	79 (74–84)
	Specificity (95% CI)	57 (49–65)	92 (89–94)	42 (25–61)	74 (56–87)	83 (77–88)
Cirrhosis (METAVIR F4)	Sensitivity 95% CI)	77 (73–81)	48 (41–56)	–	–	89 (84–92)
	Specificity (95% CI)	78 (74–81)	94 (91–95)	–	–	91 (89–93)

World Health Organization

Şu anda antiviral tedavi başlanmalı mı, izlem mi yapılmalı?

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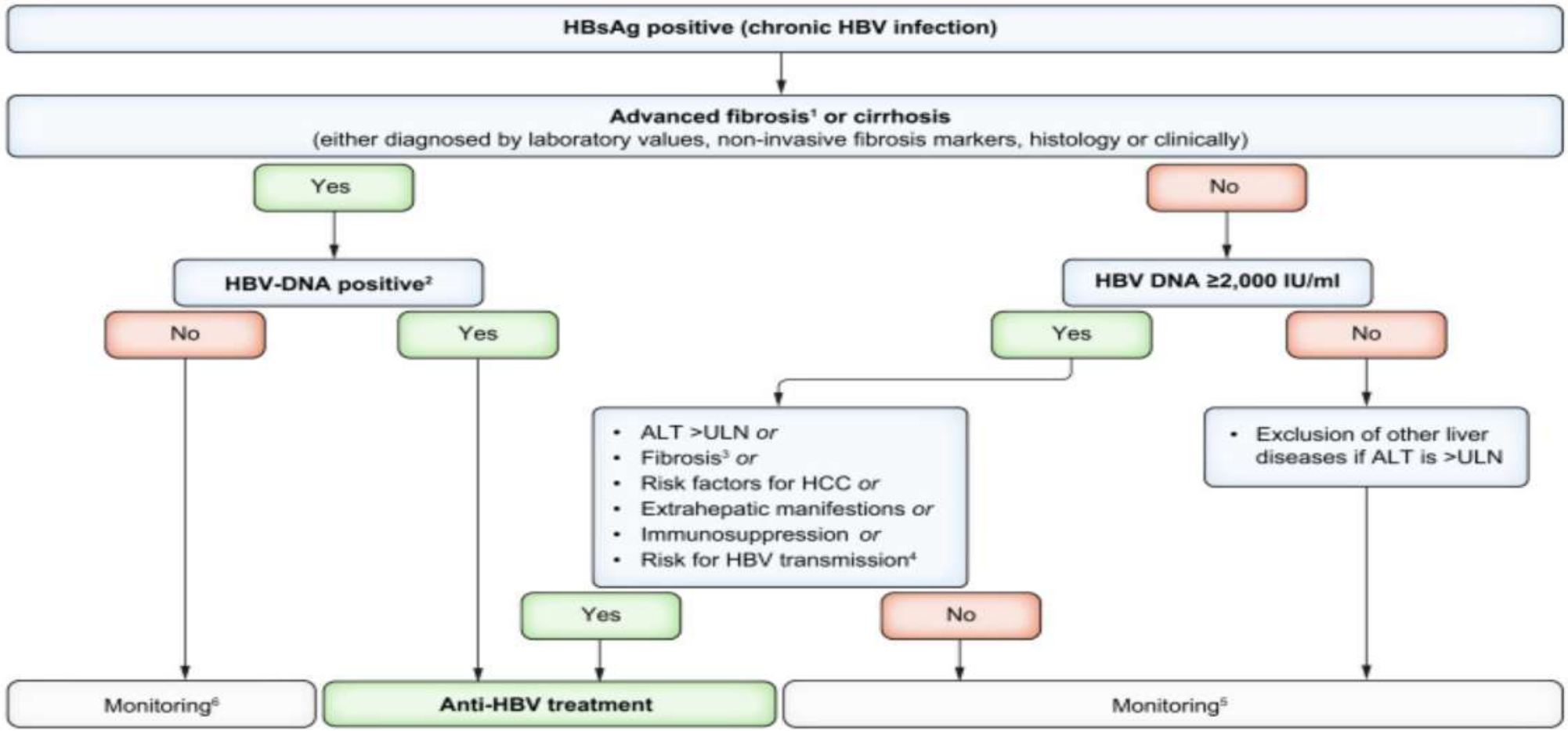


