

#266 Diarrhea Disemboweled Pt. 1 Acute

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SPEAKERS

Iris, Matt, Everyone, Stuart, Elena, Paul

Matt 00:00

So tonight. This is part one of two we are talking about diarrhea. And this is the acute diarrhea episode with Dr. Shao Jang Iris Wang, who is fantastic. You'll meet her shortly. And with me is the great Dr. Stuart Ken Brigham. And of course as always, Dr. Paul Nelson Williams.

Paul 01:47

And in addition to our amazing expert we also have Dr. Lena Gibson with us who produced this episode and we'll let Dr. Gibson tell us about our guests won't be discussed tonight.

Stuart 07:19

Thank you. So we discussed acute diarrhea with Dr. Iris Wang. She is a Assistant Professor of gastroenterology and hepatology at Mayo Clinic in Rochester.

Elena 09:47

So first case from Kashlak today is Mr. Sam Ella. He's a 71 year old male with a past medical history of diarrhea, hypertension, some coronary artery disease, he's coming to the clinic with a 2 day history of diarrherra, chills and abdominal pain. He reports previosuly normal bowel movements and then suddenly developing this acute illness. He is tachycardic to the low 110s. He's normotensive. And he's febrile to 38.4. So thinking about Mr. Sam, Ella, Iris, how would you define diarrhea? And what would be important for you to think through and categorizing what's going on with this patient?

Iris 11:54

I think anytime you start with a category that's symptom driven like diarrhea, similar to things like reflux or nausea, it's really important to clarify what the patient means when they're seeing diarrhea. So in the acute setting, it may be a little bit less important, but we can get into it when it's chronic diarrhea, but you really want to know, is it loose stools? Is it just frequent stores? Or is it that their stool is leaking, in which case that's more of an incontinence issue. But if it is true diarrhea, how we would define diarrhea would be three or more looser, liquid stools per 24 hours, or really more frequently than normal for an individual person, because three times a day may be normal. For some people, for other people, it's

three times a week is their normal. And so daily stools is actually diarrhea, a little bit of a more objective definition, maybe by stool weight. And that's difficult to obtain. But the definition of it, if you can obtain it would be greater than 200 grams a day of stool.

Matt 12:58

That seems like the most impractical definition. (Laughter)

Paul 13:01

That had to come out for research purposes and not just sort of weighing their stool.

Stuart 13:06

Correct. And, and, and it also depends, because if you eat a high fiber diet, then the cut off is like up to 500 grams. So it's kind of it's very fluid, if you will.

Everyone 13:16

Laughter

Matt 13:18

I like where this is going,

Elena 13:19

Stuart, you have competition.

Stuart 13:21

But, uh, it really is dependent on the individual and baseline. And so it's really important to really get the baseline from your patient. In terms of your second question of how to categorize the diarrhea, you know, if you go by kind of GI textbook is really acute or chronic. But if you look at a lot of the society guidelines, it will be divided between acute, persistent and chronic. So acute is anywhere between two to four weeks depending on where you're looking. And if you say there's a persistent category that categories between two to four weeks, so we can say acute is less than two weeks persistent between two to four and anything greater than four would be considered chronic diarrhea.

Paul 14:01

Alright, so where where do we go from here for Mr. Ella, what kind of questions do we need to ask to get a better sense of what's going on with them?

Iris 14:09

Yeah, so especially in someone who's coming in febrile, tachycardic, you really want to get a sense of timeline of the consistency of the stool. And you know, what has happened to trigger this diarrhea? So consistency of the stool, you really want to know, what is their blood or not? Right. That's the consistency that really matters a lot in this case, because of his acute presentation and his inpatient need. Timeline was you want to think about well, did he just eat something that day, where it would indicate have a kind of more of a toxic food poisoning picture? Did he eat something bad the day before where that would be more of an infection versus a toxin? Did he have an allergic response to

something he was eating? Is anybody else sick that he just got back from somewhere and was he was he trouble Or was somebody else around him traveling to expose him to something else? And in terms of kind of the quality of that stool, right, in GI we get, like real specific about what that stool looks like. And I have never turned down an offer to look at stool. I know. I know. but what you really need to ask, right is, is this diarrhea that is a small volume with an increased frequency? Or is this a large, voluminous, watery diarrhea that's not happening that frequent? Or is it both? Is it both watery, voluminous and happening all the time? Because that really kind of differentiate where that potential infection or where the defect in the GI tract is?

