

57| Neuropsych Bite: Balint's Syndrome – With Dr. Joel Kamper

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Speakers: Joel Kamper, Ryan Van Patten, John Bellone



Intro Music 00:00



Ryan Van Patten 00:17

Welcome, everyone, to Navigating Neuropsychology: A voyage into the depths of the brain and behavior, brought to you by INS. I'm Ryan Van Patten...



John Bellone 00:25

...and I'm John Bellone. Today we have our third Neuropsych Bite with Dr. Joel Kamper, a board certified neuropsychologist at the James Haley VA in Tampa, Florida.



Ryan Van Patten 00:35

We speak with Joel today about Balint's syndrome, which is named after the Hungarian neurologist and psychiatrist who initially described it. It is a rare neurological condition that is frequently touched upon in neuropsychology coursework. But, like everything brain-behavior related, there is important nuance to it, and we touch on some of that with Joel. Although it is rare overall, many clinicians will see patients who have several or all of Balint's features, so it's in the best interest of neuropsychologists to be familiar with these symptoms and with the overall syndrome as well.



John Bellone 01:12

Before we get started, we want to again give a brief reminder that select NavNeuro episodes are available for CE credits through INS. If you need CEs, check out navneuro.com/INS for more information. And, with that, we give you our Bite with Dr. Joel Kamper.



Transition Music 01:29



Ryan Van Patten 01:38

So Balint's syndrome is comprised of simultagnosia, optic ataxia, and ocular apraxia. If you don't mind, describe and define these three symptoms for us.



Joel Kamper 01:50

Sure. Well, simultagnosia is the easy one because it's the one that people don't get confused with the others. Simultagnosia is trouble perceiving simultaneous objects in one visual field. So it's like seeing a picture of a picnic and saying, "Okay, well, here's a basket. And, oh, over here is a tablecloth. And here's a person and here's some grass. What is this picture of?" And they can't say - that gestalt isn't there. You can't recognize the gestalt. They can focus on just one detail at a time.

Oculomotor apraxia and optic ataxia are the two that everyone confuses. Oculomotor apraxia is trouble with voluntary eye movements. The colliculi are still

working fine - since the involuntary eye movements are okay and something moves out of the corner of someone's eyes, they're going to look at it. That's working okay. But when you say, "Look left, look, right" - when you do those sorts of things, they're not able to volitionally control those eye movements.



John Bellone 01:54

The purposeful movement is the difference there.

Joel Kamper 02:57

Right. Yep. Vertical movements are often better than horizontal movements as well.



And then there's optic ataxia. So "ataxia", we often think of that as cerebellar. This is not cerebellar necessarily, but think of that symptom. So it's basically misreaching. It's visual, so it's the connection between seeing something and then knowing how far away it is. It's not like a typical or a true ataxia that we see where there's trouble placing the limb. It's seeing something and having your brain target, "Okay, that's about three feet away", and then your arm reaching out three feet away.



Ryan Van Patten 03:38

Right. So we could imagine the types of problems people might have reaching for a cup of milk or catching a baseball, and yet if you ask them to close their eyes and touch their nose, they could do that.



Joel Kamper 03:48

Right.



John Bellone 03:48

Yeah. I had a patient recently with Balint's and I gave her a cup of water and she was having trouble reaching out and grabbing it. Then I put a stapler in front of her and a pencil and she had difficulty with all of those.



Joel Kamper 04:02

We typically don't do this - at least no one I know tests ataxia this way - but neurologists will often look at dysmetria, which is a type of ataxia, by doing the heel-to-shin test. If you're not looking, it should be something that you can do. It's optic ataxia, you need to be looking at it to have the problem.



John Bellone 04:24

Interesting. Right. So I guess the finger-to-nose touching test - could they do that okay, if they have their eyes closed?



Joel Kamper 04:32

I think so. Yeah. The finger-to-nose is the most common test of dysmetria, which is a type of ataxia, and it's almost always cerebellar. But, yeah, if you close your eyes, and it's - I'm actually trying it right now.



Ryan Van Patten 04:48

[laughs]



Joel Kamper 04:48

Your listeners are probably doing the same thing, because why not? But then they'd reach over to grab the pencil and, you know, knock it off the table.