Hangi NA tercih edilmelidir?

eGFR (mL/dk/1,73 m2)	38
Albumin/kreatinin (mg/g)	110

KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease

KDIGO: Prognosis of CKD by GFR and albuminuria categories

GFR categories (ml/min/1.73 m²) Description and range				Persistent albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–300 mg/g 3–30 mg/mmol	>300 mg/g >30 mg/mmol
	G1	Normal or high	≥90			
	G2	Mildly decreased	60–89			
	G3a	Mildly to moderately decreased	45–59			
	G3b	Moderately to severely decreased	30–44			
	G4	Severely decreased	15–29			
	G5	Kidney failure	<15			

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red: very high risk. GFR, glomerular filtration rate.

REVIEW ARTICLE OPEN ACCESS

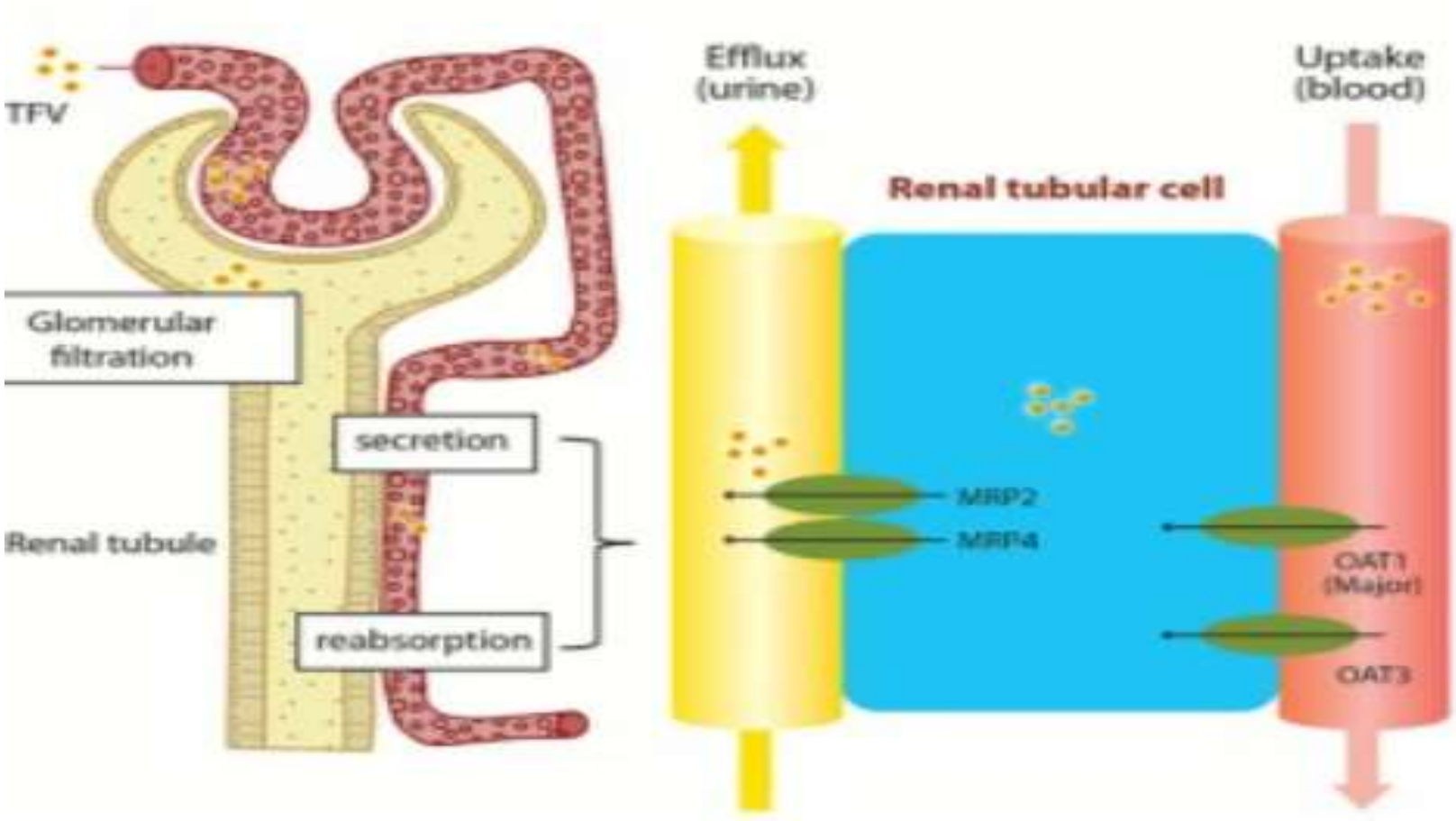
Review Article: Renal Safety Profiles of Tenofovir Alafenamide, Tenofovir Disoproxil Fumarate, and Entecavir for the Treatment of Chronic Hepatitis B Infection—General and Special Populations

