

Dijabetična polineuropatija i hronični bol

Doc. dr sc. med. Zoran Vukojević
Univerzitetski klinički centar Republike Srpske
Banja Luka



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VASKULARNE KOMPLIKACIJE DM

Mikrovaskularne komplikacije

1. Dijabična polineuropatija

2. Dijabetična retinopatija

3. Dijabetična nefropatija

Makrovaskularne komplikacije

1. Srčani udar

2. Moždani udar

3. Okluzija perifernih arterija

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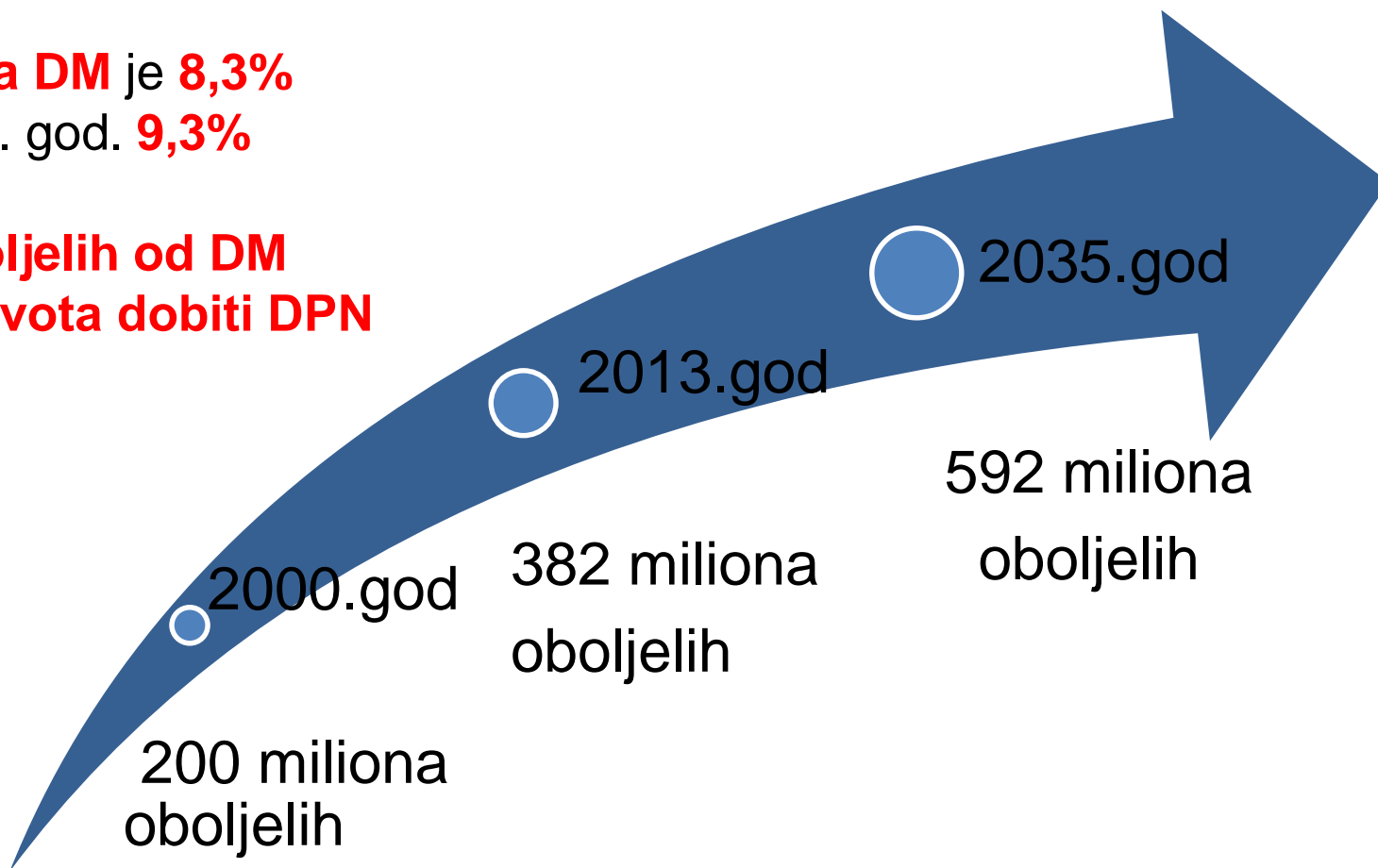
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Epidemiologija dijabetes melitusa

