
Family Practice Grand Rounds

A Child With an Enlarging Head Circumference

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DR. DAVID D. SCHMIDT (*Associate Professor, Department of Family Medicine*): Today we are going to discuss the case of a ten-month-old child with an enlarging head circumference and his family. I have selected this particular child and his family for several reasons. First, in my 15 years of clinical work, I have faithfully measured and recorded head circumferences, and this is the first time I have been confronted with this management problem. Because this finding is relatively rare, I had to review the differential diagnosis and diagnostic approach, and I thought others might appreciate a similar review.

Secondly, this is a very cohesive family that has many strengths and assets. In our clinical work and in most of our previous teaching exercises, we have focused on the extremely chaotic and disorganized family. I would like to make the point that many of the principles of family medicine are generic for all families and cut across all cultural and socioeconomic strata. Permit me to suggest an analogy. The extremely disorganized family is similar to a case of heart failure in the stage of pulmonary edema. The therapeutic effects of digitalis and diuretics are readily learned with this extreme example. However, in the average practice, these learned skills will most often be used on the earlier and more subtle stages of heart failure. We like to think that early detection and early intervention prevent the patient from having to suffer

the discomfort of pulmonary edema. Similarly, the lessons we learn from studying extremely disorganized families will allow us to detect and intervene at an early stage when stress threatens to disturb the family's equilibrium.

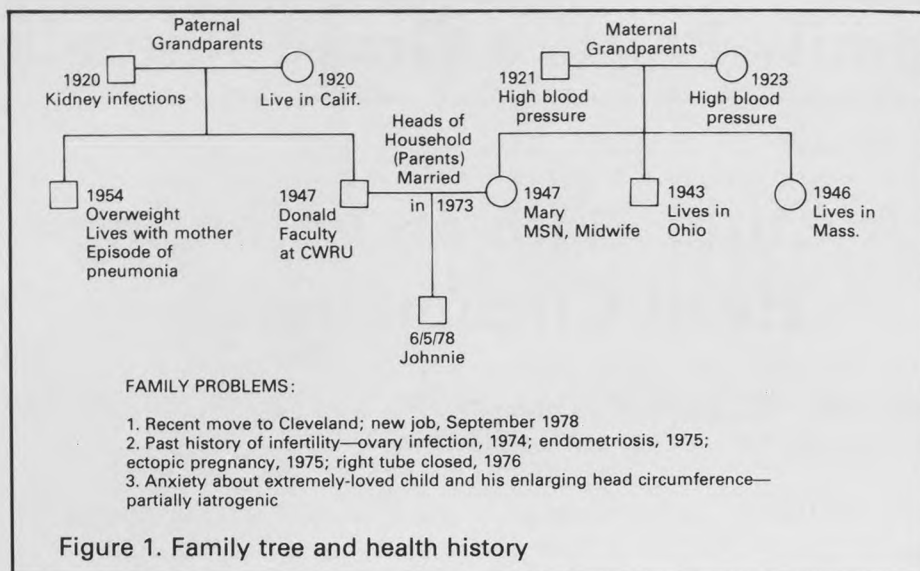
The final reason for selecting this particular patient is that the parents are extremely articulate. During the family interview, they will relive the experience of the past few months. This will undoubtedly increase our sensitivity to what families experience when a physician brings up the possibility of a neurologic problem and orders certain diagnostic procedures.

The plan for this conference includes a case presentation followed by a discussion by Dr. Samuel Horwitz of the differential diagnosis and the diagnostic approach to a child with an enlarging head circumference. There will follow a family interview and, finally, a general discussion led by Dr. Jack Medalie.