Lung-Yi Mak[1] | Tsung-Hui Hu[2] | Desmond Y. H. Yap[3]

TABLE 1 | Guideline-recommended conditions that require avoidance of tenofovir disoproxil fumarate (TDF) treatment in patients with chronic hepatitis B.

Guideline	EASL 2025 [13]	WHO 2024 [14]	AASLD/IDSA 2025 [15]
	– GFR decreases; – Tubulopathy occurs; or – Hypophosphatemia or osteoporosis develops	– CrCl falls below 50 mL/min; – Progressive decline of renal function occurs; or – Low bone mineral density is detected or suspected because of a fracture	– Presence of renal or bone disease

Abbreviations: AASLD, American Association for the Study of Liver Diseases; CrCl, creatinine clearance; EASL, European Association for the Study of the Liver; GFR, glomerular filtration rate; IDSA, Infectious Diseases Society of America; WHO, World Health Organization.



Mak LY, et al. Review Article: Renal Safety Profiles of Tenofovir Alafenamide, Tenofovir Disoproxil Fumarate, and Entecavir for the Treatment of Chronic Hepatitis B Infection-General and Special Populations. 2026

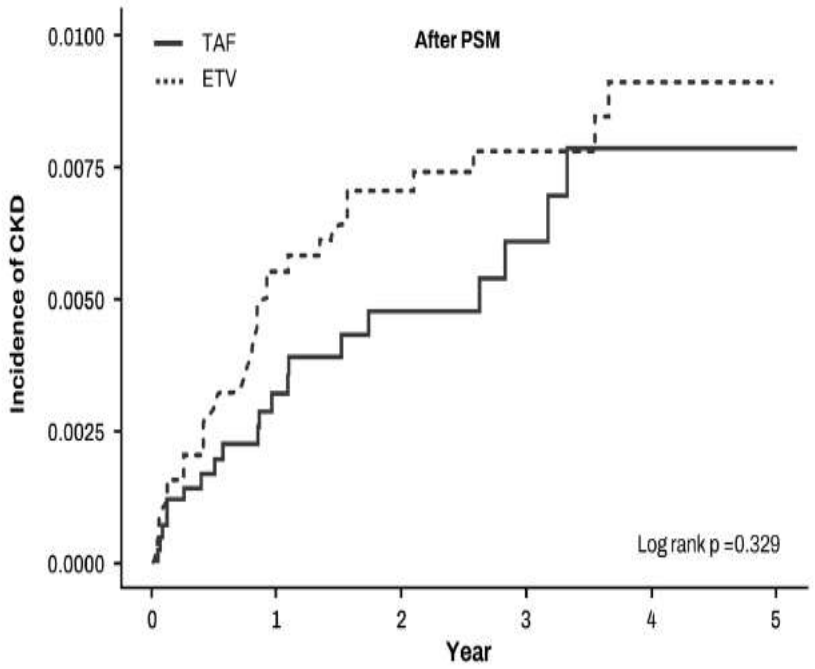
scientific reports

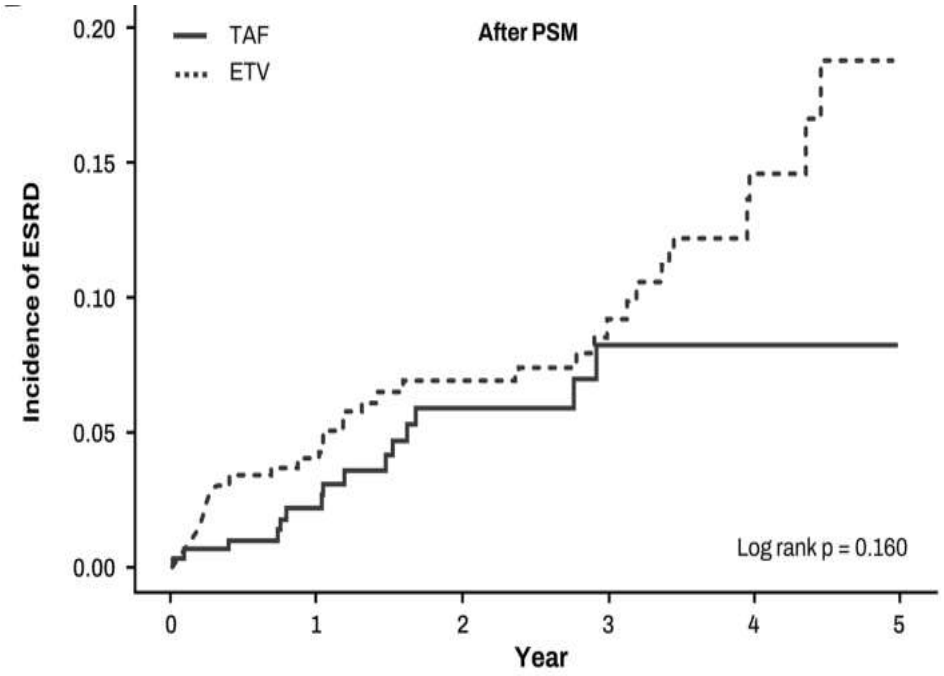
Check for updates

OPEN

Nationwide analysis of renal outcomes in chronic hepatitis B patients treated with Tenofovir Alafenamide vs. Entecavir

