The Myositis Association

JM COMPANION

Winter 2009

For children, families and friends affected by juvenile myositis

Caring for your child's eyes

Although juvenile dermatomyositis itself does not normally cause eye problems, you may notice redness around your child's eyes. This is due to the skin symptoms and most likely does not mean anything is going on inside the eye. It's rare, but children with JM sometimes do have inflammation of the blood vessels in the back of the eye. When the overall disease is treated, the inflammation subsides. If you suspect something is wrong with your child's eyes, check with his or her physician.

It's more likely some of the medications your child takes may cause eye problems. Children who take corticosteroids (such as prednisone or Solumedrol) should receive a thorough eye examination twice yearly to be certain that they are not developing cataracts – a rare but possible side effect of the medication.

What is a cataract?

A cataract is when the lens (a transparent tissue inside the eye) becomes clouded. The lens focuses light on the retina, allowing your child to see clearly. Large doses of corticosteroids, often necessary to control your child's disease, may cause cataracts on the back of the lens after long-term use. They may be either slow or fast growing, depending on the amount of medication taken. These cataracts are easily identified by an ophthalmologist, and may stop growing or even shrink when the corticosteroids are stopped. Obviously, this creates a need for new ways to treat your child's myositis. You can

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Coping with calcinosis

Calcinosis (hard calcium deposits under the skin) is a troubling complication of juvenile dermatomyositis and, to a much lesser extent, of the adult disease. People with some other chronic diseases also have problems with calcinosis. The exact percentage of children with juvenile dermatomyositis who have calcinosis is unknown but published reviews report it happens in about a third of patients. Not much is known about possible causes, prevention, or treatment.

In two different studies, researchers couldn't find a connection between calcinosis and the patient's age at diagnosis, or their gender, race, or place of diagnosis. Calcinosis does not seem to be related to how serious the disease is when it first begins. We do know that calcinosis seems to be related to cases that don't get prompt treatment, and cases where symptoms are more severe and persist over long periods of time. As researchers understand juvenile dermatomyositis better, they'll also find more clues to calcinosis. For now, the best prevention strategy is to treat the overall disease quickly and aggressively.

Where and when does calcinosis appear?

Calcinosis is seen most often in the elbows, knees and sides of the feet, all areas where there is pressure. However, calcinosis can appear almost anywhere in the bodies of children with juvenile dermatomyositis. It usually begins within a few years of other symptoms of juvenile dermatomyositis appearing, but it has also been reported early in the disease course – before any other symptoms appear and as late as 20 years after the diagnosis.

How can I identify calcinosis?

The appearance of calcinosis varies a great deal, ranging from small bumps just under the skin to larger deposits in deeper tissue. The bumps sometimes move around when touched. There is sometimes pain at the place where the calcinosis is first forming, as it irritates the surrounding tissue. If it touches or surrounds a nerve, it can be very painful. Masses of calcinosis can break through the skin and leak fluid. When that happens, they may shrink and go away. When large deposits of calcinosis form over joints, it makes it hard for the joints and muscles to move freely.

What happens when my child has calcinosis?

Calcinosis can disappear on its own,

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work with your child's doctor to find other medicines, so your child's steroid dose can be tapered quickly.

How can I tell if my child has a cataract?

A cataract often causes sensitivity to glare and light, most apparent in bright sunlight or when looking at the headlights of oncoming cars. Often, there's a kind of "starburst" sensation, as the cloudy part of the lens scatters the light onto the retina.

Ask your child whether he or she has any painful reaction to light, any trouble reading or seeing, any pain, blurred vision or double vision. If the answer is yes, arrange for an eye exam right away.

What if my child is diagnosed with a cataract?

If your child has a cataract, protect his or her eyes from sunlight, using sunglasses designed to block ultraviolet rays. It also helps to wear a hat with a brim. Depending on the age of your child, the cataract may need to be treated if it gets so large that it causes difficulty seeing. Your doctor may suggest a temporary treatment that enlarges the pupils, allowing your child to see around the cataract.

Your child's myositis doctor will be the one to decide if your child's general condition allows cataract surgery, which usually means general anesthesia for children. Advances in cataract surgery have made it possible to use sound waves to break up the cataract. The surgery is short, painless, and usually successful. A patch is worn for a few weeks following surgery. Depending on the age of your child, a plastic lens will be implanted to replace the cloudy lens, or glasses or contact lenses will be fitted to help your child see clearly.

