

# Family Practice Grand Rounds

## The Family Physician, Teamwork and Rehabilitation of the Patient with a Stroke

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A patient with a cerebral vascular accident presents many challenges and opportunities to the health-care team. Foremost is the need for an accurate physiological diagnosis as well as an overall assessment. The rehabilitative program must consider the social, psychological, and environmental needs of the patient. This Grand Rounds addresses the objectives in managing the patient who has suffered a stroke and illustrates techniques that the health-care team can use in helping the patient regain a meaningful life.

DR. H.C. SLADE (*Director, Division of Family Practice*): Today's discussion centers around the "Family Physician, Teamwork and Rehabilitation of the Patient with a Stroke." Dr. Nathanson, what is the scope of the problem?

DR. S. NATHANSON (*second-year family practice resident*): In Canada over 10,000 people or approximately ten percent of all deaths per year are caused by cerebral vascular accidents. At age 55 the probability of one's dying from a stroke within the next ten years is 931 per 100,000. At age 65 the probability rises to 3,160 and

at age 75, to 8,522 per 100,000. But mortality is only one important aspect, because another major concern is the patient who survives a stroke and is disabled. The patient and family are in a crisis situation, and the family physician has a key role in coordinating community resources to facilitate rehabilitation of the patient.

DR. SLADE: The patient we are presenting today is Mr. A.K. I think he is a good example of such a patient because he was severely disabled and now is doing extremely well.

DR. NATHANSON: Mr. A.K. is a 37-year-old man who recently arrived from Poland. In Poland he was in charge of a good restaurant, working as a chef, and he was well respected and admired for his skills.

Two months after arriving in Canada, he awoke one morning feeling dizzy and had a tingling sensation in his hands; there was no associated headache. The next thing he remembers is that he fell to the floor. He

could not move the right side of his body and could not speak. He was brought to the Vancouver General Hospital by ambulance.

On admission, his blood pressure was 140/90 mm Hg and his other vital signs and general physical examination were normal. All abnormal findings were related to his neurological status. Mr. K. had slurred speech, and examination of his vision showed a right homonymous hemianopsia. There was lower-right facial paralysis and decreased facial sensation on the right side. Power on the right side was markedly reduced with a right hemiparesis, worse in his arm than in his leg. Sensation on his right side was diminished to touch and pinprick. Also, on his right side he had a Babinski sign and increased deep tendon reflexes. Mr. K.'s funduscopic examination did not show hypertensive encephalopathy. Initial investigations included a normal chest x-ray and electrocardiogram. A lumbar puncture was done and the spinal fluid was clear and colorless with normal pressures, protein, and glucose; there were no white or red cells and gram stain and culture were negative. It was noted that Mr. K. was right-handed.

The diagnosis at that time was a left cerebrovascular accident with a right hemiparesis. The patient underwent a left cerebral arteriography several days later. Dr. Kaan, could you comment on the radiographic findings.

DR. K. KAAN (*Radiologist, Vancouver General Hospital*): (See Figure 1.) There is an avascular space-occupying lesion in the diencephalon on the left side deep to the sylvian fissure and lateral to the basal ganglia. The internal cerebral vein is 4 mm to the right of its normal position. In view of the patient's history, the most likely underlying lesion is that of a hematoma.

DR. NATHANSON: The patient's history revealed that he had been complaining of pain in his finger joint and had a history of iritis several months earlier. On examination of his urine there was significant and persistent proteinuria plus microscopic hematuria. Also noted were an increased sedimentation rate, increased gamma globulin, decrease in complement factor, and an eosinophilia. At that time a clinical diagnosis was made of periarteritis nodosa. This systemic vasculitis of unknown cause probably