Hyuk Kim[1,5], Jae Young Kim[2,5], Hye-Jin Yoo[2], Log Young Kim[3], Jeong-Ju Yoo[1,4], Sang Gyune Kim[1] & Young-Seok Kim[1]





Two drugs for PBC added to the Hepatology Drug Interaction checker: **Bezafibrate** and **Elafibranor (Iqirvo®)**

Interaction Checker

Access our free, comprehensive and user-friendly drug interaction charts

🔴 Birlikte uygulamayın. 🟧 Potansiyel Etkileşim 🔺 Potansiyel Zayıf Etkileşim 🟢 Herhangi bir etkileşim beklenmiyor.

	TAF
Apixaban	🟢
Digoksin	🟢
Domperidon	🟢
Furosemid	🟢
İnsülin	🟢
Metoprolol	🟢
Pantoprazol	🟢

Tenofovir alafenamid	
≥15	25 mg/gün
<15 ve hemodiyalize giren hasta	25 mg/gün (Hemodiyaliz günlerinde, hemodiyaliz tedavisinin tamamlanmasından sonra uygulanmalıdır)
Hemodiyalize girmeyen ve kreatinin klerensi < 15 ml/dak olan hastalar için	Öneri yok

Bu hastada takip nasıl yapılmalıdır, nelere dikkat edilmelidir?

TÜRKİYE HEPATİT B

TANI VE TEDAVİ

KILAVUZU

2023

Herhangi bir NA ile tedavi edilen böbrek hastalığı riski olan hastalar ve böbrek hastalığı riskine bakılmaksızın TDF ile tedavi edilen tüm hastalar, en az tahmini glomerüler filtrasyon oranı (eGFR), idrarda proteinüri ve serum fosfat seviyeleri de dahil olmak üzere periyodik 6 ay aralarla böbrek fonksiyonları için takip edilmelidir. Serum fosfat seviyeleri <2.5 mg/dl ya da eGFR < 60mL/dak altına indiğinde daha yakın renal fonksiyon takibi yapılması gereklidir.

