

FROM DETECTION TO TREATMENT: EXPLORING VIRAL TESTING, REACTIVATION, AND THERAPY

TRANSCRIPT

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Gilian Crowther

Welcome everyone delighted to have you this evening joining us for this webinar and of course wonderful to have Dr Armin Schwarzbach with us again. I'll just introduce him briefly. Let me just in terms of housekeeping mention that if you have any questions in the course of the webinar please just pop them into the chat or the Q&A and we'll cover as many as we can afterwards Armin will be speaking for about 45 minutes he has got quite a long presentation today but as you know he speeds through presentations at a rate of knots I'll just briefly introduce him it's from detection to treatment today exploring viral testing reactivation and therapy and Dr Armin Schwarzbach is a world expert in the field of laboratory medicine and infectious disease and he's particularly committed to the field of *Borrelia burgdorferi* and co-infections a research area to which he's devoted more than 20 years of his professional life he has conducted including all the testing he did over the pandemic well over half a million samples from tests from patients and so I think we'll just let Armin fire away delighted to have you Armin thank you and we'll talk to you again at the end with our questions I'll leave now

Dr. Armin Schwarzbach

Thank you thank you Gilian for this very kind introduction yes Corona is over now and but we have still the viruses let me say so I will talk about the detection to the treatment how we can explore the while testing the reactivation or we name it opportunistic the opportunism and therapy options this is really a newer chapter we opened up you will see later on very important is if you do diagnostic test ask your laboratory if it has accreditation and yeah I could proudly say we have the CAP accreditation the clinical American pathologist which is international accreditation additionally so the quality of the test should be a good one and

not a bad one so to compare all of the results you are doing in your laboratory three I in
Diagnostics and

02:53

therapies this is now also so the way of CDC in America we know that infections play a role we know that inflammation plays a role and the immune dysfunction immune suppression and all three belong together so if you have an infection you always have infection and immune dysfunction if you have immune dysfunction you will get reactivated infections and you will get inflammation if you have inflammation the same will happen with the immune system and the infections get reactivated so this is cycling around and this very important also in doing therapies with your therapist the agenda today is the recent research a huge viral involvement reactivation in the postCOVID era optimal testing for DNA and RNA viruses and I also want to talk about therapeutic options for viral infections infection inflammation immune dysfunction and also about detoxification which options we have now days doing that the prevalence of Herpes infection and the deactivation in this is now fully recognized that

04:11

started in the beginning let's say 2020 2021 because intensive care they had a lot of problems with reactivations of viruses and a lot of papers came and we have now this meta analysis and the prevalence of active EBV infection in covid-19 population is around 41% which is a lot in multiple sclerosis we know it's around 66% so much higher but EBV it's a virus of the Herpes virus group plays very important role a little bit lower in this meta analysis was the prevalence of activated

04:56

HHV-6 34% in the third place the prevalence of activated Herpes simplex virus one this might be Herpes on the lips or genital herpes 8% followed by Cytomegalovirus and the Varicella Zoster virus you all know the Herpes as a the activation as example and in this Banko meta analysis again EBV is the most prominent reactivation the mechanisms now also becoming more and more clear there's a lot of research about that in the study 2021 that was the first study about that with the long-term covid patients they

05:38

found two of them it was a pilot study were positive for EBV reactivation we all have thought that everybody has this virus in the body but it doesn't play any role so if you talk with virologist they say to you yes everybody had this virus but this not the question the question is

is this virus reactivated or not we all know that from the Ed model from the 80s where we learned about how viruses which persist in us can be reactivated and this is now the chapter which was opened by the SARS-CoV-2 virus

06:18

Hashimoto in 2023 he found that the mechanism by EBV stored in memory B cells and the EBNA the EBNA also can be reactivated SARS-CoV-2 infection this just a model please let us think about also other infections you know I'm coming from Lyme disease for 20 years or 25 years now and also other infections can reactivate other infections you know so we see that also in Lyme disease patients massive reactivation of viruses so various phenomena contribute to EBV reactivation in covid so EBV can be reactivated as I have shown by

07:01

SARS-COV-2 infection or it can be exacerbated by SARS-COV-2 could get worse if it's ongoing process and then you get another virus which suppress your immune system and again the sensibility so if you have underlying EBV Infection you have ME and you don't know that EBV is doing that or you have multiple sces and you don't know EBV is doing that also you have a higher sensibility for COVID infection so your immune system is suppressed your CD3 cells your helper cells are suppressed this pretty clear all of this Immunology behind that