Prevalencija DM je 8,3%

SAD u 2017. god. **9,3%**

**30-50% oboljelih od DM
će tokom života dobiti DPN**



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Etiopatogeneza DPN

Najvažniji etiološki faktori:

- loša kontrola glikemije sa održavanjem njenih visokih vrijednosti
- dužina trajanja dijabetesa

Mogući dodatni faktori:

- hipertenzija
- pušenje
- dislipidemija
- hipoinsulinemija
- starost

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Patofiziološke promjene kod DPN

Kompleksna interakcija metaboličkih, neurovaskularnih i autoimunih faktora

Oštećenja malih krvnih sudova, oksigenacije i ishrane nerava

Prva su oštećena distalna senzorna vlakna i autonomna vlakna

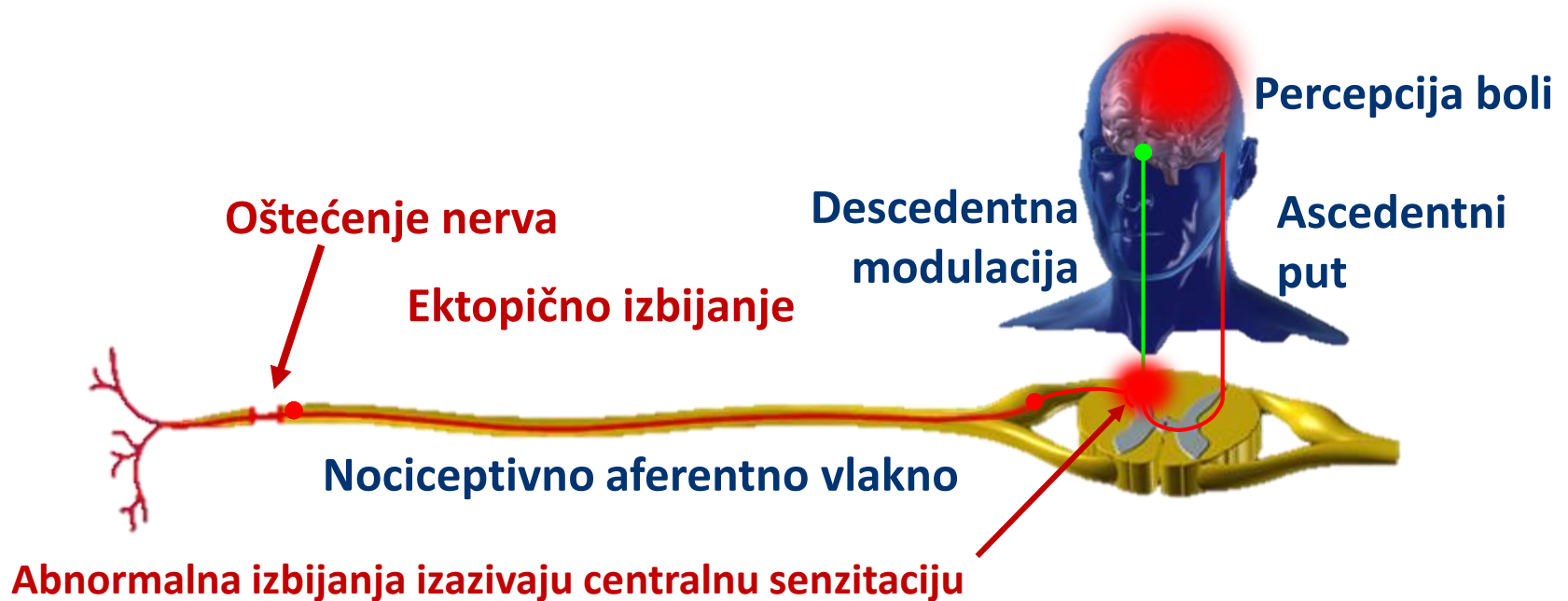
Oštećenja najdužih perifernih nerava su u završnoj fazi posredovana sa slobodnim radikalima