John Bellone 04:55

They would have difficulty. So that's a good way to maybe parse those out.



Ryan Van Patten 04:58

Yeah, the visual component is important, right?



John Bellone 05:01

It's "optic" ataxia.



Joel Kamper 05:03

Right.

Ryan Van Patten 05:04

There must be difficulty with reaching and guiding your movement visually.



I want to go back to simultagnosia for a second. Sometimes this is defined as the inability to see more than one object in the visual field at a time. I think that can lead to some confusion in people who are just learning about this. They might wonder, well, "What's one object? Like, is a human being one object? Or is a finger one object?" My understanding is that it's a very reduced visual field. You mentioned

that people cannot appreciate the gestalt and they overfocus on one aspect of what they're seeing.

Joel Kamper 05:45



Right. Yeah. So if the goal was to identify that this is a human being, in a textbook case, they couldn't do it. In reality, something like that may be salient enough that they could see it, and it might be a picture of some event that they couldn't perceive. But going with that textbook definition - they might say, "Okay, it looks like there's an appendage here, and some hair, some sort of cloth there". They can identify the details, but if you ask, "Well, what would those details make up?", they couldn't say, "Oh, that's a person."

Ryan Van Patten 06:16



Yeah, that binding of multiple objects together into a unified whole would be impaired.

Joel Kamper 06:21



Right. Right. Sort of like being able to see the details on the Rey Complex Figure but not tell you what it's actually a picture of.

Ryan Van Patten 06:28



Perfect example.

John Bellone 06:29



Right. Although people who don't have Balint's have plenty of difficulty with that, too. [laughs]

Ryan Van Patten 06:34



[laughs]

John Bellone 06:35

My patient's Reys are terrible usually. [laughs]



So I was studying for the boards and trying to keep all of these separate - the optic ataxia from oculomotor apraxia, it's very, as you mentioned, easy to get those confused. I think of it as: ataxia is a problem with purposeful movement - if you're reaching out for a cup or a pencil, you're making some movements. And then with

the oculomotor apraxia, there's difficulty with eye movement, specifically. So ocular motor, eye movements, I put together.



Joel Kamper 07:10

Right. It's in the name. Yep.



John Bellone 07:11

Right, it's still a little confusing, because they both have the eyes involved, obviously. But that's one way that I found to parse it.



Joel Kamper 07:18

Yep, that's a good way to do it.



Ryan Van Patten 07:21

My understanding with oculomotor apraxia, is that, as you said, there's trouble with purposeful eye movements in directing your visual gaze, especially horizontally. So then, are you frequently seeing patients, to compensate, moving their head and neck rather than moving their eyes to focus on things?



Joel Kamper 07:44

That's a good question. I've only seen a couple of these folks. So I don't have a definitive answer for you. My guess would be no, though, just because it's not that they - I mean, if they move their head and their neck, their gaze would still be directed. Your eyes are staying put, they're not moving with your head. So I don't know if that would necessarily solve the problem.



John Bellone 08:07

We should distinguish this also from a neglect syndrome, right? So in the simultagnosia if they're seeing the picture, it's not because they're neglecting one side of the page. That's not what we're talking about here.



Joel Kamper 08:19

No, you are correct. It is not what we're talking about. No, with a proper neurobehavioral exam, you can pretty easily distinguish those. This is not neglect.



John Bellone 08:32

They're gonna draw the full clock, for example, when you ask them to draw a clock. They're not going to draw the right half of the clock only.



Joel Kamper 08:39

Right.

Ryan Van Patten 08:39



Yeah. Another caveat we should give is that Balint's syndrome, like Gerstmann syndrome and others, these three symptoms can come along together. We'll ask you about neuroanatomy in a few minutes, but we're talking about a clean textbook case and typically this isn't how it works in the real world. You don't see someone who has these three symptoms and only these three symptoms exactly as they're described. Just for people to keep in mind, the real world is messy.



John Bellone 09:08

You might have two symptoms. You might have this and then something else.



Ryan Van Patten 09:11

Or several other symptoms that we're not talking about so much today.



Joel Kamper 09:14

Right. And this isn't, I mean, it's not super well-defined. I mean, it is - there's three criteria like we've talked about. But it's not like Parkinson's disease or something where the features are well known.