What is glaucoma?

Steroids can also contribute to the development of glaucoma, a painless eye condition that's associated with elevated pressure inside the eye. Only a small number of children will have any significant elevation of eye pressure leading to glaucoma, but it is very important to monitor your child's eye pressure during the entire time steroids are used, so that there is no permanent damage to the optic nerve.

How is glaucoma treated?

Glaucoma is treated by special eye drops that lower the eye pressure. If it is possible to stop steroid treatment, especially if steroids have been used for less than a year, eye pressure may return to a normal level within two weeks. If your child must continue steroid treatment, there are anti-glaucoma medications in eye drop form that can control the eye pressure.

Hydroxychloroquinine and your child's eyes

In rare cases hydroxychloroquinine (Plaquenil) can cause loss of vision or color vision. This can be prevented with frequent eye examinations and a relatively low dose of medication. An eye exam should be done before starting treatment, and then annually.

Finding a doctor

Ask your child's myositis doctor to refer you to an ophthalmologist or a pediatric ophthalmologist. Your child will be given a dilated eye exam. This exam is part of your child's medical care and will be covered by your insurance. Make sure you let the physician know about the medications your child is taking. Children with JM should visit their ophthalmologists twice yearly or as often as the ophthalmologist recommends.

Excerpted from "Eye Health," a chapter in "Myositis and You" by Drs. Janine A. Smith and Manuel B. Datiles.

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either by being absorbed by the body or by working its way outside the skin. This resolution is more common in patients whose disease is inactive, patients who have had aggressive treatment for other symptoms, patients who are very physically active, and those with just superficial bumps. Some cases of calcinosis remain static, neither growing nor shrinking in size. Calcinosis can also progress, growing larger and appearing in more places in the body. This seems to be more likely when other disease symptoms are also uncontrolled. Whether calcinosis is small or large, it is a concern to children and parents. It can be painful as it forms and if it grows to touch a nerve, it can be disfiguring, it can interfere with movement and it can hurt as it breaks through the skin.

Since it's hard to treat calcinosis, the first priority is to prevent its development. Dr. Lisa Rider, a pediatric rheumatologist and a juvenile dermatomyositis expert with the National Institutes of Health, reviewed studies that point to the importance of early, intensive treatment as the best way to prevent future development of calcinosis.

INTRAVENOUS PULSE METHYLPREDISOLONE AS THE FIRST TREATMENT

In one review, patients in one group received repetitive, intravenous pulse methylprednisolone (short periods of high doses of a form of prednisone administered through the veins) right away and did not develop calcinosis. In the second group, patients received oral prednisone alone and 34 percent of them later had problems with calcinosis.

Addition of methotrexate within six weeks of treatment

Patients who began with intravenous treatment followed quickly by both oral prednisone and methotrexate had either no calcinosis or a low frequency of calcinosis, compared to patients who were given methotrexate later in the disease course. The second group developed calcinosis at the same rate as the general juvenile dermatomyositis population.

Increase in treatment at the first sign of calcinosis

Increasing anti-inflammatory medication when calcinosis first forms might be helpful in preventing further deposition, but not necessarily in resolving existing lesions, Dr. Rider found.

Success with other treatments

There are limited examples, but some clinicians report marked improvement of calcinosis with the use of hydroxychloroquinine (Plaquenil), intravenous immunoglobulin (IVIG), cyclosporin, and most recently with infliximab. Colchicine has been effective in inflammation associated with calcinosis, as well as in healing ulcerations, but it has no reported effect on the size of the lesions.

The effectiveness of a particular treatment seems to depend on controlling inflammation, so other anti-inflammatory agents have potential.

RITUXIMAB (RITUXAN)

A multi-center trial is underway using rituximab for adult polymyositis and dermatomyositis and juvenile dermatomyositis. Informal, smaller trials have demonstrated improvement in children with juvenile dermatomyositis, including improvement in calcinosis. At the conclusion of the trial, we will know more about the effects of rituximab on calcinosis. Meanwhile, your physician can contact clinicians participating in the study for information about whether this treatment might be helpful to your child at www.edc.gsph.pitt.edu/rimstudy/, or email tma@myositis.org.

Potential treatments

Another treatment, diltiazem, a calcium channel-blocking agent, has shown positive results, Dr. Rider said. Nine patients with juvenile dermatomyositis or systemic sclerosis (another inflammatory disease) have experienced a reduction in lesion size after receiving a high dose over one to twelve years.