Uvođenje alfa-lipoičke kiseline kao snažnog antioksidansa u liječenje DPN

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„Periferna i centralna senzitivacija“ kod DPN



fNMR, PET: anatomske i neurohem. promjene neurona zadnjih rogova kičmene moždine, kore mozga i subkortikalnih dijelova mozga (povećana ekscitabilnost, spontana aktivnost neurona)
Uzrok bola je u PNS, ali se bol održava usled promjena u CNS-u

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TRPITI BOL JE ŠTETNO, NE SAMO NEPRIJATNO!



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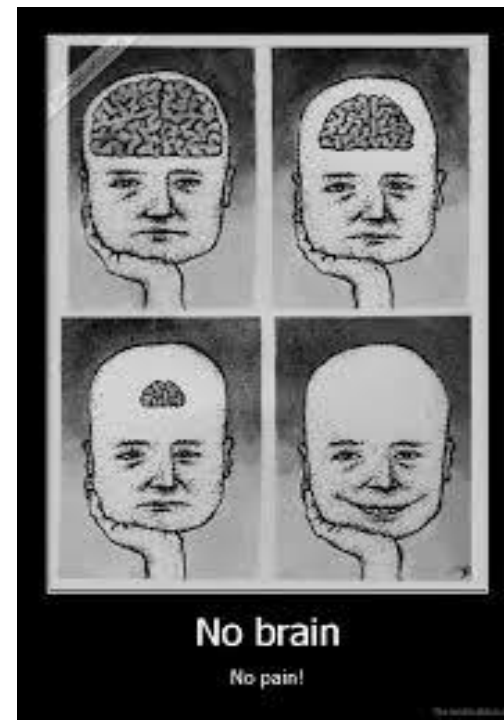
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„Pain is in the brain“

No brain



No pain



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„Pain is in the brain“



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Socioekonomski značaj DPN

DPN je najvažniji faktor rizika za razvoj dijabetičnog stopala i amputacije stopala

DPN je uzrok 50-75% netraumatskih amputacija stopala

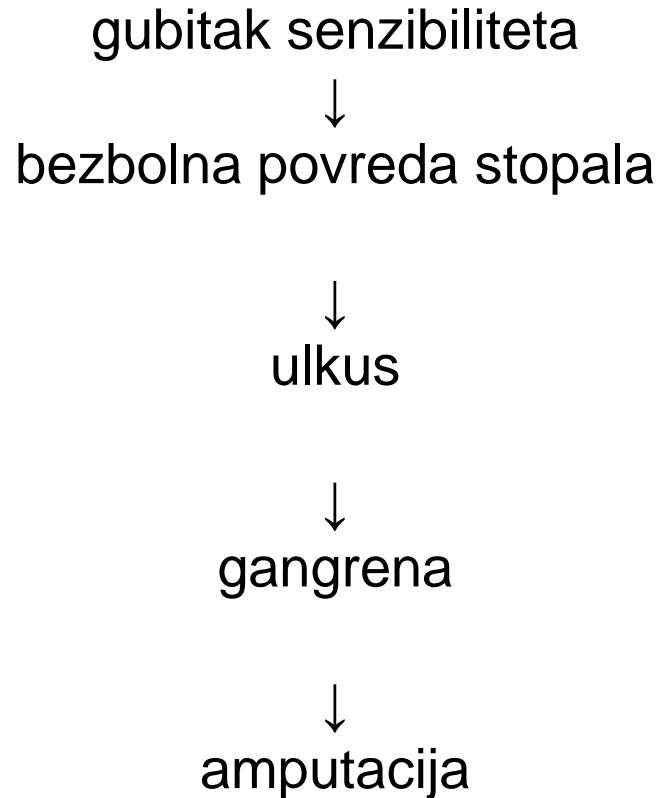
75% ovih amputacija se moglo sprejčiti boljim liječenjem DM i DPN

