Report on the All Soviet Union Neurosurgical Conference in Moscow, November 25–29, 1966

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The invitation to attend the annual All Soviet Union Neurosurgical Conference in Moscow from November 25 through 29, 1966, came in May, 1966, from the Soviet Ministry of Health, via the U.S.S.R. Foreign Embassy in Washington, D. C. I was to be their guest, with all expenses paid on reaching Moscow. My acceptance was prompt, for I felt this friendly gesture on their part should be reciprocated, and in addition it was obvious that the experience would be a splendid opportunity to learn about Soviet neurosurgery at first hand.

Having flown into Leningrad by Finnair from Amsterdam via Helsinki in the last plane for 3 days to skim in out of the snowstorm, it was comforting to take the midnight Red Arrow Express to Moscow. This is one of the crack trains: splendid spotless staterooms, absolutely smooth riding, with each of the 20 sleeping cars equipped with a glowing samovar for the delicious, hot morning tea served in tall glasses, together with caviar on buttered bread.

Dr. Ed Kandel, secretary of the conference, kindly met me at the Moscow station at 8:25 a.m. and escorted me to the comfortable Hotel Pekin, where most of the foreign neurosurgeons stayed. Dr. Kandel speaks excellent English and is known to many of us because of his visit with the Russian delegation to the Washington, D. C., Neurosurgical Congress in 1961. After 20 years service at the world famous Burdenko Neurosurgical Institute in Moscow, he has now become Chief of the Neurosurgical Service at the Neurological Institute of Moscow, where he is principally concerned with vascular and stereotaxic surgery.

Dr. Paul Bucy of Chicago and Dr. Harvey Gass of Detroit, who were the other representatives of the U.S.A., had been delayed by the weather. Each foreign guest who did not speak Russian had a permanent interpreter-escort for the duration of the conference. Dr. Lifschitz, a young trainee under Professor Arutiuonov, escorted me to the meeting which was held in a pleasant building called the House of Literature. We were all personally and effusively greeted by Professor Arutiuonov and introduced to other prominent Soviet and foreign neurosurgeons, including Professor Egoroff, an impressive figure now retired whose son is the first medical astronaut. Foreign visitors included Dr. Guiot of Paris, Dr. Norlen of Goteburg, Sweden, Dr. Kunc and Dr. Petr (who trained in St. Louis) of Prague, and Dr. Kostic of Belgrade. There was also a Polish delegation of more than 20 neurosurgeons.

First Day of the Conference

The conference opened shortly after 9:00 a.m. on November 25, 1966, with a welcoming address by Professor Arutiuonov, who kindly invited me to sit next to him on the podium with Dr. Guiot and a Polish delegate on my left (Fig. 1). The applause when I was introduced and stood up to shake hands with Professor Arutiuonov was a pleasant surprise for a representative of the U.S.A.

The topic of the day, presented in 24 papers, concerned the management of glial tumors of the brain. Excellent translation service was provided through earphones so that we were able to follow papers and discussions well.

We learned first that approximately 12,000 brain tumors had been operated upon in the Soviet Union during 1965, and that the more difficult cases were usually transferred to special large centers in the major cities. A report from a Leningrad group by Dr. B. M. Ugrumov indicated that 43% of their glial tumors were operated on, of which 31% were astrocytomas, two thirds of these being fibrillary. Their diagnoses by EEG and scan were 60% correct. They seemed interested in the fact that psychiatric dis-
turbances were the first symptoms in some cases, and that diencephalic-endocrine disturbances occurred in some patients with deep tumors. They also spoke of an "unconditioned salivary reflex" as a possible diagnostic aid but indicated that years of work on this had not yet showed it to be reliable. Following surgery and x-ray therapy, some of these patients survived for 5 years, two for 10 years, and one for 16 years.

A report from Kiev by Dr. U. A. Zozulya cited 1060 supratentorial "neuroectodermal" tumors (by which they meant gliomas). Of the total series, 357 were glioblastomas. The postoperative mortality was 43% for "surface" tumors and 80% for deep tumors. The most radical surgery possible was advocated. In their 560 angiographic studies, they spoke with authority of tumor stains and venous as well as arterial shifts.

Professor L. A. Koreisha of Moscow, who later presented me with his book on electroencephalography, listed 1091 operations for gliomas in 1965. In children, according to one of the vivacious lady neurosurgeons of the Moscow group, 310 operations for gliomas were done in 1965, with 25 reoperations. Professor I. M. Irger of Moscow described rage reactions elicited by deep temporal lobe stimulation when some temporal gliomas were operated upon under local anesthesia.

Dr. E. C. Temirov of Rostov-on-Don compared what he called the "usual spoon" operations (meaning a relatively small subtotal removal of tumor by a Cushing spoon or its equivalent) with really radical tumor resection by suction and electrocautery. "Spoon" surgery led to an operative mortality of 28%, only 12% good recovery from 6 months to 6 years, and a 59% incidence of recurrence. The comparable figures for radical resection were 15% mortality, 48% good recovery, and 36% recurrence, which of course demonstrated the appreciable advantages of radical tumor surgery.