07:38

and the immune suppression plays really a huge role there are a lot of studies now the interaction between SARS-COV-2 and EBV decrease also of the CD is written in some papers not just CD4 cells and the natural killer cells and you know that we are doing a lot of CD56 CD57 cells and exactly this is what we see a massive reduction of the general natural killer cells this is the marker is CD56 C and also we know that a lot of patients are treated with immunosuppressive drugs like corticosteroids and you know they work

08:21

anti-inflammatory corticosteroids are inflammatory for a while but if you use them longer in higher dosages you suppress immune system and that means you inuse by this truck a risk factor for reactivation of some viruses like herpes viruses there's also an increasing correlation of HHV6 and Herpesvirus 6 and even HHV7 the han virus s and h8 with neurological manifestation and cytomegalovirus plays a very important role in this we always thinking about EBV the Epstein-Barr virus but we forgot about

09:00

the c what we see in Laboratory statistics so we have more and more problems with the cytomegalovirus or we have together with EBV the Epstein-Barr virus and in this study 2021 they found a prevalence of herpes viruses nearly around 80% for one of these Herpes viruses but also for 75% of these patients have also co-infection with two or more viral subtypes so that means what we see daily in the laboratory results that it's not just one virus active we find patients up to five six viruses active but we

09:42

patients just with one virus active we have two or three so it's individual profile which depends on your history so that means which virus you had a contact during childhood or when you get contaminated with the virus infected with the virus not everybody has every virus during the whole life Acquired and HHV6 is also prevalent in this studies 47% Cytomegalovirus again 43% and HHV 7 39% and HHV8 I had a accreditation of the German accreditation authorities and Professor Schnitzler from University

10:21

Heidelberg came to me and he said oh no it cannot be reactivated in our guidelines for biologist HHV 6-7-8 cannot be reactivated and I said to him oh I have different papers now but they these are not in your guidelines how old are your guidelines he said from 2016 okay all guidelines you need to update this and I show him now that HHV 6 7 and 8 can be reactivated in normal people not just in very fresh infections you know this is now a challenge for the virologist Cytomegalovirus also influences

10:55

the coagulation system all of these viruses can influence the coagulation system there's a lot of proof this article is very old nearly 20 years old so we know that for a long while but the coagulation experts they don't know that this is also they need to learn about that because inflammation is in the also in the bloodstream the infected white blood cells with the cytokines you see on the left side Interleukin-1, Interleukin-6 on the Th2 side but it's also change of the environment from anti- coagulant to

11:27

procoagulant so you have the clotting - clotting is the word - and you know there are a lot of clinics now offering Apheresis or the best version is the Apheresis HELP so that can help you temporarily also in this coagulation if you infected and you have cold hands cold fingers a bad

blood perfusion The Ides have a problem your oxygen has a problem then it's also I think you can think about doing some apheresis and temporary to help your perfusion but it will not solve the virus story there's an

12:05

association of HHV6 and HHV7 as I mentioned with the EBV the Epstein Barr virus in myalgic encephalomyelitis but also Parvovirus B19 Professor Leona Gilbert is not here but maybe she's listening I know that Leona did a wonderful work Ines University with Parvovirus B19 and I said to her years ago Leona I I don't believe that it plays a role but now we know that it plays the role also in infected in reactivations in infected covid patients and also patients with me HHV6 are lymphotropic neurotropic and

12:43

immunomodulating viruses and they persist your whole life the question is do you want us to remove that or we arrange with that or should we keep them under control I think the last aspect will be the solution I I don't believe that you can eliminate all of the viruses and this is really impossible because they can hide they go into the lymphatic system we come later to that and the reactivation that can also doing a lot of illnesses involving the immune system the central nervous system and

13:19

also trigger ME and chronic fatigue and there's a high rate of these viruses HHV 6, 7 and Parvovirus b19 with a proinflammatory cytokine levels and also with the active viral infections and this shows clearly in this paper also the necessity doing more studies for identification of other viruses in ME patients which is you know the main problem also of long COVID I know that we not allowed to talk so much about now it's more M about post patients or both here to CARS-CoV-2 pandemic the ability of RNA viruses to

14:03

persist in tissues for long periods was largely ignored now it's in in a in a plus pathogens article they said that the enteroviruses involvement plays a very important role in ME and the chronic fatigue group also the question is do the hidden reservoirs Harbor these viruses have they induced autoimmunity through molecular mimicry we know that from Lyme disease lyme disease can all , or *Borrelia burgdorferi* the pathogen can also do mimicking but a lot of these viruses can do mimicking and induce autoimmune