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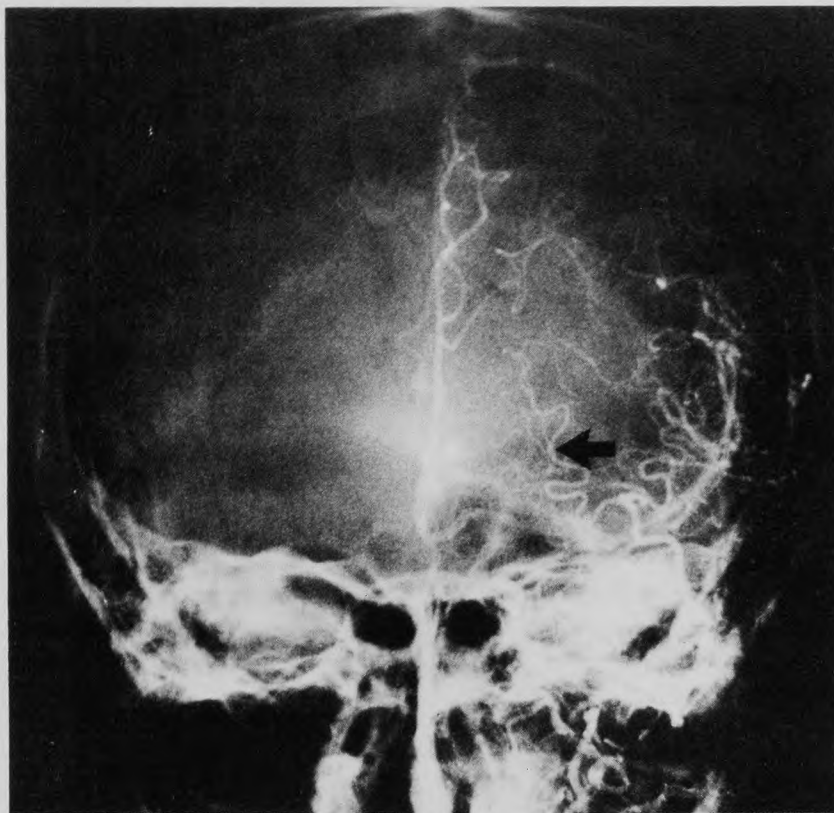


Figure 1. Left cerebral arteriography of Mr. A.K., demonstrating a shift of the vascular system consistent with an avascular space-occupying lesion.

precipitated the patient's cerebral vasculitis accident. Because of the vasculitis he was started on a steroid program of 80 mg of prednisone daily. This was later changed to 160 mg prednisone on alternate days.

At this point the patient was still very disabled, with several problems. One was his difficulty in communicating: Mr. K. had suffered a "cerebrovascular accident" and was dysarthric, but he was also a recent immigrant and could barely speak or understand English. Because of this, it was difficult to determine to what degree his speech was influenced by the language barrier. Another problem was the limitation on his daily activities. He had severe loss of tone and sensation on his right side, although his motor strength was still maintained. I have learned, in reviewing this case, that loss of sensation is probably more serious to a patient than the actual loss of motor strength.<sup>1</sup> Finally, complicating the whole situation is the fact that, having just arrived from a distant country, the patient had no

family or friends here. His rehabilitative needs were extensive. Yet, when I see him now in the Family Practice Unit, four months after his admission to the hospital, he is doing remarkably well. He walks to the Unit unassisted. He still has diminished sensation of his right side, but he has good tone and strength of his extremities and is following his rehabilitation program.

For successful rehabilitation the patient must have, from the beginning of the illness, competent clinical care. One should bear in mind that, as with this patient, there are often complicating medical problems, such as hypertension, arteriosclerotic heart disease, or diabetes. These all require careful medical assessment and management.

It is often difficult for the patient to accept the extent of his disability and to realize that it is not something that will "go away" almost magically like a pneumonia. Hence, it is necessary to provide the environment and especially health-care personnel who will encourage the patient to become

committed to the difficult task of training and adapting to his new situation.

Nursing care especially involves the encouragement of activity, accompanied by a gradual withdrawal of assistance, so that the patient takes on responsibility for his own functions. Particularly in the early part of the illness there are crucial considerations such as nutrition, care of elimination, and maintenance of joint function and of skin which nurses manage in collaboration with other health-care personnel.