U SAD godišnje 86000, a u Njemačkoj 20000 netraumatskih amputacija stopala čiji je glavni uzrok DPN

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DIJABETIČNO STOPALO



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Klasifikacija dijabetičnih neuropatija

- 1. Distalna simetrična senzorimotorna polineuropatija (najčešći oblik, 80-90% svih dijabetičnih neuropatija)**
2. Autonomna dijabetična neuropatija
3. Fokalna i multifokalna dijabetična neuropatija
4. Mješovita forma

* Prva klasifikacija DN je urađena 1893. godine.

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Distalna, simetrična, senzorimotorna DPN



Senzitivni simptomi i znaci:

bolovi, peckanje, bockanje, žarenje, gorenje, hladnoća, utrnulost... u stopalima, grčevi u listovima...



Trofičke promjene kože stopala:

plantarni ulkusi, opasnost od gangrene i amputacije stopala



Motorni simptomi i znaci:

slabost i atrofija mišića stopala, potkoljenica...



Autonomni simptomi i znaci

promjene u KV, GIT i urogenitalnom sistemu

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Distalna simetrična, senzorimotorna DPN



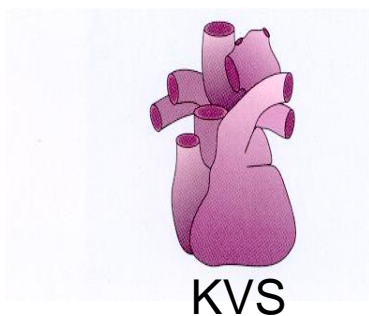
Postepen početak, sporo progresivan tok,
distalne, simetrične promjene

Ukoliko se neuropatija ne liječi adekvatno dolazi do
„penjanja“ senzitivnih simptoma: stopala,
potkoljenice, šake, natkoljenice...

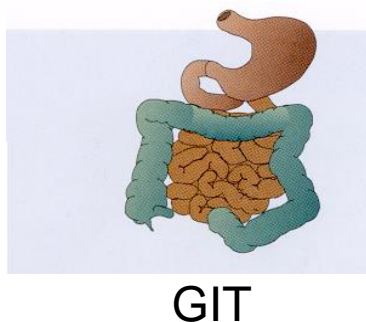
Zamora u nogama i otežanog hoda

Smanjenje opšte životne i radne sposobnosti

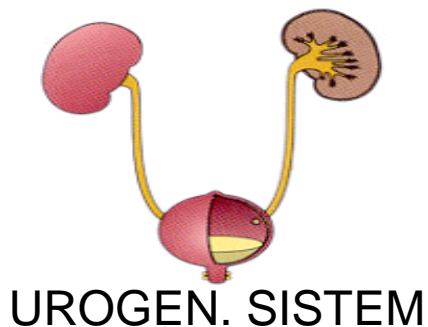
Autonomna DN



Asimptomatski infarkt
Asimptomatska ishemija
Aritmije...