14:41

disorders so if you treat the virus you have a good chance to get to reduce the titres and to get rid of maybe Hashimotos or Shin syndrome or Rheumatoid arthritis we know that also from Lyme disease if we treat with antibiotics that some of the patients we could reduce the ANA titers as an example the pathogenesis of enteroviruses there's a primary entrance by aerosol or ingestion it's High highly contagious to you so it's like sneezing and then you inhale it and then there's a replication in the tonsils and

15:25

also the Peyer's patches and these are gut viruses the Enteroviruses we have three different groups one is the Cocksackie virus group the second is the polio virus group where where you could do vaccination against that and the third group is the Echovirus group and they have a lot of subspecies subtypes the problem is that they persist in the Peyer's patches and they persist also in the tonsils or in in our mouth and they can be reactivated the next problem is the macrophages that they

15:59

transport these viruses which originally are gut viruses all over the body they pass the into spinal fluid that's not a problem they inflame the brain the you can get meningitis you can get liver problem a skin problem a muscle problem mti it mimics a lot of other infections for sure but the original problem is or was the gut and this is what we see in many many patients the herpangina which is react means reactivation in the mouth of this Cocksackie virus and if you have this you should check yourself for Cocksackie Virus

16:39

Infection this is slide I did as an overview from scientific papers cellular virus it's a single stranded RNA virus it's highly contagious it can easily spread from person to person feil oral if you go on restrooms it's in the kindergarten it's in your household you can can get reinfections with other subtypes droplets of fluid from sneezes coughs body fluids and so on it's a gastrointestinal virus and it has two main groups group A group B and you all can see all of these problems as

17:16

it is a sore throat it's very common symptom of this Cocksackie virus diarrhea cough fatigue conjunctivitis loss of appetite headache night sweats so but also very traumatic developments if you get insulin dependent diabetes mellitus also described in huge studies the myositis

paralysis so it's highly neurotropic virus and it can also inflame and destroy parts of your brain as an example also the frontal temporal dementia you know Bruce Willis I don't want to say that he is suffering from that but we know that Coxsackie virus

18:00

can do that the myalgic encephalomyelitis is one of the main complications the mitochondriopathies in this so you feel fatigued for sure the colitis all of this colitis group has a massive problem with this gut viruses leaky gut you name it food intolerances histamine intolerances issues you could get with this coxsackievirus and the echovirus Dr Amy Proal is very exciting in doing research with the psac and what she mentioned it's very brand new research she's doing more and more in that since 2021 she described a lot of

18:43

viruses connected with infected patients with covid-19 SARS-COV-2 she did a lot of studies enteroviruses Coxsackie Echo the Ebola virus the sea virus Dengue fever virus influenza but also Borrelia she did research on that Borrelia Bartonella Babesia Coxiella the Q Fever Brucella the retroviruses DNA viruses EBV Human Herpesvirus 6, 7 the list is not complete so we have some other viruses as I mentioned already but in this study and the the good papers she did the last years she said that the study of this SARS-Cov-2

19:25

Reservoir in PSC May inform the identification of disease mechanisms biomarkers and therapeutics for other chronic conditions increasingly tied to persistent viral infection so it's now accepted that viruses can persist or can be reactivated which is really now completely changing the whole medical world in the pathogens these diseases she also tells the story of my ME Alzheimer's diseases mentioned autoimmune diseases such as multiple sclerosis which is more or less a autoimmune disease and

20:04

systemic lupus so how can you diagnose Persistence of the spike protein and this was is a question but we can do that very well now we check for SARS-CoV-2 IgA antibodies and I'm really shocked how many patients we diagnose with massively elevated IgA spike protein antibodies and this spike antigen as you know it's still immunogen which weakens your immune system it's it's doing you inflammation you coagulopathies you have problems with it so it's not good to have IgA antibodies believe me you could have them for a

20:47

while for maybe two three four weeks but that's a maximum but what we see now it's massively elevated in patients with let me say also postvac and also long COVID post-COVID patients so they still have this SARS-Cov-2 spike protein and we can detect that with the IgA which is mucosal antibody there's also a shocking conclusion of some researchers from large scale studies they they said meanwhile not to threaten you it's a brand new study from end of February this year long COVID does

21:24

not seem to be self dissolving it's it's study from nearly one million adults and the transmission England and they said there's a three point loss in IQ which is not so good the possible mechanisms are now discussed that studies involving humans and mouse or genoid show that SARS-COV-2 infection induces fusion and neurons which compromise neural neural activities and it seems like long COVID does not seem to be self-resolving in the sense sense of recovery but but but but but but if you suffer as an example