Matt 15:48

Can you tell us how how you think about it, if it's like the the high volume watery but less frequent, versus the small volume stuff?

Stuart 15:57

And at what point do you pull out the Bristol stool chart and say, Hey.

Matt 16:03

I have a forearm tattoo of the Bristol stool chart, do you find that useful?

Elena 16:07

Can I just say that I trained once with a pediatric gastroenterologist who's amazing, by the way, who had it on a mug? Really, I just felt like that was just like, a little too close for comfort.

Matt 16:18

What about one of those, like the football, the quarterbacks have that armband with the plays on it? Like, I feel like that might be acceptable, then it's not permanent? You know?

Iris 16:26

I just love that. Oh, quality of stool! Can I can I just geek out for a little bit like I what I teach things and and talk to my residents and fellows about things, I really want to go back to the pathophysiology. Because like understanding pathophysiology, I think helps us conceptualize a framework for differential diagnosis. So like, the question is, like, why do we get diarrhea? What, what's up with that? So we all know that there's a lot of fluid that that gets, you know, secreted by the GI tract, and we also consume fluid. And a lot of the function of the small bowel is to reabsorb that fluid, and then the colon reabsorbs, the rest, and we won't break it down. And we won't get into numbers, but you can look all that up. But if that absorption rate is off by even 1%, you get diarrhea. And so it's really a very fine tuned system that can break down. And so the diarrhea comes from a number of etiologies, which is why it's going to be kind of hard to parse it out later, there can be a change in absorption rate. And that can be because there's a change in surface area, or a contact time. So either there's not enough surface to absorb or not enough time for that surface to actually work. And that can be because of a change in transit time, it can be a change in the composition of what's in that lumen track. And so for example, if you have a lot of absorbed osmosals, right, we'll talk about that later. Or if there's a lot of fat, it actually inhibits your ability to bind water and get water back into the lumen. And so those are kind of three big ideas about how the diarrhea happens. Going back to what we were talking about in terms of stool volume, we kind

of have to think about the small bowel as kind of the workhorse in absorption. And so if there is a small bowel etiology, or even a right up to a right colon etiology of diarrhea, you're going to have a large volume store. So small bowel etiologies are usually large volume. On the flip side, if you think about the function of the left colon, and especially the function of the rectum as a reservoir, when that's the area that's impacted by your inflammation, infection, what have you, it's going to lead to less ability to hold on to stool and more irritation. And so irritation of the rectum is what gives you that sense of I need to go I need to go, I need to go. And because it can't hold on, because there's something wrong with it, you go frequently, and you just produce a little bit at a time, because there's actually nothing wrong with you absorption, you just need to go. And so small volume increased frequency you think more about colonic, especially left colonic and then the large, voluminous diarrhea, right colon, small bowel in etiology.

Paul 19:18

So that was extraordinarily helpful. I guess, when we're taking a history and what we're talking about in terms of acute diarrhea, are there any symptoms that the patient would report that are red flags to you, or that actually alarm you and make you a little bit more concerned than others?

Stuart 19:31

You know, yes and no. The duration of the diarrhea sometimes determines that because you can have an acute diarrheal illness with fever, for example, fever being one of those symptoms. But if it lasts less than 72 hours and an immunocompetent, otherwise healthy person, it's actually not that much of a red flag. And so it kind of depends a little bit on the patient's background. However, they're like red flag signs that I would look out for are fever, bloody stools, and then signs of dehydration. Like if they're not producing urine, their urine is becoming very concentrated. I know that's not really my system, but it doesn't matter - weakness, dizziness, those sort of systemic impacts, then those are going to be red flags. And in an acute setting.

Matt 20:13

they mentioned a lot about dysentery in the reading. I wonder if you could just I guess we're kind of jumping back to definitions. But can you define like, what's dysentery? Is it just bloody stool? Or is there a specific thing that makes you call it that?

Paul 20:28

It's just bloody stool the way we use it. It's just that it's just a cooler sounding term.

Matt 20:33

Yeah, I feel like we should use it more audience please, please use the word dysentery more to describe someone with like bloody diarrhea.