A second class of agents aims at either hampering the body's absorption or increasing its excretion of phosphate in an effort to decrease the deposit of calcium in tissues. Eleven patients with juvenile dermatomyositis or systemic sclerosis experienced a reduction in the size of calcinosis deposits or resolution of the lesions when treated with high doses over several months. These medications – aluminum hydroxide and probenecid – cause some side effects.

BISPHOSPHONATES

The same drugs given to people with osteoporosis are being tried for calcinosis, with some promise, Dr. Rider said. Two patients have experienced a dramatic improvement and near resolution of extensive calcinosis after two to twelve months of treatment.

Rehabilitation

Patients with calcinosis can benefit from physical therapy to extend their range of motion. They should be careful to avoid bumps and bruises.

Surgery

In extreme cases, patients experiencing severe pain, disability, recurrent infection or drainage will benefit from surgical removal of the calcinosis. Surgery can have complications, and the calcinosis may reoccur, but chances of success are greater with good control of the myositis before surgery and adjusting medication so it doesn't interfere with healing.

Recent JM studies examine disease course, treatment, and possible triggers

Predicting the course of juvenile dermatomyositis: significance of early clinical and laboratory features

Stringer E, Singh-Grewal D, Feldman BM. The Hospital for Sick Children, and University of Toronto, Toronto, Ontario, Canada.

Writing in the December, 2008, edition of "Arthritis, Rheumatism," the coauthors reported on their study of the widely varying disease course in JM. Since little is known about how to predict the duration or severity of JM while in its early stages, the researchers used statistics taken at the time of diagnosis to determine whether early features of the disease could predict the length of time it would take a child to reach remission. They also wanted to see what other aspects of the disease course could be predicted by early disease characteristics.

To conduct this study, the authors entered clinical and laboratory statistics from 84 patients with juvenile DM into a database. These patients were diagnosed between 1998 and 2005.

For this study, the authors defined remission as a clinical state of no active skin rash, weakness, or elevated muscle enzyme levels for 6 months after the patient had been taken off medication. They defined three different possible disease courses: monophasic (initial symptoms followed by treatment and then remission and no reoccurrence of the disease); polyphasic (several periods of disease activity, followed by treatment and remission), or chronic (disease may get better or worse, but is never really in remission as defined).

Statistics were reviewed at the time of diagnosis, at 3 months and again at 6 months after the diagnosis.

Here's what the authors found: The median time to remission was 4.67 years. Of all patients 60% had a chronic course, 37% a monophasic course, and 3% a polyphasic course. The presence of rash, most strongly indicated by Gottron's papules (red, scaly patches over the knuckles) at 3 months was the earliest predictor of a longer time to remission.

At 6 months, the presence of nail fold abnormalities (usually painful, red, ragged and inflamed areas around the nails) and rash also predicted a longer time to remission. The authors were unable to make predictions of disease course but concluded that the persistence of Gottron's papules and nail fold abnormalities early in the disease course were associated with a longer time to remission.

Treatment of refractory juvenile dermatomyositis with tacrolimus

By Hassan J, van der Net JJ, van Royen-Kerkhof A., Department of Pediatric Immunology and Rheumatology, Wilhelmina Children's Hospital, University Medical Centre Utrecht, Utrecht, The Netherlands.

Writing in the November, 2008, edition of "Clinical Rheumatology," the authors report the clinical course of three patients with juvenile dermatomyositis who were not improving despite extensive treatment. The three patients who were then treated with tacrolimus had previously experienced extensive skin disease, severe muscle weakness and were dependent on corticosteroids.

All three patients showed impressive improvement, especially in their skin. The overall disease activity decreased, all children became more physically active, and corticosteroid treatment could be tapered. However, none of the patients showed recovery of muscle strength, which the authors said was most likely due to irreversible muscle damage related to the long-standing myositis and high-dose steroid treatment. The patients were followed for 7 to 9 months after the introduction of tacrolimus. No adverse effects were seen. The authors concluded that this small study of three cases seems to demonstrate that tacrolimus has beneficial effects in children with refractory JDM, especially in those with severe skin manifestations.