22:04

from a reactivation of a virus doing your symptoms then you have options okay I I'm not pretty sure that these researchers pretty in well informed about what I'm what I talked about some of these papers but I I think that plays a very important role also that you have options and you that you could recover from long COVID the optimal testing for DNA and RNA viruses as you know the Cytomegalovirus we have an IgG and IgM test the IgA test is not accredited it's more or less in-house test so we have an

22:47

IgA for Varicella Zoster and for herpes simplex virus but for Cytomegalovirus and EBV virus it's not a test which you should rely on and say this is now my activity marker the IgG is it's really problematic in this if you have don't have an IgA test the IgM it doesn't help you really it's more important to do an IgA test for sure IgG means past infection there's no discussion with IgM but the information is missing the IgA what is about the IgA for cus but we don't have a good test the same with the Epstein-Barr virus EBV but in this case we

23:29

have the early antigen and a lot of these studies are based on the EA the early antigen so ask your laboratory are you doing the early antigen or not if they don't do the early antigen the test is not conclusive for you and you cannot say it's now excluded my reactivation this is how

the reports are looking like this is we see daily so many patients I cannot tell you also patients who think they have lyme disease but that maybe they had lyme disease but they had reactivations of

24:01

all of these viruses and varicella zoster important all the IgAs elevated in this case for Coxsackie Virus Infection also Echovirus is elated IgA titer and SARS-cov- 2 this is what I already have spoken about that the IG this is not normal this is not allowed and this is a sign that the spike protein is still working Ona it's still active maybe also the virus could persist you know we have also no studies that the virus could persist what can we do for Cy virus what can we do also to improve the

24:41

Diagnostics because don't have IgA we are doing a lot of these T- cells tests you know that and one is named the Elispot test an enzyme linked immunospot which is CAP accredited so there's no discussion about that for the viruses it's German accreditation which implicates the UKAS accreditation so we are three-fold accredited meanwhile internationally there's no discussion on the results and I think in Germany there are more Labs doing these tests now and I think we we have a good experience with that test and we

25:15

are the leading labs in the world doing most of these tests internationally in many countries they don't know this test or they ignore it or they say they don't exist It's cytokine release assay in the Gamma released as it's name and I could proudly present you a new book where we did a chapter with my infectious disease expert on my side Dr Pruteanu is a parasitologist fantastic parasitologist and Markus Berger and we did this new book with co-authored Leona Gilbert she's the editor of that it's published now

25:53

evidence-based book with a lot of good tests and if you want to understand more about that buy the book it's not so cheap to buy but we say that in the in our chapter that many clinical laboratories are convinced that the cellular test is superior to the west and blood essay in terms of sensitivity for detecting the underlying *Borrelia* infection this is a book about *Borrelia burgdorferi* but you can transpose it to all infections I would say this is our [EliSpot](#) we have now the solution for EBV infection you could see here the lytic

26:24

antigen these the papers are based on early antigen and the lytic antigen and you can see here the latent phase so the sleeping virus which is allowed to have that the snoring form but it's lytic means replication this is not good it's really a High lymphocytic in Gamma release and you have really a problem with this virus for sure and all of these patients they suffer from chronic fatigue what I can tell you and we need to bring back the lytic phase into the latent phase the latent see and if

26:59

we can manage that we have the virus under control so we have a perfect marker by this test believe me this is we see daily and we see also in the followup how the patients are improving we developed as you you know me maybe I'm a clinician also medical doctor infectious disease doctor Internal Medicine I did a lot of infections during my career oncology I did in hospitals so I know all about the symptomatology about the differentials and what we developed in the beginning of SARS-COV-2 in 2020

27:32

it was already I said yeah we need to check for opportunistic infections and it's pretty clear that the patients will get this by this massive SARS-COV-2 epidemic so and this is how it works and it's free of any cost you could download from the website and post-COVID also let me name it unofficial post vac or both in combination checklist and we are also very busy we have now parasite checklist we have also checklist rheumatoid arthritis patients we have a viral reactivation panel developed together I

28:12

think it's affordable price I don't want to do much marketing on this it's not necessary but I want to say we also have the main pathogens the main viruses in a panel for you where you can find out if the virus is active in your body but just if you have symptoms please if you don't have any symptoms it doesn't make sense to test you okay spare the money but if you have symptoms and you can use a checklist you can use also the new ArminLabs viral checklist for download we can tell you more