In order to get into more detail regarding some of the problems of Mr. K.'s rehabilitation, I have asked some guests to come and speak with us. The first is Miss Klari Varallyai who is in charge of Mr. K.'s rehabilitation program at the Vancouver General Hospital. Miss Varallyai, would you like to say something about Mr. K. and particularly what we can do to help a patient who suffers a cerebrovascular accident.

MISS K. VARALLYAI (*Physiotherapist, Vancouver General Hospital*): I am very happy to be here to discuss with you Mr. A.K.'s problems and the current philosophy of rehabilitation.<sup>2</sup> The Chinese people have two symbols for the elderly, one is opportunity and the other is challenge. These certainly apply to the person in need of rehabilitation. Our goal is the development of maximal functional independence. The importance of an early rehabilitation program cannot be over-emphasized. Under ideal circumstances, physiotherapy should begin immediately after the onset of hemiplegia. In Mr. K.'s case we were fortunate enough to start from day one.

Many future difficulties can be minimized or eliminated by preventive positioning, movements, and exercises in the early stages, after the patient's vital signs are stable. Our early role consists of care of the chest: keeping airways clear and assisting the nursing staff in correct positioning. We try to achieve maximal potential by preventing abnormal postures which could lead to increased spasticity, contractures, and pressure sores. After his initial clinical state stabilized, Mr. K.'s physiotherapy program included getting in and out of bed, encouragement in using both sides of his body, and the establishment of normal balance reactions. Much of his energy



is directed toward using, rather than ignoring, the affected side. We try to avoid extra struggle in performing a movement which is too advanced. This is because excessive effort will encourage abnormal movement. There are many degrees of hemiparesis and one cannot set any rigid rules because progression depends upon ability and tolerance.<sup>3</sup> As soon as possible the patient is treated in a group setting away from the ward. This provides greater stimulation and opportunities to socialize with other patients.

Like most patients, Mr. K. desperately wanted to walk. As soon as possible we try to help re-establish weight bearing on the affected side with gradual improvement of balance. Then the patient learns to transfer his weight from one foot to the other, using aids as he needs them. Finally he progresses, if possible, to walking without aid.

We followed Mr. K. on an outpatient basis after his discharge, and his movements and functions continued to improve. Last but not least, the quality of life he leads has greatly improved since his discharge.

It certainly makes a big difference if family or friends can be involved early in the patient's rehabilitation. They should be taught how to maneuver a wheelchair. It is then possible for them to take the patient out for visits when opportunity permits. Of course, it is essential for family members or close friends to be instructed in the basic aspects of the program so that when at home the patient may have assistance as long as it is required.

Because of his speech problems, Mr. K. worked with a speech therapist. When necessary, the speech therapist helps the patient who has suffered a stroke by being an interpreter and social link, forming a bridge between the patient and those around him. Apart from specific therapy, the speech therapist's major concern is that staff individuals respond to the patient as an intelligent adult and not talk with him as if he were deaf.<sup>4</sup> This consideration again encourages the patient to be more responsible for, and work toward, improvement of his own situation. Very often the family has difficulty in relating to a patient with poor speech patterns. We discuss this with the family and demonstrate guidelines available to them in book-

lets provided by the Heart Association (Table 1).

MRS. J. SCOTT (*Occupational Therapist, Vancouver General Hospital*): As soon as possible one should evaluate the patient's range of motion and general potentiality in terms, for example, of abilities in communication, washing and/or shaving, and mobility. In this way one can see what the levels of specific functions are and then work toward general improvement. The occupational therapist can teach the patient specific tasks and therapies. We often use our workshop class and kitchen to build the patient's confidence in handling activities of daily living. In this way, we can help the patient combat his feelings of helplessness and depression. With this approach the patient becomes more aware of himself, his body, and his environment. Starting to do things for himself, such as dressing, personal care and eating, leads naturally to job related activities.

DR. SLADE: How can the social service worker assist in the patient's management?

MRS. A. MUELLER (*Social Worker, Vancouver General Hospital*): In Mr. A.K.'s case, I noted that he was very depressed about his condition because he did not know anybody in the community who could help him. He could not communicate with his wife and two children who are still in Poland. His goal was to build up something here in Canada and get his family over and live in a free country, and then this catastrophe occurred. He was very depressed.