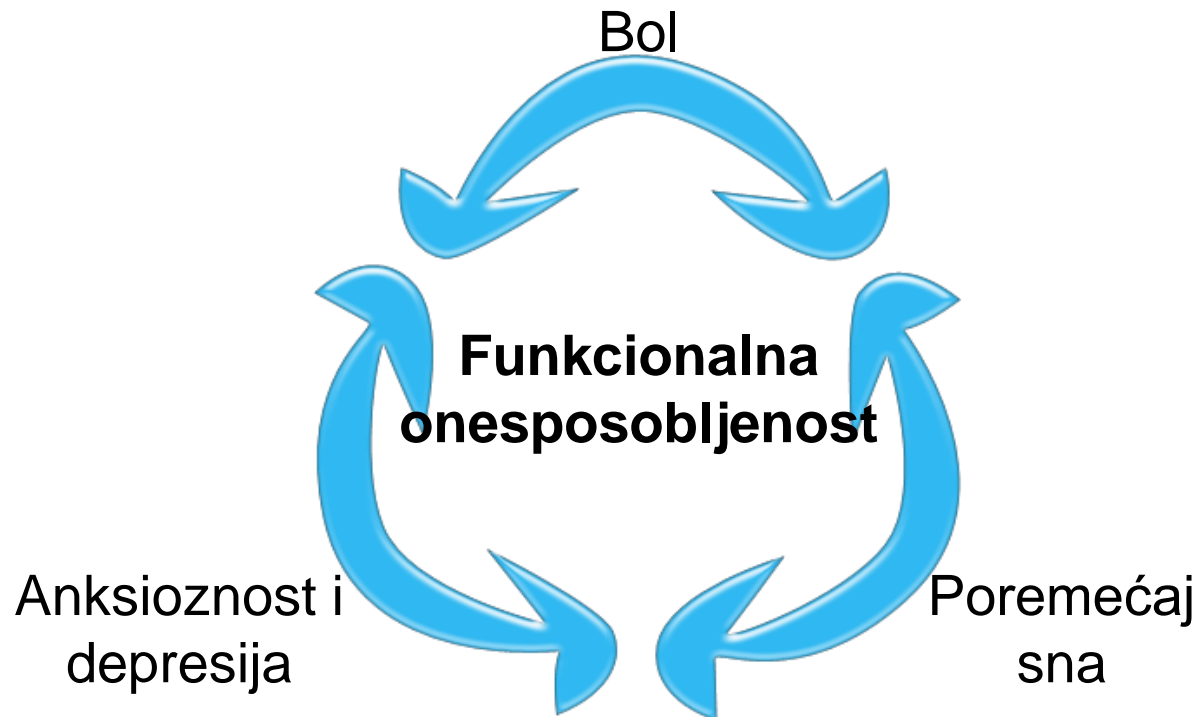
Smetnje apsorpcije
Opstipacija
Proljev...



Infekcije
Eretilna disfunkcija
Rezidualni urin...

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Povezanost između bola, spavanja i anksioznosti/depresije



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Dijagnoza DPN

Najčešće jednostavna, može da je postavi ljekar porodične medicine:

- Anamneza
- Klinički pregled (ispitivanje senzibiliteta, monofilament test)
- U nejasnim slučajima EMG i konsultacija neurologa

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Neuropatski bol kod DPN

“probadajući”

“trnci”

“strujni udar”



“pečenje”

“žarenje”

“utrnulost”

hladnoća stopala

Obratiti pažnju na verbalne
opise neuropatskog bola

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William Osler 1849.-1919.

„Listen to the patient: he is telling you the diagnosis.“

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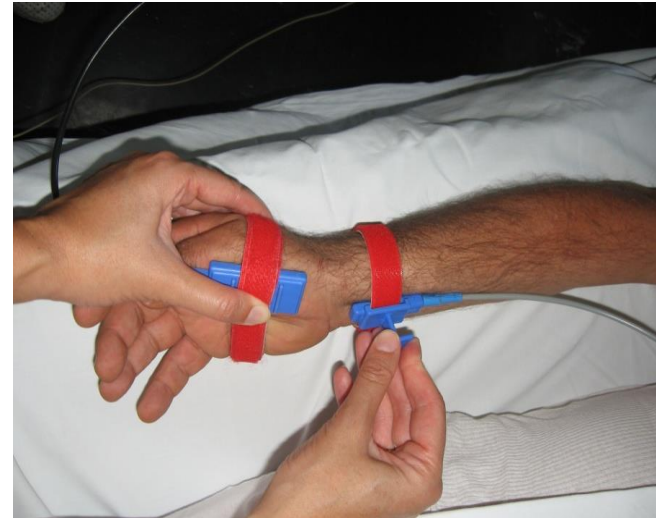
Dijagnoza DPN



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Dijagnoza DPN



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Opresz u dijagnozi DPN



Ukoliko je tok polineuropatije neuobičajen:

- izražene motorne slabosti
- brz tok bolesti
- Izražene hipotrofije mišića na početku bolesti...