Olgu-2

- 52 yaş erkek hasta
- Ailevi Akdeniz Ateşi (FMF) tanısı ile immunsupresan ilaç başlanması planlanıyormuş (Kanakinumab)
- Öncesinde polikliniğimize yönlendirildi

Özgeçmiş

- FMF (40 yıl)
- Astım (8 yıl)
- Osteoporoz (5 yıl)
- Hipertansiyon (4 yıl)

Kullandığı İlaçlar

- Kolşisin
- Kandesartan + hidroklorotiazid
- Asetilsalisilik asit
- Salbutamol inhaler

Fizik Muayene

- Belirgin obezitesi mevcut
- Hepatomegali saptandı
- Bilateral pretibial minimal ödem tespit edildi

Laboratuvar Sonuçları

Seroloji-ELISA	Sonuç
HBsAg	Negatif
Anti-HBs	Pozitif
Anti-HBc IgM	Negatif
Anti-HBc Total	**Pozitif**
HBV DNA	Negatif

Seroloji-ELISA	Sonuç
Anti-HCV	Negatif
Anti-HİV	Negatif

Hemogram	Sonuç
WBC (10^3/µl)	5,4
HB (g/dL)	13,3
PLT (10^3/µl)	267

Koagülasyon	Sonuç
INR	0,91
Aptt (sn)	27
PT (sn)	10,5

Biyokimya	Sonuç
AKŞ (mg/dL)	83
BUN (mg/dL)	18
Kreatinin (mg/dL)	1,14
eGFR (mL/dk/1,73 m2)	**71**
Total protein (g/dL)	6,4
Albumin (g/dL)	3,74
ALP (U/L)	81
ALT (U/L)	36
AST (U/L)	29
LDH (U/L)	233
GGT (U/L)	83
T. Bilirubin (mg/dL)	0,57
D. Bilirubin (mg/dL)	0,17

Laboratuvar Sonuçları

Tam İdrar Tetkiki (Stripli İdrar Testi)	Sonuç
pH	6
Glukoz	Normal
Keton	Negatif
Bilirubin	Negatif
Protein	++
Dansite	1015

Spot İdrar	Sonuç
Albumin/kreatinin (mg/g)	4120

Görüntüleme Sonuçları

Hepatobilier USG	Sonuç
Hepatobilier USG	Karaciğer boyutu interkostal incelemede yaklaşık olarak 185 mm ölçülmüş olup normalden büyüktür. Karaciğer kontur, parankim yapısı tabii olup eko paterni grade 2 olacak şekilde artmıştır (hepatosteatoz ?).

Bu hastaya Hepatit B reaktivasyon riski için antiviral profilaksi başlanması gerekir mi?

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EASL Clinical Practice Guidelines on the management of hepatitis B virus infection☆

European Association for the Study of the Liver*

situations, such as with B cell-depleting therapies.[578] Therefore, all individuals being considered for immunosuppressive therapy should undergo testing for HBsAg and anti-HBc antibodies. In HBsAg-negative/anti-HBc-positive individuals, baseline HBV DNA measurement is crucial to rule out active HBV replication. Additionally, anti-HBs testing is suggested in this setting to further stratify the risk of HBVr in HBsAg-negative/anti-HBc-positive individuals (see below) and to identify candidates for vaccination among those who are negative for both HBsAg and anti-HBc (see section "Prevention of HBV infection").

Table 14. Risk of HBV reactivation in individuals undergoing immunosuppressive therapies.