Case Presentation

DR. SCHMIDT: This child was born on June 5, 1978, weighing 7 lb, 2¹/₂ oz, in Boston. The father is on the faculty here at Case Western Reserve University. The mother is a registered nurse with a Master's degree in midwifery. The parents were married in 1973 and decided to have a child in 1975. Because of an infection associated with an intrauterine device in 1974, Mrs. B. underwent several diagnostic work-ups for infertility. A laparoscopy showed endometriosis in 1975. She had an ectopic pregnancy later that same year, and the right fallopian tube and ovary were removed. In 1976, studies showed an occlusion of the left fallopian tube. The couple had resigned them-

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selves to having no children and were exploring the possibility of adopting a child. Quite unexpectedly, Mrs. B. became pregnant with this child in 1977. The pregnancy was unremarkable and the child was born in an alternative birth center with no difficulties. The three-member family left the birth center after four hours. When the child was one-month old, the family moved to Cleveland as Dr. B. assumed his new position at the university. The family joined the Family Practice Center at University Hospitals in October of 1978. Figure 1 shows the family tree.

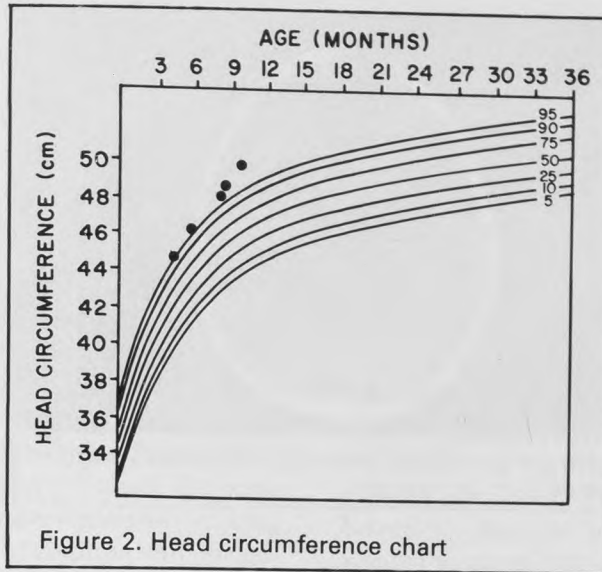
During the course of well-child care here, it was documented that there was a steady increase in the child's head circumference. The head circumference, which was initially entered on the 95th percentile, went well above this curve while the body weight and length remained at the 75th percentile. In other words, there was a marked relative increase of head circumference out of proportion to the changes in weight and height. Figure 2 records this trend. At ten months of age, this trend was definite and could no longer be ignored, despite the fact that motor and verbal development were normal and repeated neurologic examinations were within normal limits. After discussions with a neurologist, a computerized tomographic scan (CT scan) was ordered. The official results of the study included "mild changes of cortical atrophy with mild ventricular enlargement." The possibility of having a serious neurologic problem in this ex-

tremely valued child caused considerable concern and anxiety for these parents.

Differential Diagnosis and Diagnostic Approach

DR. SAMUEL J. HORWITZ (*Associate Professor, Department of Pediatrics*): I was interested to note that in your years of practice, Dr. Schmidt, you have seen very few examples of big heads. In my particular type of practice, I see enlarged heads every week. When confronted with the problem of an increased head circumference, there are several decisions to be made. There are some general rules that one tends to follow. The head circumference should normally be between the 3rd and 97th percentile lines. That rule usually holds up well. But what if you have a child with a small length and weight? Shouldn't he have a little head? No, that isn't true. By and large, a head circumference below the 3rd percentile represents an abnormality. There is the same tendency to say that the child who is large should have a large head. This is also not true. The head circumference should not be above the 97th percentile despite the body size.

The child's head circumference usually follows his own percentile line rather constantly. Therefore, it is worrisome to see a child's head size beginning at the 25th percentile and increasing to the 50th and later to the 75th percentile. The one exception to this may be in the premature infant



who tends to go through a rapid catch-up head growth spurt that will eventually level off and follow his own percentile line.