Paul 20:39

It just seems more like the serious. Yeah, take care of it. It's that bloody diarrhea still sounds pretty bad. Yeah. Yeah, but nobody said that on the Oregon Trail, right? Like dysentery.

Matt 20:54

Alena, what's the next part of this case here, mister? Mister Ella. So it sounds like he was tachycardic blood pressure was okay. But he was tacky. And this has been going on for two days. What are we what's happening next with him? Yeah, so

Elena 21:07

he starts to describe his diarrhea a little bit more, to make you happy. Eight to 10 episodes of diarrhea per day, he does know that he has bright red blood on the surface of his stool. He hasn't had any recent antibiotic use, no new medications, no travel that he reports in the last few months. His initial labs are also notable for a little bit of an AKI. His creatine is 1.3; his baseline was 0.9. His potassium is 3.3, white count is 10. And he does have a normal hemoglobin as well. And so thinking about, you know, we've talked through how to categorize diarrhea, but in Mr. Ellis case, how would you decide whether or not to complete microbiological assessment for the cause of his diarrhea?

Iris 21:55

Actually, if you don't mind, we'll go back a little bit to categorizing his particular acute diarrhea. Because if you go to the ACG kind of acute diarrhea guidelines that was referenced, prior to this, dysentery diarrhea is the passage of grossly bloody stools. And this is going to be an important point, because what you described in the patient was bright red blood noted on the surface of the stool. And so it's important to differentiate where that blood is and what it's coming from. Is it actually bloody stools? Or is he wiping so often because he has diarrhea, that he's exacerbating a hemorrhoid? That there's some sort of, you know, irritation, and his case sounds more like the latter. And it is important to make that distinction because watery diarrhea and dysentery diarrhea kind of fall out different pathways. And one of them being a little bit more concerning than the other, right? Like if he's having dysentery diarrhea. The other thing about this case is going to be that normal H and H also suggest to you that this is not dysentery but rather probably rectal outlet bleeding that has been exacerbated by the diarrhea. So in terms of then completing a microbiological assessment, you know, you want to do that in dysentery, in mild diarrhea with dysentery, where, you know, there's either a low grade fever or no fever, and you have that time to really wait for an assessment and target your antibiotics. Otherwise, if it's watery diarrhea, and it's kind of moderate or severe illness, and again, you have a fever that's lasting a while it's not going away, and you really need to treat it, then you you do that microbiological assessment, it's a little confusing. There's a lovely flowchart, basically, it boils down to, Is there time to wait for that microbiological assessment? And is it not going away on its own and we really need to figure out what's going on so we can treat it, then the third reason to do it would be if there's a high risk for spreading whatever is going on to someone else. So if it's a healthcare worker or a daycare worker or food industry worker who might be you know, giving norovirus to someone, you know, typhoid Mary should have probably had a microbiological assessment. that's a that's a category where, regardless of what their symptoms are, because of their risk, you should probably assess them.

Elena 24:14

I feel like a lot of times we throw around the term gastroenteritis. And as long as it's like, less than a few days, or you know, people get better within three days, then, you know, frequently I'll see that we won't do a full evaluation of the cause. Do you have any timeline you think about For how long?

Iris 24:34

Usually it's going to be that 72 hour mark that three day mark, exactly like you were saying, if it's not a dysentery, I'm gonna keep using that word. Now. If it's not a dysentery and it's watery diarrhea, then that's 72 hour duration, if it's lasting, and they're kind of febrile, and I'm really feeling like I need to treat something, then, you know, that would be what the guidelines say. Now, if you have someone coming into the hospital, because they have diarrhea to the point that they have an AKI with that baseline creatinine rise, and he's febrile. And he's tachycardiac, you may want to do that microbiological assessment at that point, you know, because the severity is there.