28:45

about this chapter and there are a lot of links to more detailed virus presentations on the AONM website look we started in 2019 already with the virus story it was one year before Corona came so we were on the right track already and so we have a lot of experience for five

years now with this viruses how to diagnose and also how to treat them and in the beginning all the doctors they said we cannot treat the virus we cannot treat the virus I said we need to treat the virus it's it's nonsense so during my

29:20

career I also was infected myself with a Coxsackie virus and I I'm my own patient so I know something about these herbs and I'm a fan not of the chemical drugs I I don't like the virostatics which you can try out but they are virostatics for sure but on the other side they have side effects they can be liver toxic nephrotoxic the [Samento](#), [Samento](#) is one of the herbs we have in the world and this is really good working against herpes simplex virus type one and it has a good antiviral capacity and it plays an

30:03

important role if doctors work with the herbs in fighting against pathogens that cause the infections so it helps you in improving symptoms also like the osteoarthritis so if you have osteoarthritis I'm sure you have also an underlying infection which is maybe treated with Samento and maybe you know the name Eva Sapi she did studies in Lyme disease I think 10 or 15 years ago and it was very successful treatment with [Samento](#) and the combination with [Banderol](#) [Banderol](#) is also from the Amazon basin and it's a

30:41

broad spectrum antimicrobial It's very effective as I mentioned against *Borrelia burgdorferi* and the co infections you know Bartonella babesia interestingly it can help also against Aspergillus and chlamydia which is one of the main bacterial pathogens we see reactivated also long covid patients interestingly it has also antiviral properties there's a book about that also from Stephen Buhner and if you're interested there's also a lot of evidence based paperwork B it or you Google and it can be or it is effective

31:15

better to say it can be effective against cytomegalovirus some encephalitis viruses hepatitis virus and the human papillomavirus so if you have a problem with human papillomavirus you also could try it out you cannot lose anything it's it's not a risk for you because it's belongs to nutritional medicine it's can also address mycoplasma some parasites rickettsia Coxiella Ehrlichia it's proctitis also very interesting to use it in respiratory infections but I'm sure there's also chlamydia mycoplasma behind that the sinusitis asthma

31:51

arteriosclerotic disease cellulitis psoriasis and urinary tract infections so you have a lot of options there to try it out I not longer Tred it out than two months if it doesn't work it doesn't work you need to change your strategy I'm more the fan of the liquids than I'm fan of the capsules and my wife is a naturopathic doctor and in Germany they work they like to work with the liquids to say not with the capsules it's traditional way to work here in Germany in the naturopath way also the

32:27

[Takuna](#) I think it's a newer herb against the viruses in the combination with [Houttuynia](#) It came it became it it became famous I think also eight nine 10 years ago and we know that it works against HHV herbal simplex virus type 1 and 2 but also CMV EBV and viral encephalitis meningitis and I'm taking that myself prophylactically and I I not getting so many colds it's interestingly so I'm using it for years Takuna and [Houttuynia](#) these are my favorite herbs in the world so also Stephen it's not in

33:10

Stephen Buhner's book because too new this is a herb which is known all over the world we have it also studies against norovirus herpes simplex virus one influenza and other viruses [Houttuynia](#) you find lot of of paperwork lot of information about that scientific there there's a lot of published papers about Cumanda also herb to treat infections it's antibacterial antifungal antiviral anti parasitic anti-inflammatory maybe to say we cannot say these herbs are just specific for this infection my impression is sometimes or

33:54

most patient works against bacteria maybe against parasites and also against viruses but in the end the combination makes it stronger so you if if you do combination with Takuna and [Houttuynia](#) and [Cumanda](#) maybe and yeah Stevia I come to that in the over next slide you have a better synergistic situation to cover all in a broad range if you don't know if you know to spare money you you cannot test yourself I think it's better to take something to invest in in some cheaper products than to do nothing the baicalin

34:29

it's a antiviral and you know it's also inhibitor has inhibitory activity against viruses HHV-6 study is on the rights at Cocksackievirus again so that makes therapy stronger and nevertheless don't underestimate this we know or I know many of my other patients internationally they get

herxheimer-like reactions by that and the one drop is enough for them so be careful if you use them they in some patients you need more we don't know why but in some patients one drop is enough very sensitive to that but they react this

