Transcript Details
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ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Differentiating Pediatric MS from ADEM

DR. JAYNE NESS:

It's going to be symptoms that are referable to the central nervous system, which would include symptoms referable to the optic nerves, the brain, spinal cord, and these kind of symptoms would include vision loss in one eye or sometimes both eyes. Typically, it can be fuzzy vision, it's usually that all of the vision in that eye, often the color red, for example, doesn't seem as bright with that eye, so that's suggestive of optic neuritis. Sometimes, there is pain with eye movement. Sometimes, there is double vision or difficulty speaking or difficulty swallowing or numbness on one side of the face that suggests that there might be an abnormality in the brainstem or there can be weakness in the arm or legs or numbness that can suggest either brain. It could be cord, it could be brainstem, or there can be difficulty with bladder function or bowel function or difficulty of a band like sensation around the waist which would suggest that there are problems in the spinal cord.

DR. BILL RUTENBERG:

Visual changes also occur in migraine headache, which is obviously a lot more common in children. At what point do you say this visual change could be a demyelinating process versus a migraine headache, can you get a headache with the presentation of MS?

DR. JAYNE NESS:

Sometimes, but usually it's painless. Rarely are there mental status changes, so you know, your thinking should be normal and these symptoms need to last at least 24 hours.

DR. BILL RUTENBERG:

Ah! Okay, that's an important point. What makes up the minimal workup for a child who presents with an initial demyelinating event?

DR. JAYNE NESS:

Top of my list is getting an MRI and that is useful for ruling out a number of other disorders. There is a lot of neurodegenerative disorders that are mimickers of the demyelinating disease and sometimes it takes a while on the repeat MRIs to sort it out. It can sometimes be a seizure. Some children present with a seizure and then they are weak on one side and you know it's just part of their postictal phenomenon or it's just, you know, the beginning of something else. Thus a spinal tap is critical, and I think the big thing for pediatricians

is if a child comes in and is, you know, really obtunded and may be have some focal neurologic deficits, is to get plenty of CSF. We really don't want to have to go back and tap that kid again. They are going to remake their CSF again in less than an hour, and again, pediatricians they really love to draw very much CSF, but we need about 4-5 extra milliliters and I know it's hard when the kids are kicking and screaming, but if you can get it forth, it's really helpful.

So that's probably the two, I think starting out with an MRI, CSF and then you tailor your workup from there. I typically do an autoimmune workup and look for ANA, sed rate, look at thyroid function. I am trying to actually find reasons why it could be something else other than MS.

DR. BILL RUTENBERG:

And for the MRI, is the brain sufficient or do you have to..?

DR. JAYNE NESS:

It depends on your symptoms. Obviously, if you are worried about your child is not moving their legs and you are worried about cord compression, you are going to go for an MRI and you may push to get an emergent MRI if you are worried about cord compression.

DR. BILL RUTENBERG:

Yeah, because I read that the cervical spine should be included.

DR. JAYNE NESS:

I actually recommend the whole, that takes about 2 hours and plus you have to give sedation for lot of these kids to get both the brain and the spine done so many times you have to do them at separate settings and so, of course, you know go for, you know, either brain or spine or wherever your symptoms are coming from, but I do recommend that both brain and the spine down to the conus needs to be imaged because often even if there is not symptoms directly relatable to, for example, the spine, you often see lesions there.

DR. BILL RUTENBERG:

And then we're always asked, doctor do you want it without contrast?

DR. JAYNE NESS:

I actually ask that you get it with contrast. When you are looking for demyelinating lesions, and again it gives you a sense of how active the lesions are and you know active lesions will light up with contrast, you know, if they are a little older lesions, which may be 24 hours, may be 2 weeks, there is some variability in that, they can give us a sense for how active the process is.

DR. BILL RUTENBERG:

And we all know to order on spinal fluids, cell count, and protein and glucose, what specifically should we order if we are looking for multiple sclerosis or a demyelinating disease?