Effectiveness of infliximab in the treatment of refractory juvenile dermatomyositis with calcinosis

By Riley P, McCann LJ, Maillard SM, Woo P, Murray KJ, Pilkington CA., Juvenile Dermatomyositis Research Centre, Institute of Child Health UCL, 30 Guilford Street, London

Some juvenile dermatomyositis (JDM) patients have a disease course that doesn't respond to multiple drug treatments. Prolonged disease activity is associated with increased sickness and chance of death. Writing in "Rheumatology," the authors say that TNF-alpha (tumor necrosis factor alpha, a cytokine) has been identified in high levels in JDM patients who have a long disease course and also have calcinosis.

The authors assessed the response of five JDM patients who had not responded well to treatment with an antibody that specifically opposes TNF-alpha. The monoclonal antibody infliximab was given intravenously to five patients. Further doses were then given at weeks 2, 6 and 8 weeks

thereafter. The dose and frequency were adjusted according to response.

The authors reported results between 8 and 30 months after starting infliximab. Improvements were seen in all five patients, including joint range of movement and, in some, improvement of calcinosis and skin signs. There were no major side effects observed with the addition of infliximab to the therapeutic regime.

The authors concluded that major clinical benefit was demonstrated after the initiation of infliximab in all five cases of hard-to-treat JDM.

Assessment of an infectious disease history preceding juvenile dermatomyositis symptom onset

By Manlhiot C, Liang L, Tran D, Bitnun A, Tyrrell PN, Feldman BM, Division of Rheumatology, Department of Pediatrics, The Hospital for Sick Children, Toronto, Ontario, Canada.

A number of studies have looked at the role of infectious diseases in triggering juvenile dermatomyositis. Previous studies have found a moderately high frequency of infectious symptoms prior to disease onset; however, no specific pathogens could be identified. The authors, reporting in "Rheumatology," set out to compare infectious symptoms with both the beginning and the eventual outcome of juvenile dermatomyositis.

They studied JDM cases diagnosed at The Hospital for Sick Children between 1988 and 2006, and found statistics about symptoms, diagnosis and disease outcome. They asked two independent pediatric infectious disease specialists to review all records of patients with symptoms or tests that suggested infection.

A total of 110 patients were reviewed; of these, 78 had sufficient information about disease onset for inclusion. Potential indications of an infectious process prior to JDM onset were found in 55 of the 78 patients (71%) and were further evaluated for evidence of infection temporally associated with symptom onset.

Features suggestive of infection prior to JDM symptom onset were found in 40 of the 55. Most children who had infections prior to JM diagnosis had respiratory illnesses (80%). Fewer patients than expected had disease onset during summer months. The presence of an infection at onset was not found to be associated with differences in characteristics at diagnosis or disease outcome.

The authors concluded that a substantial number of JDM patients have a clinical history consistent with an infection prior to onset. Newly diagnosed patients should undergo a full infectious disease assessment as part of their initial work-up; specific attention should be given to respiratory infections.

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Cleaning up damaged cells aids stem cell therapy

An experimental procedure that dramatically strengthens stem cells' ability to regenerate damaged tissue could offer new hope to patients with muscle-wasting diseases such as myositis and muscular dystrophy, according to researchers from the University of New South Wales.

This procedure, the first in the world, successfully increased muscles in mice, but it could be applied to all tissue-based illnesses in humans, in areas such as the liver, pancreas or brain, the researchers say.

The New South Wales research team adapted a technique currently being studied in bone marrow transplantation. Stem cells are given a gene that makes them resistant to chemotherapy, which is used to clean out damaged cells and allow the new stem cells to take hold.

A paper detailing the breakthrough appeared in the journal "Stem Cells" in early March.

The ability of adult stem cells to regenerate whole tissues opens up a world of new possibilities for many human diseases, according to the lead authors of the paper, Professor Peter Gunning, Professor Edna Hardeman and Dr Antonio Lee, from UNSW's School of Medical Sciences.

"The beauty of this technique is that chemotherapy makes space for stem cells coming into muscle and also gives the stem cells an advantage over the locals. It's the first strategy that gives the good guys the edge in the battle to cure sick tissues," Professor Gunning said.

"What has been the realm of science fiction is looking more and more like the medicine of the future," he said.

The procedure solves one of the major hurdles involving stem cell therapy – getting the cells to survive for more than an hour or so after inserting them into damaged tissue.

"In muscle, most stem cells die in the first hour or are present in such low numbers that they are not much help," Professor Gunning said. "Until now, the new, healthy cells had no advantage over the existing damaged tissue and were getting out-competed."