Neophodan je pregled neurologa zbog moguće udruženosti drugih vrsta neuropatija sa DPN!

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TERAPIJA DIJABETIČNE NEUROPATIJE

Neophodno je liječenje započeti što ranije da bi se spriječile:

A: Patofiziološke promjene u kičmenoj moždini i mozgu

B: Kliničke komplikacije: ulkus, gangrena i amputacija stopala...

Značajan napredak u liječenju postignut je uvođenjem preparata alfa-lipoičke kiseline krajem 20.vijek a nakon objavljene studije ALADIN III

Prvi pokušaji liječenja sa alfa-lipoičkom kiselinom su bili prije 60 god. (različite doze i kombinacija oralne i parenteralne th)

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TERAPIJA DIJABETIČNE NEUROPATIJE

1. Terapija zasnovana na patogenetskom konceptu

A: Dobra glikoregulacija

B: Farmakoterapija metaboličkih poremećaja

Alfa-lipoička kiselina (amp. i caps.)

snažan antioksidans koji uništava slobodne radikale koji učestvuju u završnom oštećenju per.nerava u složenom lancu patofiz. zbivanja

Benfotiamin

2. Simptomatska terapija - liječenje neuropatskog bola

3. Fizikalna terapija

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TERAPIJA DIJABETIČNE NEUROPATIJE

Ukoliko su smetnje blage ili umjerene liječenje može voditi i **porodični ljekar** ili endokrinolog (sa peroralnim ili parenteralnim oblikom alfa-lipoičke kiseline, uz ostale lijekove)

Alfa-lipoička kiselina (amp. i caps.) se može istovremeno koristiti sa benfotiaminom i lijekovima za neuropatski bol (antiepileptici i antidepressivi)

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Alfa-lipoička kiselina - ALK

1. ALK amp. 600 mg + 0,9% NaCl 250,0 ml /30-60 min., 21 dan
bocu i sistem zaštiti od sunčeve svjetlosti
(zaštitna navlaka ili Alu folija)
2. nakon parenteralne th nastaviti peroralno:
600 mg ALK ujutro, pola sata prije jela, 3-6 mjeseci

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Koliko dugo liječiti bolesnika sa ALK (amp. i kapsulama)?

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Alfa-lipoička kiselina

Snažan antioksidans, uništava slobodne radikale

Peroralni oblik uzeti ujutro pola sata prije doručka (bolja resorpcija)

Ne preporučuje se istovremeno davanje sa preparatima željeza, magnezijumom i mliječnim proizvodima (zbog sadržaja kalcijuma)

Nema iskustva kod djece, adolescenata, trudnica

Prilikom istovremene primjene cisplatina gubi dejstvo

Sigurnost primjene alfa-lipoičke kiseline

ALK se smatra **izuzetno sigurnim lijekom**

Od nuspojava u velikim klinickim studijama prijavljene su samo **MANJE HIPOGLIKEMICNE EPIZODE** (vezano za povećanje senzitivnosti na insulin)