Ryan Van Patten 09:27

Right.



Joel Kamper 09:29

I tell my students that if it looks like a textbook case, you're probably wrong.



Ryan Van Patten 09:34

[laughs]



Joel Kamper 09:34

It's too good to be true. Things are never that clean.



Ryan Van Patten 09:36

Yeah.



Joel Kamper 09:36

Once in a while they are, but very, very rarely.



John Bellone 09:41

So let's talk a little bit about the location of the lesion here. So the neuroanatomy and then also the common etiologies.



Joel Kamper 09:49

Sure. So I think it is often a parietal-occipital lesion. I think it typically has to be bilaterally.



Ryan Van Patten 09:57

Yep.



John Bellone 09:57

Kind of at the junction of the parietal and the occipital lobes there.



Joel Kamper 10:00

Correct. It's not too easy to do that. So you're talking about a posterior circulation stroke, probably. You're going to have to hit both of those sides, so I would think a watershed infarct might do it - that's bilateral.



John Bellone 10:16

I've also heard severe hypotension, like sudden severe hypotension.



Joel Kamper 10:20

Yes.



John Bellone 10:21

It can do that with the watershed areas. Yeah.



Joel Kamper 10:23

Yep. So like a hypoxic ischemic injury or severe hypotension from a heart attack. Or like an embolic shower. I've had a couple of cases of embolic showers either just happening on its own or if someone has a heart attack and they're trying to go in there and place a stent, and they knock loose a plaque, it breaks up, and you get all

these little strokes. So that's certainly possible. But, otherwise, it would have to be something like that.



Ryan Van Patten 10:51

That's why it's rare.



Joel Kamper 10:52

To hit both vessels, but in the watershed areas. To your point, it's not that clean. Someone might have this and they probably are also going to have, if it's a watershed stroke, impairments in the frontal lobes, too. I mean, you're not just going to have Balint's syndrome and that's it.



Ryan Van Patten 11:06

Right.



John Bellone 11:06

It doesn't just hit the parietal occipital junction.



Ryan Van Patten 11:09

That strategic lesion doesn't happen.



John Bellone 11:11

Right. Which is important for listeners to know. We're calling it a syndrome because it's a collection of symptoms that commonly travel together, but it doesn't say anything about the etiology of it. The cause, like you said, could be vascular, it could also be neurodegenerative, sometimes people with Alzheimer's disease have this syndrome, sometimes traumatic brain injury. The key is that it hits the neuroanatomy, the bilateral occipital parietal junction.



Joel Kamper 11:36

Or pathways.



John Bellone 11:37

Or pathways, good.

Ryan Van Patten 11:44



This is a bit of a difficult question, just give us the best you can from what you know. Describe what it might be like for someone with the syndrome to go about their daily life. You know, we've talked through the three classic symptoms. How do people function with this disorder? What compensatory strategies can we offer to them?

Joel Kamper 12:05



Well, I was going to say it would be difficult, which would be supremely unhelpful. [laughs]

John Bellone 12:10



[laughs]

Joel Kamper 12:10



I realize that's supremely unhelpful. I think it would be exceptionally frustrating, particularly if you didn't exactly know what was going on. So I don't know if you guys see this in private practice land where people are typically a little bit more up on their health, but believe it or not I have patients who had strokes and didn't realize it. "I went to bed. I felt dizzy. I woke up, I was still dizzy. I thought it would be fine."

John Bellone 12:42



They shake it off.

Joel Kamper 12:43



Okay. And then it turns out they have had a stroke. You may run into that, too. That amazes me, because I think about if I felt that way. But for folks who didn't connect that something like that could be a stroke, then they're frustrated that they're knocking things over. They're having trouble. No one's ever going to come into your office and say, "I have trouble directing my gaze."

Ryan Van Patten 13:07



[laughs]

Joel Kamper 13:08



If they do, be suspicious.