While trials of the procedure are at the pre-clinical stage, researchers plan to launch human trials treating specific forms of muscle disease within the next three to five years.

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Spring forward to healthier habits: Stop the salt assault

If you're eating out a lot these days, most likely you've seen information about the very worst food choices for those watching trans-fat and fat content, and there are a lot of excellent guides to help (see resources, below). However, salt content is trickier. Salt appears in foods where you'd never expect it, and even home-cooked food can pick up a lot of sodium from sauces and canned ingredients. It's important for everyone to be aware of salt intake: for those on prednisone it's especially important. Prednisone causes your kidneys to retain salt and therefore retain water, leading to some of the unpleasant side effects you've come to recognize.

The Center for Science in the Public Interest, a non-profit health-advocacy organization, recently published "Sodium Levels in Processed Foods" written by Michael F. Jacobson, Ph.D., CSPI's director. It turns out, says Dr. Jacobson, that a very low percentage of the salt in our diet is added via the salt shaker on the table. Although it's good to avoid adding salt in this way, it's becoming increasingly important to be aware of the salt that's already hidden in the food you buy at your favorite restaurant and from the supermarket shelf.

The amount in the typical American diet is a major cause of high blood pressure, or hypertension, a disease affecting 65 million Americans, increasing their risk of heart disease and stroke. In 2004, the director of the National Heart, Lung, and Blood Institute estimated that reducing sodium levels in processed and restaurant foods by 50 percent would save 150,000 lives a year.

Processed and restaurant foods account for more than three-quarters of all sodium eaten by the American people, according to a 1991 study. Dr. Jacobson believes that figure is probably even higher today. The same study estimated that naturally occurring sodium (especially in dairy foods) accounts for about 12 percent of our intake, and sodium from salt added in cooking or at the table adds another 11 percent.

Researchers have found that when consumers are offered a lower sodium product, they typically do not add salt, even when it's available, so the problem is recognizing which products are loaded with salt before they ever appear on your plate. Since salt is hidden in foods like desserts and tomato sauces, reducing your salt intake can be difficult. Dr. Jacobson notes that, even though excessive sodium consumption has been of great concern to health professionals, food processors have done little to reduce sodium levels. In fact, said Jacobson, between 1994 and 2004, the average sodium content of foods actually increased by 6%.

CSPI monitored hundreds of products for salt content, including restaurant food and products sold in large, mainstream stores. The researchers got their information from food labels, company web sites, or company representatives. They found huge variations in sodium content among brands, with some brands having twice as much or more sodium than a different brand of the same product.

Researchers found no rhyme or reason as to which products are lowest in sodium. In some cases, the brands offered at conventional supermarkets have much more sodium than specialty brands at natural-foods stores.

The reverse is also true. Some natural-foods brands have much more sodium: Amy's Organic Family Marinara Pasta Sauce has more sodium than Barilla Marinara Tomato & Onion. Likewise, some supermarket-brand products are lowest in sodium; some others are higher than nationally-advertised brands.

What about taste?

Evidently, salt is a learned taste, at least to some extent. In a small experiment in Australia, researchers found that people could barely detect when the sodium content of bread was reduced by 25 percent over six weeks. Many people who go on low-sodium diets to reduce their chance of bloating and fluid retention while on prednisone say they get used to unsalted foods rather quickly and enjoy the taste of the food, as opposed to the salt.

Resources

CSPI offers a free online tool that gives the salt content of hundreds of restaurant and supermarket foods. Find it at http://cspinet.org/new/pdf/saltupdatedec08.pdf.

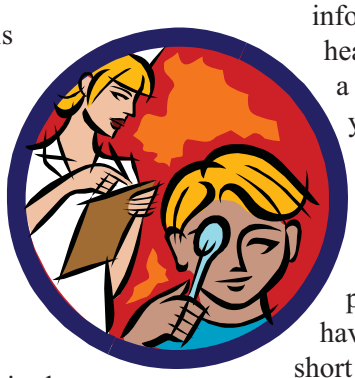
"Helpguide" has a wonderful guide to choosing healthy fast food online at http://www.helpguide.org/life/fast_food_nutrition.htm with links to dozens of other helpful sites. One of the best is "Stop and Go" Fast Food Nutrition Guide, available free online at http://www.fastfoodbook.com/.