When do you intervene, and why? I would have done the same thing that Dr. Schmidt did. When the child first went from the 95th to the 97th percentile, I would not have worried too much. But, at some point, one has to make a decision as to whether or not there is an abnormality. By the third measurement, when it was far above the 97th percentile, one has to worry. The underlying concern is that the progressive enlargement represents hydrocephalus. There are subtle degrees of hydrocephalus that do just this. These subtle changes over a long period lead to gradual brain damage and a decrease of 10 to 20 IQ points by the time he or she is four years old. This is the main reason for following these children so closely.

To discuss the differential diagnosis of an enlarged head, let us think anatomically and work through the layers of the head. We will begin with the bone. The skull itself may be thickened. There are several diseases of this type, and most are rare, such as osteopetrosis and familial hyperphosphatasia. In these situations, it is appropriate to start with a simple skull x-ray before a CT scan is performed.

A different type of skull defect may occur with an enlarged head and very thin skull. Such a skull may have a defect in the laying down of the bone—osteogenesis imperfecta. The bone is so

weak that the normal pulsations of the brain have enlarged the head, because there is nothing to contain the brain. Remember that the skull grows because the brain forces it. The skull is, in a sense, only a passive covering of the brain. As the brain expands, the skull makes way to accommodate the brain.

The next layer of the head is the subdural space. Subdural hematoma is another cause of a big head. This would be noted particularly in populations where there is a high prevalence of child abuse. The presence of subdural effusions may lead to secondary hydrocephalus. Transillumination is still a very valuable tool in the diagnosis of subdural effusion. However, today none of us would tap the subdural space without first having a CT scan performed. In the meninges, there can also be cysts that cause an enlarged head.

The deepest layer of the head is the brain itself. Here, the most common cause of head enlargement is hydrocephalus. Another cause of head enlargement is neurofibromatosis. Here, the brain is enlarged and contains abnormal neural elements. Other examples of enlarged brain due to infiltration of abnormal substances are storage diseases, such as Tay-Sachs disease, and mucopolysaccharidosis.

Now let us consider this particular child being discussed today. His bony skull is normal. There are no skin lesions. If he had a storage disease, his development would be leveling off or deteriorat-