Matt 25:15

working in hospital medicine, I find like the patient had their worst day like more about more bowel movements, they could count the day they came in. And then sometimes by the time I'm rounding on him the next morning, we can't even get a stool sample because the diarrhea is gone. And, and going back to the blood in the stool, the I definitely see way more often the person that's like, I had no blood in my diarrhea. And then I had so many episodes that eventually when I started wiping, I started seeing some blood on the toilet paper paper and coating the stool that that seems to be the majority what I'm seeing,

Iris 25:47

and not to jump the gun on the topic. But that resolution of diarrhea, once they get into the hospital, you really have to consider like, what is the cause of that diarrhea? Is it osmotic? are they eating something at home, that now that you have kept them fasting, and not eating whatever food is at I'm sure the wonderful food at your hospital, that they're still not eating? Or you've kept them NPO for whatever reason, right? Is that the reason their diarrhea has gone away, you know, that's always something in the back of my mind to consider when that therapeutic admission happens, or the therapeutic GI console happens.

Paul 26:23

Let's say we're where we decided to do a microbiological workup, whatever that may look like I feel like sort of, especially in the outpatient setting, which is where my heart is, stool collection is no small feat. Like I feel like just asking patients to take a stool sample of lab and seems kind of burdensome. So I guess how can we how can we be parsimonious? Like what I guess what did the testing look like is usually when someone orders stool studies, it's everything. They just think every single box and we're doing like, we're culturing stool, you're looking for OVA, and parasites, you know, they have exactly their risk factors for it. So what can we order sets that are smart if we actually are concerned for some sort of microbiological cause that we actually want to address.

Iris 26:59

So, so talking about the outpatient setting, if there's a travel component, which is often what we're seeing in these episodes of acute infectious diarrhea that need treatment, there's actually just empiric antibiotic therapy recommended. And that can depend a little bit on where they went and the regional susceptibilities of those bugs, for example. But there you can just kind of follow the guidelines or your local infectious disease experts or your local travel clinic and just treat them empirically without sending the stool. I have to be honest, I don't do a lot of acute diarrhea workup in the outpatient, right, because either they are sick enough that they need inpatient assessment, in which case we just collect their

stool, or their acute illness has gotten better, and I don't ever see them. So by the time they make it to me, usually I'm doing a microbiome, a biological workup for chronic diarrhea. And I bring that up, because then I can be a lot more parsimonious about which tests I'm going to request that the patient said, and those are really going to be which bacteria, parasites, viruses can actually give you a chronic diarrhea, and I'm probably jumping the gun a little bit, but I'm talking about it anyways. And those are really going to be cdiff. Right? that can give you diarrhea for more than four weeks. Giardia entamoeba can sometimes do it. And it can be a bloody diarrhea. And then you always have to consider CMV, particularly in someone immunocompromised, and then there's cryptosporidiosis, microsporidia etc. But those kind of are the big ones that I would send specifically to evaluate from a microbiology standpoint.

Matt 28:37

And this might mean that was more for the chronic outpatient that's coming to see you. So back to Mr. Ella. And this this is our patient who's coming in tachycardiac does not have bloody diarrhea. And he's having like eight to 10 episodes per day. If the night you know, the night-admitter is putting sending this person in and they want to send stool testing or just labs in general, what would you recommend they send?

Iris 29:06

I think he's gotten a lot of the good labs already sent right that initial CBC that initial BMP to evaluate his hydration status. So that's going to be where we start. Is he losing blood? How much water do we need or fluid do we need to replenish? And then in terms of store, it depends a little bit on what your hospital is able to run? And I say that because there are now a lot of these nonculture based tests that are PCR based, or like the one that we run is PCR based. There's a couple of other ones that are based on. Based Yeah, antigen based, PCR based and it can give you a variety of organisms that are evaluated. So the one that is from like bio for diagnostics, for example, that's listed in the guidelines, runs 22 pathogens at once. And that test actually comes from back much faster than a culture does. Because culture, you have to actually wait the two or three days for the bacteria to grow, in which case often they're already better, where you've kind of missed the boat, right? So these non culture based tests can be a lot faster. Now, when you have the option of testing 22 pathogens at once you also run into a lot of issues. One, one of our my favorite consultants here, calls it the decerebrate. panel, the decerebrate panel, is you literally just don't have to think about it, just send it all and something will come back positive. Right? So you don't really have to think about Oh, is it bloody? Is it non bloody? Is it this or that. But that aside that like the shame of not thinking about it aside, you really have to think about what these tests because they're PCR based, like, what is the true positivity rate? Like if this test comes back with noting Giardia, right? It may have picked up like two spores, and is that truly your pathogen or something else going on? Giardia is probably not a good example. But often I'll see EPeck come back that he EPeck with a P. And often that's just the colonizer and it's not really helpful, but then patients really worried that they have an E. coli infection. And so with a lot of this testing, you do have to consider one cost. And two, is it truly going to help you when you send it? I'm purposely not truly answering your question. I'm just telling you the things that I know.