35:12

is a Stevia now is a sweetener you could put it into your drinking water and it has also antiviral activity please use the whole leaf extract you could also do a tea or whatever it's better to use this sweetener than if you use other sweeteners you could also ask for chocolate there's no sugar in it with stevia it exists in the world this is also good if you change your nutrition that way little inflammation we need to treat the inflammation so today I want to show you some possibilities options the

35:54

dandelion *Taraxacum officinale* this is native to Europe so and interestingly when I went through this binds on the ACE receptor and so it also can help you in SARS-COV-2 infections to reduce the virus the virus replication phases and it also in liver problems metabolic antioxidant this really important that it's doing a support for the SOD which also helps it's an enzyme that helps breaking down the dangerous oxygen molecules in the body cells and glutathione you know glutathione is also very

36:44

good for you in in your health to support this Nattokinase it got famous as a biofilm breaker we have three biofilm Breakers the lumbrokinase, serrapeptase, nattokinase, lines the serrapeptase is one of my favorites my own favorite nattokinase it's neuroprotective protic and anti-inflammatory and as I mentioned with the cya virus all of these infections are doing coagulation problems so it's it's not a bad thing if you would use nines maybe it's better to use aspirin but you need to drink maybe one of my key sentences 3 litres water without gas

37:27

and if you don't do that this biofilm breakers cannot work because biofilm is a slime you spit it out it's you need water water water in your body and then you have good chance also to remove the clots and maybe you could spare the money for aasis then the lines got famous also in heart attacks when I was intensive care doctor in fibrinolysis so the nines is really a good option in this immune dysfunction detox that's my last chapter now we have some binders to ensure efficient elimination chlorella you all

38:08

know the inine you heard about the Zeolite Is also very famous some don't tolerate it very well bentonite clay the activated charcoal can be dangerous be careful if you're using it aloe vera there are a lot of shops in the world now with that fulvic minerals also could help you and the PTO Bell also is an option for you so there's a lot in the nature nevertheless if you have a tincture use a tincture if you don't have it maybe in this case you use a capsule [Burbur and Pinella](#) this is my favorite and detox and not just my also

38:48

for a lot of therapists I know in the world [Burbur](#) is a plant from South America and it's good for for detox of the liver for sure the kidneys and the lymphatic system which is really important because you know the viruses this they block it some have swollen lymph nodes as a symptom of that and it supports also our immune system Pinella it's also from South America it's aborigen remedies like TCM and it's very effective also in eliminating biotoxins from brain spinal cord so it's no guarantee that it's

39:26

all doing that but we have studies about that it can do in your body you need to try it out simply it's also anti antibacterial antifungal Antics and anti-inflammatory magnesium malate this is also very important to use because we get more mitochondrial ATP we need it so use the mate because then you have a option with a malic acid to bring it in a high level and to support your ATP your energy I I would better use this as a capsula sorry about that it's not a tincture but if you go in Internet

40:06

you will find options for you vitamin C vitamin C is crucial we all know that if you don't live in Italy and you don't have enough lemons every day it's so important most powerful antioxidant also in wound healing it stimulates our blood cell immune activity and you know viruses they suppress the lymphocytes and this exactly what we need we need to increase our lymphocytes and the corticosteroids they suppress also the lymphocytes so this is not good for us we need to increase vitamin C is really helpful and it neutralize free

40:44

radicals also for your cardiovascular health and it helps you really really really interesting we lack the ability to synthesize it ourselves vitamin C along with only bats skinny pigs and other arotic primates like monkeys so we came from the monkeys maybe vitamin D3 that's my last

slide and K2 mk7 the combination makes it more powerful I know a lot of products on the market for that they support a healthy immune system it's good it became famous during COVID crisis the

41:25

bigger working group still ongoing with this combination D3 and you need sunshine for that so go outside if it's not training joints it's good for your if you have joints problems muscle problems blood pressure and so on and so on and it upregulates what's very important the Th2 and Th1 system but please if you over regulated be careful if you produce too much Th2 and you use it you could also get autoimmune disorder by the Th17 pathway so important maybe you do a small panel with CD19 CD3

42:06

CD6 maybe CD7 and then you know how is your immune system Th1 Th2 balance and then you could better adjust your therapy sy so that's my last slide now is a key player in your or all of us antiviral armoury it is a core on 300 different enzymes and there are lot of supplements around the world but please if you are not reacting allergic against this is capsula please use sync and now I'm coming to the end three eyes Diagnostic and therapies this is what I want to give you on the way options don't give up if you suffer from ME and you don't know if a virus is doing that like EBV CMV if you have little money test for that if you cannot test do something for your body try it out you have options and thank you very much for your attention thank you very much

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