JUST FOR ME

Fun facts and news for children affected by JM

Seeing through a waterfall

In your eye you have a lens, which is normally clear like a window that has just been cleaned. If that lens gets cloudy, it's called a cataract. Like a dirty window, a cloudy lens makes it difficult to see well. The person can still see, but it's blurry.



The lens in your eye is made of protein and water. Certain medicines can make proteins in the lens stick together and cause cloudiness, or cataracts, over a long time. At first, a person who has a cataract may not notice any difference in the way he or she sees. But over time, the person may find it harder to read and do other normal tasks. In fact, "cataract" means waterfall in Latin. Why? Because, if you have one, it may look to you like seeing through a waterfall. Let your parents know if there is a change in the way you see, or if you see flashes of light in your eyes. An eye doctor can easily tell if you are getting a cataract.

When a cataract first forms, you may be able to see better by using stronger lighting and wearing glasses. Eventually, though, surgery may become necessary.

During cataract surgery, the cloudy lens is removed and replaced with a new plastic lens that a person can easily see through. Cataract surgery is one of the most common operations performed in the United States. More than 1 million surgeries are done every year. That's a lot of eyes!

You can help protect your eyes, especially if you are taking medications or have a cataract. Eat healthy, protect your eyes from injury, and always wear your sunglasses!

Cool health websites for kids:

If you like to search the internet for information about your health, what to expect from a hospital stay, or why your doctor does certain tests, there are plenty of good websites. Those listed below also have information for your parents. Some of these have movies made by kids, short videos of common operations and procedures, and games and puzzles.

Children's Hospital, Boston: www.childrenshospital.org

Children's Hospital of Philadelphia: www.chop.edu

Johns Hopkins Hospital: www.Hopkinschildrens.org

Children's Hospital, Denver: www.tchden.org

Children's Hospital of New York Presbyterian: www.childrensnyp.org

Children's Hospital of Pittsburgh: www.chp.edu

University Hospitals of Cleveland: www.rainbowbabies.org

Texas Children's Hospital, Houston: www.txchildrens.org

Children's Hospital Medical Center, Cincinnati: www.cincinnatichildrens.org

Children's Memorial Hospital, Chicago: www.childrensmemorial.org

Children's Hospital, Los Angeles www.childrenshospitalla.org

University of California, San Francisco Medical Center: www.ucsfhealth.org/childrens/index.html

UCLA (Mattel Children's Center) healthcare: www.peds.ucla.edu

Massachusetts General Hospital: www.massgeneral.org/mghfc/

Lucile Packard Children's Hospital (Stanford) www.lpch.org

Mayo Clinic: www.mayo.edu/pediatrics-rst/

Children's National Medical Center, DC: www.dcchildrens.com

Children's Hospital and Medical Center, Seattle: www.seattlechildrens.org

Duke University Medical Center: www.dukehealth.org/health_services/childrens_health.asp

Miami Children's Hospital: www.mch.org

Yale-New Haven Hospital: www.ynhh.org/ynhch/ynhch.html

University of Michigan Hospitals: www.med.umich.edu/mott

St. Christopher's Hospital, Philadelphia: www.stchristophershospital.com

St Louis Children's Hospital: www.stlouischildrens.org

Children's Mercy Hospital, Kansas City: www.childrens-mercy.org

Go online

Be sure to see page one of the "OutLook" to see what's available for patients and families on TMA's website, www.myositis.org. On page 6 of this issue of the "Companion," we list some great web pages for children with health challenges, maintained by some of the country's major children's hospitals. Most of the links will take you directly to the "Just for Kids" sections, but all of these sites have information for parents as well. Your child can find hospital tours, movies made by kids, illustrations of medical procedures, games, puzzles and videos.

Sign up for camp

The Myositis Association offers $100 towards the cost of the camp to any family sending a JM child to a summer camp. The funds are paid directly to the camp or the parent after completion is verified. The "camperships" are a benefit of TMA membership. Email TMA@myositis.org for details.

Q&A with Dr. Ann Reed

On April 17, Dr. Ann Reed answered questions about juvenile myositis in an online, interactive discussion. Dr. Reed is a professor of pediatric medicine and chair of pediatric rheumatology at Mayo Clinic Medical School in Rochester, Minnesota. Dr. Reed is a long-time member of TMA's medical advisory board.

Read the transcript by going to the "Live Discussion" page in the "Community" section of TMA's website. Live discussions are a benefit of TMA membership.

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