Risk of reactivation	HBsAg-positive or HBsAg-negative/anti-HBc-positive but HBV DNA-positive	HBsAg-negative/anti-HBc-positive (HBV DNA-negative)*
High >10%	• Immunosuppression in the context of stem cell transplantation[604] • High-dose combination chemotherapy (e.g. R-CHOP)[605] • B cell-depleting therapies[606] • CAR-T cell immunotherapy targeting B cells (BCMA, CD19)[577] • HCC therapies (TACE, radiotherapy, resection, ablation, systemic therapies)[598] • Anthracyclines[607] • Anti-TNF therapies[586] • Corticosteroids (>4 weeks, >20 mg/day)[608] • Cyclophosphamide[609] • JAK inhibitors[610] • IL-6 receptor antagonists[594] • Anti-IL-17[610–612] • Tyrosine kinase inhibitors[593,613]	• Immunosuppression in the context of stem cell transplantation[614] • High-dose combination chemotherapy (e.g. R-CHOP)[605] • B cell-depleting therapies[595,596] • HCC therapies (TACE)[599,600] • Anthracyclines[598] • T cell-depleting therapy belatacept – 17% in the setting of transplantation[615]
Moderate or intermediate (1-10%)	• Anti-IL-12/23 (e.g. ustekinumab)[586] • T cell activation blocking therapies (e.g., abatacept, belatacept)[616] • mTOR inhibitors[617]	• T cell-depleting therapies (e.g. abatacept[577]) • CAR-T cell immunotherapy • Corticosteroids (>40 mg)[585] • Anti-TNF therapies[586] • Anti-IL-12/23[586,610] • Anti-IL-17[610] • JAK inhibitors[590,610] • Tyrosine kinase inhibitors (e.g. ibrutinib) • Cyclophosphamide[524]
Low (<1%)	• Azathioprine[588] • Methotrexate[588] • Mycophenolate mofetil[588] • Corticosteroids (low-dose <10 mg/day)[608] • Immune checkpoint inhibitors[588]	• Azathioprine[588] • Methotrexate[588] • Mycophenolate mofetil[588] • mTOR inhibitors[617] • Corticosteroids (<40 mg/day) for ≤1 week)[585]

Clinical Practice Guidelines

JOURNAL OF HEPATOLOGY

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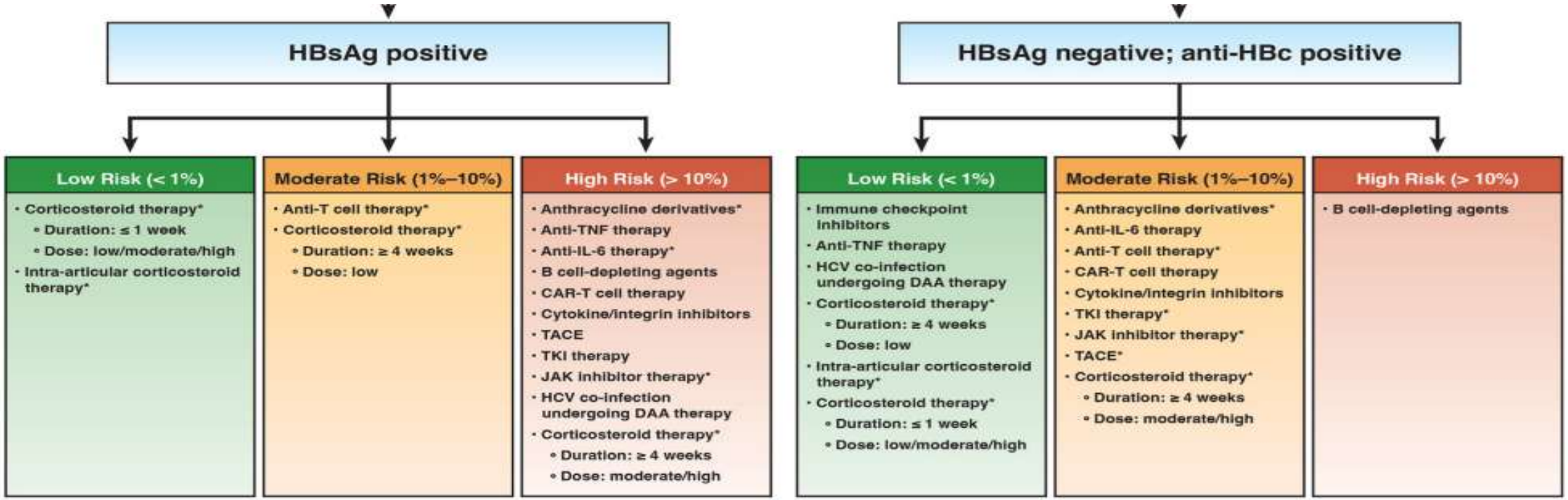
…natory 1%).