Matt 31:28

Iris, I've seen those. I've seen those panels that send like all the PCR tests and the last two places, I've worked, I'm not sure if they're expensive, or they found maybe that maybe it was because of what

you're talking about where you send these things. And since the PCR test, you're not you're not sure if you're picking up colonizers or what's the act of infection, but I don't see it that much. So I've mostly seen cultures be sent. I know norovirus is really common. Is that something that we would pick up in just a routine, like stool culture? Or is that something that you have to send for separately? Or does that just not matter?

Iris 32:02

In some cases, so it those situations where it does matter is going to be in those public health reportable cases. So you want to know whether there's an outbreak at a daycare center, whether there's a norovirus or a rotavirus, you know, outbreak in a cruise ship, for example, like in those settings, where it is important to know which pathogen it is for tracing purposes, then that's where that really comes in handy. It's not going to culture out, unless you specifically asked for that culture, right? There's usually the cultural medium are targeted at specific bacteria. So I believe most labs I've seen, you can culture like salmonella, e. coli, and Shigella together, Yersinia can be, but the viruses need separate media. And so it's going to be a separate test that you're specifically asking for, in most cases, from what I've seen, that that does bring up the thought that now in 2021, one of the acute diarrhea, pathogens needs to be COVID-19. Right? There are a lot of gi side effects to COVID. And diarrhea can be a presenting symptom of COVID. So that that should be thought about at the end of the day, though, because there are no viral, you can't treat them right. So you may need to quarantine these folks limit the exposure to everyone else. And from a public health standpoint, that's going to be important. But from a treatment for your individual patient standpoint. Not so much.

Matt 33:30

Elena, what's next for Mr. Ella?

Elena 33:32

So just thinking one more question too if he if he did have what we thought was true dysentery. Would you send anything different? Or would you still primarily send a PCR looking at for the causes such as Shigella, salmonella, Campylobacter that you you might want to treat?

Iris 33:50

That's a really good question. Because I think in the dysentery situation, right, there's a limited number of pathogens that truly cause dysentery. So you would be better off sending a culture if you had the time to wait. And really target those bugs like Ehec, like Shigella, like salmonella, sometimes into me, but that can really cause dysentery. The reason why that's going to be important as well is because some of those dysentery bugs, you should not treat with antibiotics, right? Specifically the hemolytic. The H, sorry, the Ehec, right? Because with antibiotic treatment, there has been shown to be increased risk of hemolytic uremic syndrome. And so you really want to know whether that's the etiology because then you really avoid antibiotics. The other one that you should think about is non typhoid, salmonella. And that's the one where antibiotic treatment could prolong an asymptomatic carrier state. So you're potentially infecting more people. Is that truly important for the current patient? unclear, but those two are the ones particularly for board exams or tests. You know, you don't treat with antibiotics.

Elena 34:59

That's helpful

Matt 35:00

But when I was reading about that, what what got me a little bit is I mean, what typically happens is if someone comes into the hospital, they're sick 30 hydrated, they have a diarrhea, illness, diarrheal illness, and they have some fever. A lot of the times, if it stops when they when I before I see them the first day or if it stops pretty quickly, we don't do antibiotics. But if it's still going on throughout that first day profusely, oftentimes we're giving an antibiotic and you just don't know at that point, you know, you won't you won't have unless you have one of those fancy panels, you just want to know. So I guess it's just like, you're hoping that it's not ehec, and you're pushing this person's towards, like hemolytic uremic syndrome?

Iris 35:41

Yeah. And it's a little hard to say whether they're going into hemolytic uremic syndrome because of the E. coli and how bad that infection is? Or because of something about the antibiotic. I don't think we understand that very well. And that's probably a better question for an ID physician, to be honest with you. But I think you have to treat the patient that's in front of you. Right? And and if they're looking bad, they're not responding and you don't know, I would send the culture you know, always culture them before you start the antibiotic and at least have it brewing. So that one if you need to, you can narrow your antibiotic spectrum. And to if it does come back he had maybe you stopped that antibiotic, and really focus on rehydrating them

Stuart 36:18

was totally because the F plasmid transfection from the... whatever anyways,

Iris 36:24

the reason I'm a GI doc.