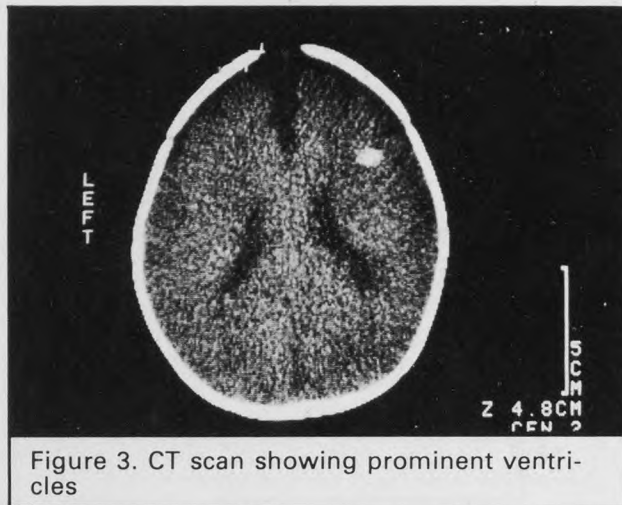


Figure 3. CT scan showing prominent ventricles

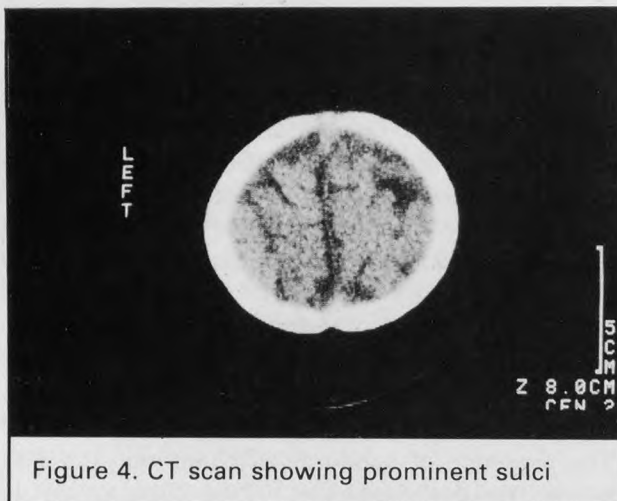


Figure 4. CT scan showing prominent sulci

ing. His differential diagnosis, therefore, comes down to hydrocephalus vs a big brain (megalencephaly). Most causes of megalencephaly are familial, inherited as an autosomal dominant trait. In this case, the father's head circumference is 62 cm, which is well above the 97th percentile. There is also a paternal uncle with a big head.

Let us look at this child's CT scan (Figures 3 and 4). The longitudinal fissure and sulci are prominent and the ventricles are generous. But look at the cortical mantle. There is a considerable amount of brain on either side. The radiologist has not taken a total look at the patient. He is looking at a set of celluloid films! He says that if the fissure is big and the sulci are deeper than normal and the

ventricles are a bit bigger, then there must be atrophy. But as practicing physicians, how could we imagine that you get atrophy with a big head and a thicker than average brain? I now have 15 or 20 of my own cases of megalencephaly. Unfortunately, this series has not been published with the CT scan findings. I have noted the large longitudinal fissure and prominent sulcal pattern with generous ventricles in many of these patients. The CT scans have often been labeled as cerebral atrophy. However, follow-up CT scan in two or three years shows the disappearance of these so-called abnormalities and, obviously, this cannot be atrophy. I am confident that this particular child does not have atrophy of brain tissue and would predict that his CT scan in a year or two will show a large brain with normal sulci and a normal longitudinal fissure with generous ventricles. The large ventricles are simply in proportion to the very thick, large brain.

DR. JACK H. MEDALIE (*Chairman and Dorothy Jones Weatherhead Professor, Department of Family Medicine*): I am curious about the increasing size of the head circumference. He did not stay on one growth curve.

DR. HORWITZ: This is a very important point. Everyone would assume that this child with megalencephaly should have started at birth with the head at a very high percentile and should have stayed along that percentile curve. He should not have risen above it. Usually, this type of progressive enlargement implies hydrocephalus or the storage of some abnormal material. I do not

understand why this should happen with megalencephaly. I brought along a reference on the whole subject of megalencephaly. There are very few good papers devoted to this disorder. This is a neglected subject, despite the fact it is a rather common disorder. DeMyer, of Indiana University, reviewed the subject in 1972.¹ In this review, he also mentions two cases in which the growth rate of the head was very rapid, thus crossing percentile lines. However, he does not really emphasize this particular point in the discussion. I have learned this largely by experience of my own cases and have followed up these patients with repeated CT scans. They have not shown the development of hydrocephalus, and atrophy is clearly not present. What you see if you follow these patients long enough is that the majority of children with megalencephaly who have this increase will eventually level off to stay at a curve above but paralleling the 97th percentile. I really do not understand this at all. If you are talking about a brain that contains more cells and more tissue, and that is made bigger to start with, why should it take this sudden jump? I have no explanation for this but, based on my own experience, this would not now bother me too much.

With megalencephaly, there are at least three possible outcomes. One is a normal outcome. This is the case in the majority of instances. The only consequence is that these patients have a big head. Cosmetically, they look fine and you do not notice the head enlargement once the hair has grown in. The second outcome may be some nonprogressive neurological deficit, such as mild to moderate retardation. In hospitalized cases, this group represents about 25 percent; it is probably lower in community based populations. The third outcome is subtle clumsiness or learning difficulty. These are relatively mild problems. You might end up with some motor imbalance leading to scoliosis. In the same family, you might find that the father is a successful attorney, that one child might be mildly retarded, another might be clumsy, and another might be attending college. With this particular child's normal motor and intellectual development, the odds are overwhelming that he will follow in his father's footsteps.