While he was on the ward, he called three people he knew in Toronto. I think he wanted to talk to people in his native tongue, and it was a very good sign that he did this.

DR. SLADE: Has he found some people in the city with whom he can talk in Polish, and what efforts have been made to maintain contact with his family in Poland?

MRS. MUELLER: We arranged for him to live with people who speak Polish and this helped satisfy his need for communication. I have assisted Mr. K. in maintaining contact with his family, and this has greatly improved his mental outlook. With the help of the Polish Society and the staff of the Family Practice Unit, I am in the process of trying to unite Mr. K. and his family. The appropriate govern-

**Table 1. A Checklist of Do's and Don'ts for the Friends and Relatives of Patients with Speech Problems**

- Do:**
1. Encourage the patient to begin speech therapy.
  2. Everything possible to make the patient want to speak.
  3. Permit the patient to make mistakes while speaking.
  4. Keep explanations short and simple, and say them slowly.
  5. Treat any adult patient like an adult.
  6. Follow the physician's and therapist's advice.

- Don't:**
1. Wait to start speech therapy.
  2. Interrupt the patient when he tries to say something.
  3. Isolate the patient.

**Pamphlets From Your Local Heart Association on the Stroke Patient**

- Aphasia and the Family
- Strokes: A Guide for the Family
- Strike Back at Stroke
- Up and Around
- Do It Yourself Again — Self help devices for the stroke patient.

ment agencies have been contacted and I can only hope that this will be successful.

DR. SLADE: How did the Social Service Department help Mr. K. to return to an occupation?

MRS. MUELLER: At the beginning of June he was considered for vocational rehabilitation by the Vancouver General Hospital Rehabilitation Committee. He is a highly trained person, attended five years at technical school in Poland, and has had an excellent employment record. I felt that it would help Mr. K. to have job training utilizing both his skills as a chef and his native tongue. The Copernick Lodge, a Polish Nursing Home, met these criteria. I had a talk with the administrator and the kitchen manager, who accepted him as a cook. In the beginning he worked preparing vegetables. He used his right hand in order to get used to using the hand lacking in sensation. Now he is doing very well, is going into cooking and preparing meals and they are very pleased with his work.

He is not fully employable yet and is on social assistance. At the present

time he has a nice accomodation for himself. He goes for one to two hours a day to a health spa to exercise, and he also started night school, taking an English course at a junior secondary school, because he feels that he needs special training in English.

As a member of the hospital rehabilitation team, I would like to state that early involvement of the whole group is very important.<sup>5</sup> Mr. K. started off with a major physiological problem. Then he needed physical and mental rehabilitation. Later on it is perhaps more of a social worker's job to help him establish himself in the community and to make sure he is really functioning at his optimum level.

While the family physician is seeing the patient on a continuing basis, the social worker can also be involved and can re-assess his status when required, since this may change and management plans may need re-adjustment. As a social worker, I appreciate being apprised of the patient's medical problems in order to help understand his needs.

DR. W. BUCHAN (*Family Physician, Family Practice Teaching Unit*): What about Mr. K.'s medical prognosis concerning his underlying disease?

DR. R.W. LAUENER (*Internal Medicine Specialist, Vancouver General Hospital*): I do not think there is any doubt that this patient's primary diagnosis is periarteritis nodosa. He presented with all the classical features as they relate to the neurological and renal systems and, in addition, had some of the other manifestations, such as the ocular changes as well as an arteritis. The purpose of placing him on the prednisone initially was to see if we could avert the rapid progression of his renal process.<sup>6</sup> Unfortunately, good control data is not available to show whether long-term, large-dose steroids really do modify the natural history the renal process. In any event, he was started on the medication and has remained on it for almost six months. It would be my opinion that we could not really say at this stage whether or not his renal process has been controlled by this, since his findings right now are very similar to what they were previously, but I do think one can say that there has clearly been no significant progression.