Matt 36:27

She doesn't want to talk about plasmids, Stewart Okay, there's something that I think Iris i think is probably more solidly in your wheelhouse. Maybe I'll throw this to Paul first. Paul, are you afraid to like, what's your practice on giving antidiarrheal to patients with an acute diarrhea Paul?

Paul 38:36

Not afraid, I, you know, I feel like there's there was an up to date warning for a period of time like just be not for us with infectious diarrhea for loperamide. Specifically Really? Does that kill them instantly? Will their bowels explode? Maybe I should just avoid that just drink lots of fluids. So why don't we say "wary" instead? So I guess rather than being more public about my own shame, why did I try this no question asked you let's let's make Mr. Ellis slightly less sick? Maybewithout renal insufficiency or dehydrated, how do we keep him from getting there? And what kind of supportive management can we throw at him when you have so let's talk a little bit about the mild illness. right?

Iris 39:09

So if it's mild, he's not that sick, rehydration and really loperamide is really safe. And it is reasonable to use the one caveat that where I'm really cautious about not using loperamide would be if I'm concerned about C. diff and honestly nowadays I'm almost always concerned about C. diff because it's no longer and antibiotic associated or triggered infection alone right? There's so much potential for community spread that it kind of always has to be in your differential particularly acute diarrhea, chronic diarrhea, what have you. And so once I rule out the C diff, is when I'm a little bit more generous with loperamide if there's watery diarrhea kind of a milder illness. Um and

Paul 39:44

What, sorry to interrupt, but what is the specific concern for the patient with C Diff. who you gave loperamide would they just feel...

Iris 40:00

Toxic megacolon. Okay, and development of an ileus - that would that would be the big concern

Matt 40:06

yeah, and we even talked to somebody about C. diff, and that his practice was, if he has patients on therapy for like five days, and very clearly the C diff is under control and the patient's not sick, he will even give them a little bit of anti-diaherrals. And, you know, with monitoring, so even then, it wasn't an absolute/ but I completely agreed that like if the person still acutely ill, you know, and c. diff it's not ruled out. But yeah, I do feel that I see a lot of like, people, maybe they came in, and they were more towards the moderate or severe, like the day before they got there. But now they're here in front of me, and they're not that sick, and they're getting a little better. And they're like, Can I just take this because like, now they have that thing where they they eat their tray, and immediately they have to run to the bathroom, and they're having that like sort of post infectious. I think it's the post infectious IBS and those patients, you know, I think it makes sense to use it. But that's, that's what I hear all the time from patients. As soon as I eat something, I have to run to the bathroom. And

Iris 41:03

if we go back a little bit to the pathophysiology of that, right? It's usually because there has been some destruction of vili. And so then the etiology of diarrhea, they're in that acute post infectious period is going to be a decrease in in surface area. So you're not absorbing as well. later on they actually, it's really interesting, that they get lactose deficiency, right? You have a lot of patients who come back with after a gastroenteritis, and they're like, I can't eat dairy anymore. And that's because lactase is at the very tip top of your mircovili. So that's the disaccharidase, you know what I'm talking about?

Matt 41:39

Yeah,

Iris 41:39

that's most likely to get destroyed after a gastroenteritis.

Matt 41:47

can we talk about the oral rehydration solution? And like, why are we not? Maybe you're using it in your hospital? But why are we not giving that to more patients, and I feel like everyone gets IV fluids and maybe it's just this because they're inpatients.