The Family Interview

(The child is playing on the floor and interacting with the parents.)

DR. SCHMIDT: Thank you for agreeing to join us for this conference. Could we start with your story when you were both students in Boston?

MRS. B.: I was in graduate school at Boston University.

DR. B.: I was at MIT—a graduate student working and teaching in the field of organizational behavior and management. I agreed to do a seminar for the nursing classes at Boston University.

MRS. B.: The seminar was so well received that we asked him to come back for a second time and our courtship began.

DR. SCHMIDT: You were then married in 1973. Did you try to have children right away?

MRS. B.: No, I think it was about two years before we decided to try to have a child. We wanted to get our educations behind us. Earlier, I had had an infection associated with an intrauterine device. When I could not get pregnant, a hysterosalpingogram was done and showed that both tubes were barely patent. I did get pregnant, but it was a tubal pregnancy. I had to have the right tube removed. They did a study that showed my other tube was completely occluded. I was told that if I did get pregnant again, there was a 90 percent chance that it would also be a tubal pregnancy.

DR. SCHMIDT: How did that make you feel?

MRS. B.: It was really devastating. We wanted to have a child and we felt robbed of the opportunity. I joined an infertility group and worked out my feelings.

DR. B.: It was more abstract for me. We were both troubled by not being able to have children, but I wasn't as personally involved as she was because of her professional role. During that time, we were looking into adoption. We were quite frustrated by being told that it would be three to five years before we could find a child. We also wanted a very young child. I couldn't understand why we couldn't adopt the kind of child we wanted.

MRS. B.: We had gone through this crisis together and it had really strengthened our relationship. At this time, I had decided that if I couldn't have children biologically, I would make a career commitment. I always wanted to be a midwife, so I went over to Edinborough to study. I had a second opinion on my infertility while I was there. The same week that I finished my midwifery exams, I got pregnant.

DR. B.: We had been commuting across the Atlantic. I visited her six different times. The pregnancy was a shock.

MRS. B.: I discovered that I was pregnant when I was back in Philadelphia. We were doing urine pregnancy tests on one another and my friend told me that my urine was positive. I said that it couldn't be true, but it was. My first thought was it's another tubal pregnancy. I called my obstetrician in Boston and he asked me to fly back home immediately for an ultrasound study. The ultrasound showed that it was an intrauterine pregnancy. The pregnancy was beautiful. We had a beautiful birth in an alternative birth center. It was natural childbirth and all three of us were home after four hours.

DR. SCHMIDT: Shortly thereafter, you moved to Cleveland.

DR. B.: Within a month. We did everything at once.

DR. SCHMIDT: Then I began caring for you when the baby was three months old. We began his well-child care and, during the course of this, found that his head circumference was beginning to increase. It was our nurse, Ms. Farricker, who first brought this to my attention, and I tried to ignore this trend. By the time he was ten months old, I could no longer ignore this. When did you sense that there was a concern about his head circumference?

MRS. B.: The first time the measurement went off the chart, I was not alarmed. The second time that you mentioned this and that it might be best for him to see a neurologist, I became alarmed.

DR. SCHMIDT: Why don't you try to recreate some of the worries and fears that you had at that point.

MRS. B.: Well, first of all, I think there was an 11-day lapse between when you ordered the CT scan and when we could have it done. This was an 11-day period of concentrated worry. The implications of neurologic problems seem hazy.

DR. SCHMIDT: And you are a registered nurse who understands these implications.

MRS. B.: Yes, I knew of some specific problems and had seen children with shunts and big heads and retardation.

DR. SCHMIDT: Did you go back to your books?

MRS. B.: I said that I wouldn't, but I did.

DR. B.: The major impact of reading the books

was that it convinced me that there was no real problem. I think the impact on us started that first day. I was late in getting to your office because I was parking the car. You had already seen our child. When I came in, my wife was in tears. She began to worry about what it could be. My wife talked about all the horrible things that might be responsible for this. While walking back to the car, I put my arm around her and she broke into tears again.