John Bellone 13:10

[laughs]

Joel Kamper 13:11

That's a plant. But, "I have trouble. You know, if someone calls my name and I'm looking around for them, I can't find where they are in the room" or something. You know, that would be more auditory, I suppose. But, things like that. Knocking things over or making some careless mistakes. With simultagnosia, I feel like it comes out in driving sometimes, where someone is focused on one detail. So let's say there's a red light and stopped traffic. Well, they see the red light and maybe some cars, but they don't connect what that means until they cause an accident or something like that. I think I had a guy who said, "I saw the stop sign," but he didn't see that there was other traffic. And he didn't appreciate the whole, the gestalt, of the situation. You just see the detail, and it doesn't connect. So you have an accident or get a ticket or something like that.



Ryan Van Patten 14:01

Yeah, someone driving with simultagnosia, I can't even imagine how dangerous that is. That's a scary idea.



Joel Kamper 14:08

It would be bad.



John Bellone 14:08

Right, right.



Joel Kamper 14:09

Yeah, for sure.



John Bellone 14:09

The good take home is that Balint's might not be what causes them to walk in our door, it might be some other symptom that is coming along with the underlying etiology that brings them in, and then we discover the triad, for example.



Joel Kamper 14:25

Right. I would think a patient like this would have some focal neurologic signs that you pick up on a neurologic exam. But if they didn't have any cranial nerve abnormalities, even if they had some small areas or encephalomalacia on imaging,



the neurologist might think, "Well, that's a little weird", but they're not going to say "Oh, this is Balint's syndrome." This is this sort of severe thing.



John Bellone 14:50

So tell us about your case, or you said you had a couple of them if you wanted to tell us about.



Joel Kamper 14:55

Yeah, so I actually want to start first with the horse, not the zebra. [laughs]



Ryan Van Patten 14:59

[laughs]



John Bellone 14:59

Okay. [laughs]



Joel Kamper 15:00

So I got referred a case and the referral question was from this neurologist I know, who's since retired, who would often think everyone was a zebra. Everyone got a PET scan and everyone was a zebra.



John Bellone 15:12

They're a very rare condition that he's trying to find.



Joel Kamper 15:15

Yes. So this patient got referred to me for Balint's syndrome. And I was like, "Well, that's a new one." Patient comes in, very disinhibited, very hard to kind of rein in, just kind of behaviorally all over the place. I'm seeing some orbital frontal signs - they're stimulus bound, they've got some utilization behaviors, they're being, maybe not grossly inappropriate, but their behavior is a bit all over the place. On testing, they're densely dysexecutive. Okay. So I do some simultanagnosia tests. I like to give the Cookie Theft picture, it's a good one. And he says, "Oh, looks like it's..." - he had some pejorative words for what it was, but he identified what the picture was. I was like, "Okay." So then I tried to do a neurobehavioral exam, and we can't check visual fields. I can't get him to do eye tracking. He just, he won't do it. He's all over the place. It surely looked like oculomotor apraxia. What was going on was he had FTD, and he was so dysexecutive that he could not follow instructions at all.



Ryan Van Patten 16:21

Wow.



Joel Kamper 16:21

He could follow one step commands, and that was it. It was like that was across the board. His frontal lobe was degenerated on imaging. It looked pretty clear to me. But he could not follow commands - any commands, of any sort. So this neurologist interpreted that as oculomotor apraxia, ergo Balint's syndrome. And, you know, he comes in my door.



Ryan Van Patten 16:44

Yeah, that's a great example of how we can rule out something.



Joel Kamper 16:48

Yeah. So I told the neurologist, "Yeah, he's impaired, but it ain't Balint's syndrome".



Ryan Van Patten 16:51

[laughs]



John Bellone 16:52

Right. [laughs]



Joel Kamper 16:52

Functionally, he's got oculomotor apraxia. But it ain't oculomotor apraxia.



Ryan Van Patten 16:56

Yeah.



Joel Kamper 16:56

Just, you know, disinhibited.