NA prophylaxis is recommended only for HBsAg-negative/anti-HBc-positive individuals with a high risk of HBVr, while close monitoring is advised for those at moderate or low risk.

AGA Clinical Practice Guideline on the Prevention and Treatment of Hepatitis B Virus Reactivation in At-Risk Individuals

Faisal S. Ali,[1] Mindie H. Nguyen,[2,3,4] Ruben Hernaez,[5,6,7] Daniel Q. Huang,[8,9] Julius Wilder,[10,11] Alejandro Piscoya,[12] **Tracey G. Simon,**[13,§] and **Yngve Falck-Ytter**[14,15,§]



High Risk	Recommend antiviral prophylaxis over monitoring alone (*strong recommendation, moderate certainty evidence*)
Moderate Risk	Suggest antiviral prophylaxis over monitoring alone (*conditional recommendation, moderate certainty evidence*)

Glucocorticoids (prednisone or equivalent): low dose, < 10 mg; moderate dose, 10–20 mg; high dose, > 20 mg

*Lower certainty in the evidence for this classification

NOTE:

- The risk of HBVr from exposure to multiple agents can be cumulative
- Using anti-HBs status to guide antiviral prophylaxis for all risk groups is not supported by the evidence
- Antiviral prophylaxis should be started before the start of risk-imposing therapy and continued for at least 6 months after discontinuation of risk-imposing therapy (at least 12 months for B cell-depleting agents)
- The risk for HBV reactivation refers to the duration of the risk-imposing state or up to one year, unless otherwise noted; longer-term risk has higher uncertainty

eGFR (mL/dk/1,73 m2)	71
Hepatobilier USG	Karaciğer eko paterni grade 2 olacak şekilde artmıştır (hepatosteatoz ?)

KDIGO: Prognosis of CKD by GFR and albuminuria categories

GFR categories (ml/min/1.73 m²) Description and range				Persistent albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–300 mg/g 3–30 mg/mmol	>300 mg/g >30 mg/mmol
	G1	Normal or high	≥90			
	G2	Mildly decreased	60–89			
	G3a	Mildly to moderately decreased	45–59			
	G3b	Moderately to severely decreased	30–44			
	G4	Severely decreased	15–29			
	G5	Kidney failure	<15			

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red: very high risk. GFR, glomerular filtration rate.

- Hangi NA tercih edilmelidir?

Ajan	**EMA Onay Tarihi**
Lamivudin	29 Temmuz 1999
Adefovir	06 Mart 2003
Entekavir	26 Haziran 2006
Telbivudin	24 Nisan 2007
Tenofovir disoproksil fumarat	15 Şubat 2008
Tenofovir alafenamid	09 Ocak 2017

HEP Drug Interactions

UNIVERSITY OF LIVERPOOL

TherEx
Centre for Experimental Therapeutics

Language

Apps

Do Not Coadminister | Potential Interaction | Potential Weak Interaction | No Interaction Expected

Results Key

	ETV
Aspirin	◆
Candesartan	◆
Colchicine	◆
Hydrochlorothiazide	◆
Salbutamol	◆

Bu hastada takip nasıl yapılmalıdır, nelere dikkat edilmelidir?

TÜRKİYE HEPATİT B

TANI VE TEDAVİ

KILAVUZU

2023

Herhangi bir NA ile tedavi edilen böbrek hastalığı riski olan hastalar ve böbrek hastalığı riskine bakılmaksızın TDF ile tedavi edilen tüm hastalar, en az tahmini glomerüler filtrasyon oranı (eGFR), idrarda proteinüri ve serum fosfat seviyeleri de dahil olmak üzere periyodik 6 ay aralarla böbrek fonksiyonları için takip edilmelidir. Serum fosfat seviyeleri <2.5 mg/dl ya da eGFR < 60mL/dak altına indiğinde daha yakın renal fonksiyon takibi yapılması gereklidir.