MRS. B.: I was really upset about it. He would rally and become strong, to reassure me. Toward the end of the week, I felt better but my husband was all upset. By the time the day of the CT scan came along, I was convinced that things would be all right. My husband had become more and more worried. Every time the child screamed out, we became upset and worried. I watched my son closely and every time he twitched, I was concerned that this was some manifestation. Remember, I called you several times about a cold, Dr. Schmidt. We had several contacts with the practice at this time. I called you about a rash. It was terrible! Even our dog got sick. We took our dog to the veterinarian. We were very worried about our son. I was playing with him as if this were the last day. I looked at him as if the end were near. We had a visitor from Holland and even he got sick! He called me from New York the day of the CT scan.

DR. SCHMIDT: Tell me about the day of the CT scan.

MRS. B.: Our son had had the sedation, but I think you probably should have given it to us! He wasn't affected at all. I'm sure he felt the nervous energy that we had. He was wide awake and alert. It was very frightening. We waited. Seeing the kinds of patients that were having these CT scans done made us realize how serious it was to have this procedure performed. There was one woman there who had a poorly fitting wig, who obviously had a brain tumor. Another child came down from the pediatric ward who was on a respirator. It was just very scary.

DR. SCHMIDT: Then I came down and gave your son a second dose of chlorhydrate.

DR. B.: We had a 1:00 PM appointment and it was 4:30 PM before we left. We had to wait and struggle with him, trying to keep him quiet. Seeing the other patients coming through the waiting room was quite upsetting. At the time when we

were trying to calm our son down, we were in a very small room. The traffic that came through that room, from the outside waiting room to the room where the CT scan was being done, included a group of residents making rounds. It struck me as a classic example of there being no awareness of our presence. The residents were carrying on an argument about why an intern had not done something. They carried on a heated argument without any awareness of our presence. You know, when you're going through a lot, you focus on outside things. This triggered other things. I was very upset by the way the residents carried on. We talked about it a bit. What's the hospital for—patients or residents? They're doing their duty, they're looking at the studies, but it seemed to me that they were talking about a chart. It was very distasteful for me. It occurred to me that my son was soon going to become nothing more than a "chart."

DR. SCHMIDT: Then you came upstairs into my office for the results.

DR. B.: Yes. My wife was very anxious to have the results. I was quite disgusted. I just wanted to go home. I wanted to get out of there.

DR. SCHMIDT: Then I got the call from the radiologist with the report, and I came out to the waiting room to greet you.

DR. B.: Yes, you came out and said, "Why don't you come into my office." That was the beginning. I sensed that there was something more than just a normal study. You just said, "Come into my office." You'd never done this before. At that point, I knew something serious was wrong. You said that, as usual, the results were inconclusive. That there's nothing that says there *is* a problem, but it is not entirely normal, either. The ventricles were enlarged. It slowly sunk in that everything was not normal. I had been optimistic, but this news was devastating.

MRS. B.: That's right. We had expected that the CT scan was going to show that our child was perfectly normal. And we were stunned by the fact that there was even a question about abnormality. You called the neurologist right away and he said, over the telephone, not to worry. You then gave that information to us and set up an appointment for consultation three days later.

DR. SCHMIDT: What was that three-day period like?

DR. B.: It was worse for me. I was much more

upset during those three days than I had been during the previous 11 days. I was sort of stuck between, "Why can't he tell us?" and "Had we never started this, we would never have had such a mess." Sure, we wanted to check to be sure that everything was okay. On the other hand, this created a great deal of anxiety. I had to be out of town when my wife came to see the neurologist. It was bad—leaving; it was bad being away and knowing that she was going to see the neurologist. Even though I wasn't at the house, it was an extremely upsetting period. I had visions of shunts and all those terrible things that my wife had talked about.