Paul 42:02

I think that's that's an excellent point. And there's a lot of confusion in for patients about this, right? Because in most of my patients who have diarrhea think that they should be drinking Gatorade. And it is actually not really good for diarrhea for a number of reasons. One, the sodium potassium, like balance, it's not enough sodium. But the other thing is, if you look at the osmolarity of Gatorade, it's actually a hyperosmolar solution. And so in your patients who already cannot regulate their water, you're actually pulling more water into their system to dilute out that Gatorade. So it's off, it actually can cause more diarrhea. That aside, so I love talking to patients about oral rehydration solution, particularly if they have chronic diarrhea, which is one I tend to see them because it really is so simple. And we know that it works. I have no idea why we don't use it more often. I think we use IV fluids in these patients because often they can't tolerate orals as well. And we're afraid of giving them orals and kind of triggering more diarrhea. So we bowel rest them. But that being aside, oral rehydration solution kind of goes back to that sodium glucose transporter, right? That balanced transporter that allows water to cross your lumen. And what I tell my patients is, yeah, you can buy it, there's Pedialyte, and there's also a couple of very targeted oral rehydration solutions that are available for purchase. But they can make it themselves. You can just look up a recipe online, and you just boil water with some salt and some sugar. And you just keep a big tub of it at home when you have the diarrhea. And I think that is it's cheap, it's effective, doesn't taste bad. And so that that's what I would actually recommend to patients to do. Whether you can do that in the hospital or not. I don't know.

Matt 43:43

Paul, I'm gonna make some with the kids this weekend and send them over to your house.

Paul 43:46

Sounds great. Yeah. Is there? Is there a peripheral flavor I can add to it?

Iris 43:51

No, because that will worsen your diarrhea

Matt 43:56

All right. So what yeah, go Go ahead, Paul.

Paul 43:59

I was I was gonna say before we started, we were pregaming, and someone brought up bismuth and your eyes lit up, and there was just a glow about you. And you were just so excited to talk about it. I feel like this, this feels a good place for it. I mean, if we if you want to wait and sort of save it up just so that you really do have some delayed gratification. That's okay, too. But now if it's a good time to talk about bismuth, Now's a good time. I can mention it later too, if you want. There won't be a good place for it later. But bismuth is in the ACG guidelines for consideration for prevention of acute traveler's diarrhea.

And honestly, like when we think about bismuth and it's like that that like old school jingle that maybe Elena would be too young to remember. Oh, God,

Elena 44:41

I know it!

Iris 44:42

Okay, good! Yeah, but it really does so much right? And you're like, how can one drug do so much and it's so cheap and then we often forget about it. But there's two aspects to bismuth that make it really good for prevention and for diarrhea and also for some of these chronic functional symptoms as well. A component of it actually causes has an anti inflammatory effect. And I think it's some combination of the bismuth and salicylate don't quote me on why, but it's also an anti microbial, but it's an anti microbial without causing like drug resistance, right? Because it's not targeting the bacteria itself. And so it has this nice property of preventing infection and decreasing inflammation. And even though it's a salicylate component, it doesn't have the same gi toxicity or potential for like ulcers, that other salicylate drugs like aspirin might. So it's actually it is really good. The caveat of using it though, is that you have to dose it very frequently. So it's like three to four times a day, which can be problematic for compliance. They can cause constipation, which is really nice in these diarrhea patients. But it also darkens stool and blackens the tongue and so you have to warn your patients that that's going to happen otherwise, then you're calling gi for a scope because they're like... yeah

Stuart 46:00

I was think it's funny when I get a call from the ER for melana when I talk to them like so, "how much Pepto bismol?" "You know, funny you ask," right? Alright, so back to Mr. Ela. What if he was on immunosuppression for renal transplant and came in with this acute diarrheal illness? How would that change your workup? And would you send any additional testing in that case?

Iris 46:26

Yeah, I think in anyone who's immunocompromised, you have to broaden your infectious differential, right? HIV immunosuppression and even chronic steroid therapy. So you think about this and your patients with rheumatoid arthritis, for example, who are on chronic suppressive prednisone, even at a low dose you brought in your infectious differential. So these are the situations where if you do have access to those large panels, this is the time to send them but the specific bugs that you're probably thinking about are specifically CMV Cryptosporidium cyclosporina, MAC, if you think about disseminated TB and some patients, but two caveats there is you would consider scoping him if he was on immunosuppression specifically if he were on cellcept. Because cellcept causes a damage to the to the GI tract. And then more recently, if there are certain checkpoint inhibitor chemotherapeutic agents ipilimumab, for example, I butchered that. Sorry, oh god, i cant.

Matt 47:32

Pembrolizumab is one of them,

Iris 47:33

Pembrolizumab!