DR. JAYNE NESS:

There is something called the multiple sclerosis panel, or at least that's we call it here at the MS Panel; it includes measurement of the immunoglobulins and albumin in the CSF. It's critical to send a serum sample with that CSF because it's done as a ratio of the IgG to albumin in the CSF compared to the IgG albumin ratio in the serum, and two key parts, that is it will see you know how active is IgG being formed within the CSF and so that's called the IgG index and it's done as a ratio relative to the serum. If something else that we look for called oligoclonal band and oligoclonal bands aren't a 100% multiple sclerosis, but they're pretty specific. It's fairly helpful in saying that you know, this could be MS, but yes, not 100%.

DR. BILL RUTENBERG:

I would like to pause for just a moment to welcome those who are just joining us and let them know they are listening to the Clinician's Roundtable on ReachMD XM 157, The Channel for Medical Professionals. I am Dr. Bill Rutenberg and I am speaking with Dr. Jayne Ness. We're discussing the diagnosis and treatment of pediatric multiple sclerosis.

Once these core tests are done, are they sufficient or there are other things that you would be doing as part of your initial evaluation.

DR. JAYNE NESS:

One of the things again is to rule out other things, for example, it looks like the MRI is worrisome for certain types of neurodegenerative disease such as adrenal leukodystrophy, then you may want to send off tests that rule that out. You would want to get in, certainly girls, but you know boys, who are worried about that, you can send off your long chain fatty acids. Sometimes you tailor that. Again, I typically get an autoimmune workup and much of the time which turns out negative. You are the first one to do a good infectious disease workup especially if there has been fever or altered mentation that makes you worry about encephalitis. If there has been a seizure or there is altered mental status, we will often get an EEG and then I think after the first episode and it looks like we have treated either with or without changes in mental status, if it was with change in mental status, there are big fluffy lesions on the MRI, typically we diagnose that as acute disseminated encephalomyelitis or ADEM. If there was no change in mental status, then sort of focal neurologic lesion is typically classified as a clinically isolated syndrome or it is a first time event, but then we'll repeat the MRI a period of time later between 3 and 6 months later. It's usually what I use, I mean it kind of depends of the kid and what the MRI looks like and how suspicious I am for MS based on the MRI.

DR. BILL RUTENBERG:

If you have concluded that you've reached the diagnosis, what's currently the standard of care and what's your approach once the diagnosis is made?

DR. JAYNE NESS:

For example, let me just back up a little bit. For ADEM, usually the MRI will get better over time. MS, the MRI usually even though the lesions might get a little bit smaller, the lesions don't go away and typically over time more lesions come. If I have made the decision, you know, after the acute phase and whether or not we have treated with steroid for the acute episode, the most common, but down the road <_____> MS, then it would be discussion of options for treatment there is just as same as adult, which include Avonex, Rebif, Betaseron; these are interferon beta, drugs there is a glatiramer acetate called Copaxone and these are all injected medications.

DR. BILL RUTENBERG:

And these are disease modifying agents?

DR. JAYNE NESS:

Disease modifying therapy. There is no data on which drug is best in kids or adults.

DR. BILL RUTENBERG:

Do the presentation of the MS, what type of MS doesn't affect your treatment choice.

DR. JAYNE NESS:

No, 95% of kids present with what's called relapsing remitting disease. They have an episode, that get better; they have another episode, they get better; and over time they may accumulate disability, but our goal is with the disease modifying therapy to spread those relapses as far apart as possible and to hopefully prevent the accumulation of the disability over time.

DR. BILL RUTENBERG:

And then how long do you stay on disease modifying therapy?

DR. JAYNE NESS:

Right now, we are saying life long and whenever you say to child you are going to be on shots for the rest of your life, what we tell me is that there is many other drugs in the pipeline coming down the road, that you know our hope is that you won't be on shots always, but you probably need to be on some type of medication and example we give this as like treating diabetes. This is like treating high blood pressure. Yes, it's life long, but you know, you can live a good long healthy life if you take care of yourself and take your medicine and hopefully you know you are taking this now to prevent complications down the road.

DR. BILL RUTENBERG:

And what kind of results have you seen from the disease modifying therapy? What's the outlook?