MRS. B.: I felt better. I felt much more positive, although I was still reserved.

DR. B.: That was based, wasn't it, on the telephone call Dr. Schmidt made to the neurologist?

MRS. B.: Yes.

DR. SCHMIDT: That's right. While you were in the office, I was able to catch the neurologist and discuss the case with him.

DR. B.: Then you said that he said, over the telephone, that it was probably just a big head and don't worry about it. That gave my wife a lot of hope.

DR. SCHMIDT: Then we had the consultation during one of our teaching conferences.

MRS. B.: The neurologist was very nice. It didn't matter that there were other people there.

DR. SCHMIDT: How did you feel at that moment?

MRS. B.: When we finally heard that everything was okay, a great burden was lifted from our shoulders. It was also over the Easter holidays, and there was a great deal of joy that weekend.

DR. B.: I called and talked to her as soon as she got home. She was very jubilant. We did talk about it before. We grew closer together during this period of stress. We were able to verbalize our fears.

DR. SCHMIDT: What can we learn from this? What advice do you have for the medical profession? What have you learned about yourselves?

MRS. B.: I would say that timing was quite important. If it is at all possible, the shorter the waiting period, the better. If the CT scan had been scheduled earlier, it would have decreased the period of great worry and anxiety. I think it would be really helpful if physicians would realize how frightening it is.

Table 1. The Field of Emotions

Feelings
Intrinsic and subjective
Thoughts
Ideas and fantasies
Behavior
Actions, ie, crying, laughing, anger, running away, etc
Physiologic responses
Increase in heart rate, changes in blood pressure, etc
Others
A. An increased susceptibility to infection
B. An increased susceptibility to surroundings
Familial effects
A. Transmission of feelings, anxieties, etc, through family
B. Homeostatic mechanisms by which the family equilibrium is maintained

DR. B.: Those residents in the hospital—if they had had some sensitivity for what was going on with the patients in that waiting room! I regret that I was not present when you first talked to my wife, Dr. Schmidt, and I was out parking the car. We don't hear the same things even when we are together. Perhaps it would have been better if I had been there. Even when we hear you say the same thing, we interpret it differently. I think that anything that deals with the brain is just devastating. If you had said something was wrong with his feet, or that he had a broken leg, that wouldn't have upset me. The suggestion of possible brain damage creates a whole new level of stress. I feel that if there is anything in the brain, this is more congenital and I would personally feel more responsible that I had passed on some defect to my child. Whether it's true or not doesn't matter, but that's the way I feel. From the neck up, there's double the stress.

DR. SCHMIDT: When you look at your son now, do you have any different approach?

MRS. B.: Yes, I have a new framework. We know what our outside limits are. As a result, it's made us much more relaxed. Minor things that we used to worry about seem unimportant compared to the possible problems we had. For instance, last

week he picked up a handful of dirt and put it in his mouth and it didn't bother me at all!

DR. B.: Yes, he had a minor cold last week and we didn't even call you. We're first-time parents and we worry, but I think we're much more relaxed with our child now.

DR. SCHMIDT: Thank you very much for sharing your experiences with us.

Discussion

DR. MEDALIE: This is a fantastic family with many strengths. They demonstrate many common reactions. Let me try to voice my thoughts aloud. When one thinks about emotions—the fields of emotions—it is possible to list feelings, thoughts, behaviors, and physiologic responses. Table 1 illustrates this. These are the classical ways by which emotional responses have been categorized. Feelings of joy, sorrow, depression . . . we saw the whole gamut of things here. The ideas are all the things one thinks about—your fantasies, the image of the child having surgery or a shunt. This family went through various fantasies. Many times the parents pray for the illness to be absorbed by their bodies, leaving the child well. The increased susceptibility to disease or infection is a real thing. Our state of knowledge has advanced beyond mere theory. The mortality rate, from many different causes, is markedly increased in those individuals who have lost their spouses. This is particularly true in the younger age groups.² Susceptibility to streptococcal infections has been shown to be increased when families are under acute and chronic stress.³ The complication rate during pregnancy is over 90 percent when the mother is experiencing significant stress, but has little support from family or community. The type of clustering of calls and visits to the physician during periods of stress is seen frequently in our practice and was demonstrated in this family.