CKD is classified based on: • Cause (C) • GFR (G) • Albuminuria (A)				Albuminuria categories Description and range		
				A1	**A2**	**A3**
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–299 mg/g 3–29 mg/mmol	≥300 mg/g ≥30 mg/mmol
GFR categories (ml/min/1.73 m²) Description and range	**G1**	Normal or high	≥90	Screen 1	Treat 1	Treat 3
	G2	Mildly decreased	60–89	Screen 1	Treat 1	Treat 3
	G3a	Mildly to moderately decreased	45–59	Treat 1	Treat 2	Treat 3
	G3b	Moderately to severely decreased	30–44	Treat 2	Treat 3	Treat 3
	G4	Severely decreased	15–29	Treat* 3	Treat* 3	Treat 4+
	G5	Kidney failure	<15	Treat 4+	Treat 4+	Treat 4+

Hasta Rutin Hemodiyaliz Programına Alınıyor

Tarih	BUN (mg/dL)	Kreatinin (mg/dL)	eGFR (mL/dk/1,73 m2)	Albumin/kreatinin (mg/g)	Fosfor
22/08/2024	33,2	3,15	21	5480	4,8
13/10/2025	56,8	5,27			

TÜRKİYE HEPATİT B
TANI VE TEDAVİ
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2023

NA naif	
≥50	0.5 mg/gün
30-49	0.25 mg/gün veya 48 saatte bir 0.5 mg
10-29	0.15 mg/gün veya her 72 saatte bir 0.5 mg
<10 / hemodiyaliz / CAPD	0.05 mg/gün veya her 7 günde bir 0.5 mg

Bu hastada TAF profilaksisine geçiş düşünülebilir miydi?

World Journal of Hepatology

Submit a Manuscript: https://www.f6publishing.com

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DOI: 10.4254/wjh.v15.i8.964

ISSN 1948-5182 (online)

ORIGINAL ARTICLE

Retrospective Cohort Study

Tenofovir alafenamide significantly increased serum lipid levels compared with entecavir therapy in chronic hepatitis B virus patients

Rui-Min Lai, Shan Lin, Miao-Miao Wang, Na Li, Jia-Hui Zhou, Xiao-Yu Lin, Tian-Bin Chen, Yue-Yong Zhu, Qi Zheng

RESULTS

A total of 336 patients (75.60% male) were included; 63.69% received TAF and 36.31% received ETV. Compared with the ETV group, the TAF group had significantly higher TCHO levels after treatment (4.67 ± 0.90 *vs* 4.36 ± 1.05, $P = 0.006$). In a propensity score-matched model for body mass index, age, sex, smoking, drinking, presence of comorbidities such as NAFLD, cirrhosis, diabetes mellitus, and hypertension, TAF-treated patients had significantly increased TCHO levels compared to that at baseline ($P = 0.019$). There was no difference for the ETV group. Body mass index, sex, hypertension, baseline TCHO, and creatine kinase-MB isoenzyme levels were significantly associated with elevated TCHO levels in logistic regression analysis. However, 1-year TAF treatment did not increase the incidence of NAFLD.

CONCLUSION

A greater increase in TCHO was observed in patients with CHB receiving TAF compared to those receiving ETV. However, TAF-induced dyslipidemia did not increase the incidence of NAFLD.

Keywords: Tenofovir alafenamide, Entecavir, Hepatitis B virus, Serum lipid, Metabolic factor


YILDIZ DAĞI
DİVRİĞİ ULU CAMİİ
ÇİFTE MİNARELİ GÖKMEDRESE
SİVAS KONGRE BİNASI
SIZIR ŞELALESİ
GÖKPINAR GÖLÜ
EĞRİ KÖPRÜ
ÂŞIK VEYSEL
PİR SULTAN ABDAL
SİVAS