So the second case I saw that had it was an older gentleman. Not a lot of records. He had maybe a CT scan that showed some bilateral old areas of encephalomalacia, no one seemed too worried about it. He comes in saying, "Yeah, I might have had some strokes in the past." All right, fine. So we're doing the testing and I think I gave him - what was it? I think it may have been the Rey that tipped me off. He's drawing the pieces sort of separately. I thought, "Well, that's weird." So

I think I gave him the Hooper. He did very poorly on that, as you'd expect. So I'm like, "That's strange." I was frantically trying to Google the Cookie Theft picture and print it off. In the meantime, I took off my watch and put that, my pager, my cell phone, and my pen on the table in front of him. I said, "What are these?" He couldn't really tell me. I said, "Okay, point to the pen." Now, it's almost like an aphasia test and he could do it. Fine. So then I held two objects up right next to each other; I think I had my pen and my pager right next to each other and I asked him, "What do I have? What am I holding up?" And he would say one or the other, he would never say both. So at this time, I had the Cookie Theft picture printed off, so I gave it to him. "Describe it." And he said, "Well, it looks like there's a boy here. I don't know what he's doing. And there's you know..." And then he would talk about that. I asked, "All right, well, what else?" He'd kind of stop and you had to redirect him. "What about over on this side?" And "Oh, there's this woman, you know, not sure. Looks like maybe a sink. She's doing something." And then he would just kind of stop there. So he wouldn't say one detail, then another detail, then another - you had to queue him for each one. All right, I said, "So what's this a picture of?" "Well, you know..." he kind of gave me a little bit. "All right. So what sort of room is this? I mean, what are we looking at?" He couldn't tell me. Okay. So then I broke out some of my neurobehavior tests and yep, oculomotor apraxia. Yeah. Kinda optic ataxia, a little bit. It wasn't a clean triad by any means. But...



John Bellone 16:59

Did you ask him to reach for certain objects?



Joel Kamper 19:04

It wasn't good. Not the worst, but not good. I think I threw it in there as a rule out or talked about a Balint's-like syndrome or something like that. I recommended MRI follow-up because CT for old strokes is not going to be super great. I don't know exactly what they found, but the CT had talked about bilateral encephalomalacia that looked like it was in the parietal occipital areas. So...



John Bellone 19:31

That fits.



Joel Kamper 19:32

Yeah.



Ryan Van Patten 19:33

Real quick. Could you describe a little bit more about his initial Rey copy? How you're describing it reminded me of a piecemeal approach. We can get a piecemeal approach in a lot of different conditions. What specifically was it about him drawing one piece at a time that was a flag in your mind?



Joel Kamper 19:50

Oh, my apologies. His copy was not good at all, but it was okay. It was the recall. On the three minute recall, there were just pieces.



Ryan Van Patten 20:02

So, literally, they weren't put together. They're in different parts of the page. Different geometric shapes.



Joel Kamper 20:08

Yeah, I mean not like, you know, end to end on a page. But yeah, it wasn't integrated at all. His copy was - I mean, there were definitely some visual-spatial impairments for sure, but you could squint and call it a Rey.



Ryan Van Patten 20:21

I see.



John Bellone 20:22

Interesting.



Joel Kamper 20:23

One last point I want to make. You had brought up Gerstmann syndrome, which is another of these rare things. I feel like Gerstmann syndrome, to me, is much easier to diagnose because typically you get it with a left angular gyrus lesion. It's more common because of that, but it's also a bit easier described. This is the lesion and there's the four symptoms that you get. You almost never see all four symptoms unless it's like an acute stroke and shortly after. But I feel like I can wrap my mind around that a bit more. Balint's is still a little nebulous. It's these three symptoms, it's associated with these bilateral lesions, but you know... [laughs]



Ryan Van Patten 21:05

Nebulous is a good word. [laughs]



Joel Kamper 21:07

Yeah. Definitely a thing. You'll probably come across it. It is not a disorder in and of itself. It is a syndrome related typically to strokes or some other underlying pathology. But it's not like a one and done sort of thing, like a Gertsman syndrome, where you hit this one vessel in this one area and you get it.



Ryan Van Patten 21:27

Yeah, that's a helpful distinction.



John Bellone 21:29

Good, super helpful.



Transition Music 21:30



Ryan Van Patten 21:34

Well, that does it for our conversation with Joel. Be on the lookout for our final Neuropsych Bite with Joel on limbic encephalitis, and more upcoming Bites on pediatric conditions. And, as always, thanks for listening, and join us next time as we continue to navigate the brain and behavior.



Exit Music 21:52



John Bellone 22:16

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Ryan Van Patten 22:27

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