DR. BUCHAN: Should he continue with steroids?

DR. LAUENER: Well, the big decision is when one should start to cut back on the steroids. It has been my general pattern to consider four to six months of maximal steroid dosage and then a gradual program of reduction. During the period of reduction, it is very important that we carefully follow the individual's clinical course, since any exacerbation might indicate that the dose of steroids should be increased. In any event, at this stage, I feel it is reasonable to consider a reduction. I think the first drop can be fairly significant, and I would recommend that he have 80 mg of prednisone every second day. Through subsequent evaluation of his clinical status by the necessary laboratory examinations, particularly a 24-hour urinary protein and determination of blood urea nitrogen and creatinine levels, we can decide on further reductions of his medication. On the basis of the available data, this seems to be a reasonable program.

DR. BUCHAN: Are there any other considerations from a neurological point of view of which the family physician should be aware?

DR. S.A. HASHIMOTO (*Neurology Specialist, Vancouver General Hospital*): Yes, I think there are several things that should be mentioned. In dealing with a patient suffering from an acute stroke, be it hemorrhagic, ischemic, or embolic, the single most damaging but partially correctable factor is that of cerebral edema.<sup>7</sup> Therefore, it is important that in the acute phase the patient be treated with some agent to try to combat this feature. At the present time, the most acceptable agent is glycerol which tends to be somewhat more effective given intravenously as ten percent solution than when given orally. Other agents used are mannitol, which has the disadvantage of a rather marked rebound, and steroids (usually in the form of dexamethasone), which are almost as effective as glycerol and relatively innocuous with respect to side effects when used for a short period of time.

The other factor which should be re-emphasized and has been mentioned by Dr. Nathanson is the fact that a sensory problem is extremely difficult to deal with from a rehabilitation point of view. The rehabilitation team has done a remarkable job with Mr. K.

Finally, I believe that this patient's

prognosis is not that of his present stroke but rather the prognosis for his generalized disease, polyarteritis nodosa. Because this is a generalized disease, it may have caused some of the initial symptoms related to his left side. One must stress that investigation should be carried out to look for other causes of cerebral vascular accidents as well as hypertension and atherosclerotic vascular disease.

DR. NATHANSON: Our rounds today illustrate the major policy of the Heart Association in their stroke rehabilitation program. They state that the physician managing the patient who has suffered a stroke must evaluate not only the physical potential but also the social, psychological, and vocational potentials of the patient. The physician must have skill and understanding to assemble all the local resources and specialized services so that the patient and his family receive adequate treatment at the appropriate time. In this case it has been fortunate that the personnel and resources that can be employed by the family physician in helping a patient with a stroke were available.

DR. SLADE: Finally, one must emphasize that the family physician is in a position to understand the full range of the patient's needs and coordinate the services required. A major aspect of such a program is the need for resocialization.<sup>8</sup> The involvement with other patients as well as with the various health-care personnel gives the patient a chance to overcome isolation and withdrawal and to work through, understand and manage the psychosocial as well as the physiological problems involved.

I would like to thank all those who helped Mr. A.K. on his road to recovery.

#### References

1. Hirschberg GC: Techniques of rehabilitation of hemiplegic patients. *Am J Med* 35:536-545, 1963
2. Sarno JE: New concepts in the rehabilitation of the stroke patient. *Rehabil Lit* 28:177-179, 1967
3. Todd JM: Adult hemiplegia. *Physiotherapy* 60:336-342, 1974 (includes excellent bibliography)
4. Horwitz B: An open letter to the family of an adult patient with aphasia. *Rehabil Lit* 23:141-144, 1962
5. Anderson TP: An alternative frame of reference for rehabilitation. *Arch Phys Med Rehabil* 56:101-104, 1975
6. Fronhert PP, Sheps SG: Long-term follow-up study of periarteritis nodosa. *Am J Med* 43:8-14, 1967
7. Browne TR: Treatment of strokes. *N Engl J Med* 281:594-602, 650-657, 1969
8. Mead S: The doctor has a stroke. *Lancet* 2:574-576, 1963