In addition to a real increase in susceptibility to true disease, there is a marked increase in sensitivity. You have heard the family describe how they watched the child's every move and interpreted his behavior as a possible manifestation of a serious neurologic problem. They were also hypersensitive about things going on around them. When your whole emotional being is working overtime, you become much more sensitive to things going on around you. You pick up little

things that you normally would not detect. Note their reaction to the residents walking in and out of the CT scan waiting room. Ordinarily, they may not have noticed what the residents were saying, but, during this hypersensitive period, they did hear and even projected their fear, as the father stated, that their own child might become a mere "chart," and that another group of residents might one day be arguing over their child. Think of how important the understanding of this human reaction is for physicians! We must be aware of this hypersensitivity and monitor our words and behavior accordingly.

Another thing I'd like to talk about is family interaction. The family is a system with advanced homeostatic mechanisms. The mother talked about this. When she had that "down" feeling, she transmitted it to her husband. By communicating this to him, her spirits went up and his went down. Each member of the family has these ups and downs, but the homeostasis, or balance in the family as a whole, is maintained. If one is down, the other is up. There always seems to be somebody up. If the whole family is down, that's a problem! Their feelings were also transmitted to their child and, in this case, even to a visitor and the family dog!

ATTENDANT: Have the obstetricians been involved in this type of a conference? One of the routine periods of high sensitivity is during pregnancy and labor. Being a physician and a mother, and having been in the obstetrical ward, I know that the things you hear personnel say ordinarily wouldn't phase you. But when you're in labor yourself, it gets to you and upsets you. Then, if you say anything to the physicians about it, they look at you as if you were absolutely crazy!

ATTENDANT: Dr. Schmidt, why did you order the CT scan?

DR. SCHMIDT: All along, I was reasonably sure that there was nothing wrong with this child. I was hoping, originally, that a neurology consultation would settle the issue. My consultant convinced me that the rising curve for the head circumference required a CT scan for evaluation.

DR. MEDALIE: Having been brought up in a period before the CT scan, I can reassure you that the invasive procedures that would have been done in the past make the CT scan seem a pleasure! A CT scan is noninvasive compared to the studies that were done in the past.

DR. SCHMIDT: If I now had a chance to do it over again, I would still order the CT scan. The head circumference was steadily increasing and rising above the curve it had started on, indicating that there was something potentially abnormal going on. There was the constant worry that this was early hydrocephalus. I did not want to ignore this and be party to holding back intervention that might have prevented this child from having optimal intellectual development.

DR. KENNETH G. REEB (*Associate Professor, Department of Family Medicine*): It seemed to me that Dr. Schmidt hoped that nothing was wrong. He had considerable evidence from the normal physical examination, but did not have enough evidence to be absolutely sure, according to the current state of the art. In 1980, the state of the art is that you need a CT scan. The dilemma is, how does the physician make it as non-noxious as possible? We cannot put our heads in the sand and ignore the trend of an increasing head circumference. The real judgment question is, how quickly does the physician move and how quickly does one order diagnostic studies?

DR. MEDALIE: This reaction that Dr. Schmidt had is one that all of us go through. The physician worries about a serious problem. The family physician goes through the same stages that the family goes through. The question comes up, how does one go on when certain investigations must be done? I think the CT scan was essential here. It will probably have to be repeated in a year or two. It's a very difficult situation for the physician who is going through the same type of anxieties as the family. This is one of the many occasions when the family physician hopes that his fears will be disproved and the results will be normal, but at the same time he or she tells the patient as much as possible. The ability to do this is the real art of medicine.

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