Matt 47:35

that one i can day

Iris 47:36

yeah, I don't know why I pick the harder one. So for Pembrolizumab patients you really do have to scope them and biopsy to see if it's a checkpoint inhibitor induced toxicity. So cellcept, those checkpoint inhibitors. And then for CMV. Remember that CMV testing in the blood doesn't equal CMV induced infection. So for CMV induce colitis in the acute setting, you really do have to biopsy it and show that there is organism in the colon in order to see that it's a CMV induced colitis.

Matt 48:11

Yeah, a quick comment, there was a woman, this is many years ago at this point, who was on immunosuppression, got biopsied. we're thinking it was going to be CMV and it ended up being strongyloides. I believe they found that on the on the biopsy. It was a crazy, it was a crazy case. And then the first time I saw autoimmune cololits I didn't even know it existed. pembo was relatively new at the time. And we had this patient who was being treated at very famous cancer hospital. Then he was at my hospital so we didn't have all the records. And he was there for like several days and we're like this diarrhea and we're working it up, we call his cancer doctor. We're like "are you sure this there's nothing to do?" He's like, "Oh, we know what that is, sent him back, He had that here." And we're like, they didn't tell us that on the first time we had to call them so I will never miss that diagnosis again.

Iris 49:07

I have to say, I've only found a worm once on colonoscopy. It was like one of the best days of my life.

Paul 49:14

Wasnt sure which direction you're gonna go with that actually.

Matt 49:16

No, I wasn't either.

Iris 49:17

We can cut that out if

Matt 49:21

Elena, do you want to try to do the recap and then maybe Iris can tweak it?

Everyone 49:33

Laughter

Elena 49:50

Definitely. So just recapping the initial evaluation of acute diarrhea. So overall, if people come in with very acute symptoms and they're doing okay, doesn't seem like they're dehydrated, no need to do a stool based study workup. After 72 hours if they have persistent symptoms, we might consider

additional testing with cdiff, the PCRs. Or if they have dysentery, then performing cultures for specific organisms would be more helpful. Another thing to remember is testing patients for COVID. But the other viral pcrs might only be helpful in the setting where you think an outbreak is more likely like a daycare, or a cruise ship. And then thinking about immunosuppressed patients. Really, what I gather is, think about calling gi if they're on cellcept or checkpoint inhibitors. So they can help you and potentially perform an endoscopy workup. And then CMV testing in the blood does not equal colitis. So you need to consider getting a tissue diagnosis as well. And then sending additional tests for more rare bacterial causes.

Iris 51:04

Yeah, and viral as well. And just to clarify in dysentery it's not that you can't send a PCR it's just that if you don't have a PCR available, then you're more likely to send a stool culture if there's dysentery than if there's not dysentery. Okay, just to kind of clarify that point. Yeah, in in our hospital, if you need to culture more than five pathogens, then it's more cost effective to send the PCR and that that might be a consideration for how to choose one or the other.

Matt 51:33

And we talked about hydration with either oral rehydration, IV hydration, and then anti diarrheals If we if we're not concerned for C diff or something that's going to cause a toxic megacolon then antidiarrheal should be okay, and if we're gonna give them bismuth tell them that their stools and their tongue may turn black

Stuart 51:55

In talking about acute diarrhea. ,what are some take home points you want to make sure the listeners remember?

Paul 52:01

So one is make sure it is diarrhea, and clarify if they're talking about bloody diarrhea, right? Really clarify that it's dysentery, and not just rectal outlet bleeding, irritating, but your work of management really needs to be focused on how bad your patient symptoms are and how severe they are in terms of systemic illness, and the duration of that diarrhea. And then most acute diarrhea is that ore infectious will improve without antibiotics and really recommend that oral rehydration solution as opposed to an electrolyte based rehydration like Gatorade power rate. And your exceptions for antibiotic treatment are going to be high fever, immunocompromised patients, dysentery that's not resolving and travelers diarrhea, generally gets antibiotic treatment. Caveats being to not treat Ehec E. coli, and consider not treating nontyphoid salmonella if your patient doesn't need it.

Stuart 53:03

This has been another episode of the Curbsiders bringing you a little knowledge food for your brain hole. yummy.