Vrlo rijetke i vrlo blage gastrične smetnje i kožne promjene

Povremeno se doze antidijabetika trebaju prilagoditi

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Benfotiamin

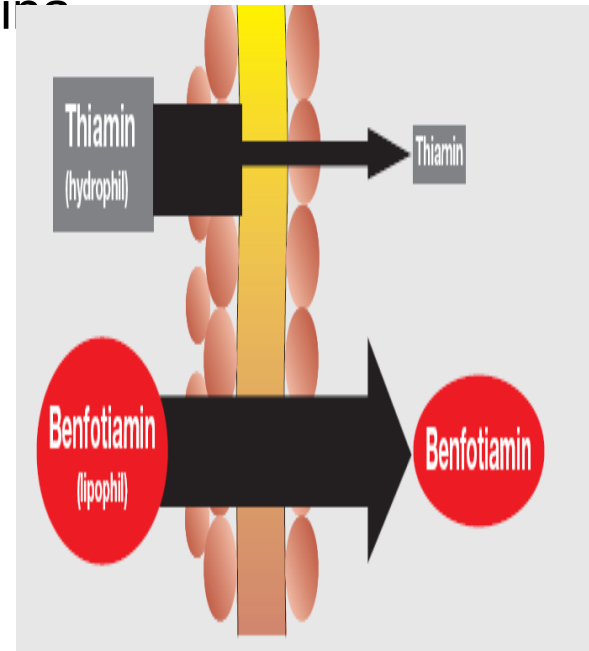
Benfotiamin je specifičan, liposolubilan oblik tiamina

- resorbuje se proporcionalno unijetoj dozi
- unutar ćelija se pretvara u tiamin
- bioraspoloživost je 120 puta veća od tiamina
- znatno veće koncentracije aktivne supstance u nervnom sistemu

Tiamin je hidrosolubilan

- slabija resorpcija, manja koncentracija u nervnom sistemu

- 75% oboljelih od DM ima snižen nivo tiamina u krvi!



Simptomatska terapija – liječenje neuropatskog bola

NeuPSIG vodič 2015.

Prva linija terapije	gabapentin, pregabalin, duloksetin, TCA, venlafaxin
Druga linija terapije	tramadol, capsaicin flaster, lidocain flaster
Treća linija terapije	jaki opioidi, botulinski toksin, ostali lijekovi

NeuPSIG - Specijalna interesna grupa za neuropatski bol pri Međunarodnom udruženju za bol (International Assotiation for the Study of Pain - IASP)

* **Neke vrste neuropatskog bola imaju specifično liječenje:** trigeminalna neuralgija akutni neuropatski bol, neuropatski bol u dječijoj dobi

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NA DPN NEMAJU ZNAČAJNIJI UTICAJ:

Paracetamol i NSAIL (diklofenak, ibuprofen...) se često propisuju, nemaju značajniji analgetski efekat na ovaj tip bola!

Tzv. „vazoaktivni lijekovi“ nemaju značajnog uticaja na ovaj oblik neuropatije

Osim specifičnog oblika B vit. - benfotiamina, ostali oblici nemaju uticaja na DPN

„Ne treba biti prvi, niti poslednji ljekar koji propisuje neki lijek“

Prevenција DPN

- dobra kontrola glikemije
- prestanak pušenja
- prestanak uzimanja alkohola
- održavanje optimalnih vrednosti krvnog pritiska
- održavanje optimalnih vrijednosti masnoća u krvi
- vježbanje i redukcija telesne težine
- njega stopala (svakodnevni samopregled)
 - nošenje udobne obuće
- pregled stopala od strane ljekara najmanje jednom godišnje

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ZAKLJUČAK

DPN smanjuje kvalitet života oboljelih vezan za fizičke i psihičke aspekte zdravlja

DPN ima veliki socio-ekonomski značaj

Neophodni su prevencija, rano postavljanje dg i liječenje

Preparati ALK su lijek izbora za najčešći oblik DPN – distalnu senzomotornu DPN koja čini 80-90% DPN

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“SEDARE DOLOREM, DIVINUM OPUS EST!”

“UKLONITI BOL BOŽANSKO JE DJELO!”

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Cilj ljekara je pomoći bolesniku kako bi “umro mlad, ali što kasnije”

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HVALA NA PAŽNJI!

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