DR. JAYNE NESS:

Well, in general, you know, the problem is we are instituting therapy for an outcome that is 10, 15, 20 years down the road, so we haven't been doing this long enough to know for sure what difference it makes, but you know we certainly have seen kids, who looks like they were having multiple relapses, got on therapy, relapse have quieted down, MRI stayed stable, and so in a short term, it looks like they do pretty well, but it's really going to be 10, 15, 20 years before we know for sure.

DR. BILL RUTENBERG:

Familial incident increases the risk of siblings to have MS. If one child has MS in the family, is there anyway of testing or screening other family members such as using evoked potentials because now that you have neuroprotective disease modifying therapy, I am just thinking, you know, if you pick it up even before it becomes clinically manifested, may be something else could be done.

DR. JAYNE NESS:

At this point, we are not recommending routine screening with either MRI or with you know evoked potentials or anything and we were really waiting for that, you know, you really have to wait for that even to happen. I mean, you know, we do have a couple of sib pairs with MS, we do have sometimes the child has developed MS and then the parent and there is a slight increased risk in family members or the first degree relatives. For example, I have some patients that we have followed who have abnormal MRIs, but have never had clinical symptoms. Those kids we don't put on disease modifying therapy unless there really something changes with their cognition or something or until they have their event and so think about that we are not treating those kids, we certainly are going to be looking for trouble.

DR. BILL RUTENBERG:

From your research, neuro protection, is there anything coming down the pipeline that people should be optimistic about?

DR. JAYNE NESS:

There are a lot of things that are potentially out there. There is nothing specific and this is true for MS, for stroke, for a number of disorders that is you know a 100% yet, and again I think we need to wait and see. For patients, I think you know having a good healthy diet and things like just as getting plenty of x-rays is just as important as any specific drug.

DR. BILL RUTENBERG:

You mentioned diet? Andrew Weil is a physician, I believe he is in Arizona. He is sort of the guru of integrative medicine. I just hate to give away my age, but in the recent ARP journal or magazine that came, Dr. Weil's anti-inflammatory diet including ginger, turmeric, dark chocolate I like that part, greens, white cheese, is there anything dietary that might contribute in an anti-inflammatory. The parents, obviously, the children with any kind of a chronic illness are always looking for complementary alternative therapies, is there anything that they should consider doing that has shown some evidence based effects?

DR. JAYNE NESS:

No, none as far as the direct anti-inflammatories. We certainly use anti-inflammatory agents, just steroids, in the middle of an acute exacerbation, however, there has actually been some interesting vitamin D and you know one of the things, as you may be aware, is that MS is more common in northern latitudes, less common around the tropics. It's not been clear why and there is now a lot of interest in is you know vitamin D exposure part of the mechanism of why people have increased susceptibility to multiple sclerosis.

DR. BILL RUTENBERG:

So you go out in the sun or not?

DR. JAYNE NESS:

In moderation, drink vitamin D fortified milk, and so some centers are routinely testing vitamin D levels and are prescribing vitamin D supplements. We are in the south and there is a lot of <_____> and so we don't have quite the same issues. I haven't been doing that routinely yet, but it is something I am very seriously thinking about to at least look and see if our kids have normal vitamin D levels, but that's something that's again with our group of pediatric MS centers across the country, this is one of the things that we can look at as a group to see if there are differences.

DR. BILL RUTENBERG:

I would like to think Dr. Jayne Ness who has been my guest and we've been discussing the diagnosis and treatment of pediatric multiple sclerosis.

I am Dr. Bill Rutenberg. You've been listening to the Clinician's Roundtable on ReachMD XM 157, The Channel for Medical Professionals.

We welcome your comments and questions. Please visit us at www.reachmd.com to access our entire program library and do explore our on-demand and podcast features. I wish you good day and good health.

This is Dr. Mark Boucek, Director of Cardiovascular Services at Joe DiMaggio Children's Hospital in Hollywood, Florida. You're listening to ReachMD XM 157, The Channel for Medical Professionals.