Preoperative dehydration was advocated by some clinics, and local probe radiotherapy by one clinic. Postoperative irradiation by megavolt or classical methods was used in most clinics, usually beginning 7 days after surgery, with a second course 3 months later and a third course at 6 months. It was felt that this repeated x-ray therapy was of no benefit for glioblastomas, which continued to have an average postoperative survival time of 15 months, but was of value for astrocytomas and oligodendroglialomas. In some cases surgery and gamma radiation were followed by a second operation for removal of "perifocal" tumor tissue, but the cases were admittedly too few to judge the value of this therapeutic approach. Some felt that the use of radioactive P32 helped control tumor regrowth and was useful for indicating recurrence. Chemotherapy consisting of trials of Phenisterine or cytoxin,
or the local application of 400,000 units of streptomycin to the tumor bed, had not proved efficacious.

In summary, it was agreed that radical surgery followed by repeated courses of x-ray therapy was the most effective available way of treating glial tumors of the brain, but that chemotherapeutic agents were clearly needed.

It was also mentioned that some astrocytomas may develop into more malignant gliomas such as glioblastomas and that early diagnosis and treatment were therefore particularly important. It was pointed out that earlier diagnosis was now more frequent because of the increase in neurosurgical clinics during the last 7 years. In 1958, for example, about 80% of tumors were operated upon at three clinics, but in 1965 only 16% were treated at these original three clinics. Results, too, were better. In 1958 the operative mortality for glial tumors, including all the large clinics, was 37%, whereas in 1965 it was 22%.

Postoperative obstructive hydrocephalus after tumor surgery, we gathered, was treated principally by a Torkildsen shunt and occasionally by a "Stookey" or lamina terminalis ventriculostomy. Ventriculo-pleural or atrial shunts were seldom used, and apparently very few hydrocephalic infants were treated surgically.

During the day a splendid paper was given by Professor Baron of the Burdenko Institute, illustrating his work on the dual subarachnoid system of the brain and its role in the spread of glial tumor cells. He has shown, for example, that in properly fixed brain slices that are not allowed to become distorted by shrinkage, the small cerebral arteries course through canals (filled with cerebrospinal fluid) where the vessels are anchored by arachnoidal trabeculae. Surrounding these canals is a honey-combed mesh, forming an "alveolar" system in which the cerebral veins lie. He finds that tumor cells, or agents tested in animals, are largely disseminated by way of this alveolar system. He has also used this technique for demonstrating the trabeculated space around the cavernous portion of the third nerve.

Following this meeting we walked through a light snow some 15 blocks along one of the great broad avenues of Moscow to our Hotel Pekin, for a quick shower and an early trip (6:15 p.m.) with our escorts to the

![Fig. 2. The audience.](image-url)
Bolshoi ballet. There was no time for any supper, but our evening hunger pangs were assuaged by bologna sandwiches and beer or champagne between the acts. Taxis were hard to come by, but the large, clean quiet subway or metro was a delight that should not be missed.

Second Day

The following day was chiefly devoted to 10 papers on basal meningiomas. The incidence and locations of these tumors were much the same as those reported by Cushing, whom they quoted with other American and foreign neurosurgeons. Indeed, the Russians at the conference (Fig. 2) seemed very familiar with foreign literature in contrast to our poor knowledge of much of their work. They pointed out that their journal of neurosurgery, Boproc (or "Questions on Neurosurgery") was apparently started "some 20 years before" the American Journal of Neurosurgery.

Professor Arutunov gave the first paper, a masterful, well-illustrated address stressing the value of one-stage radical tumor removal. Evidently some clinics were still using two-stage operations. As he pointed out, the advent of new techniques such as hyperventilation and the use of hypertonic agents now made "the inoperable become operable." His results were extraordinarily good; for example, 35 of his 37 patients operated on for olfactory groove meningiomas have returned to their usual occupation.

Professor Nikolski of Rostov-on-Don followed with a similar set of figures. Apparently the oldest Russian neurosurgeon who is still active, he had a delightfully engaging whimsical expression and a wise kindly smile that gave him an uncanny resemblance to our late beloved Jason Mixter! Dr. G. A. Gabibov of Moscow described his technique for removing anterior falx meningiomas by a transcortical incision instead of an approach along the falx. For his 37 patients he reported a 17% operative mortality. Dr. Guiot gave a fine talk on hyperostosis associated with basal meningiomas, which he closed with a typically French touch. In his last slide, he showed a beautiful color photograph of flowers in his garden—"Since I couldn't bring them to you I present them in this way."

It was agreed that a radical one-stage operation was preferable, and that the newest and latest equipment now being sent out to all major neurosurgical clinics should facilitate this. It was also suggested that hereafter meningiomas be called by that name and not referred to (as by some authors) as arachnoid endotheliomas.

Third Day

The third day of the 5-day meeting was closed to foreigners, being devoted to policies, election of officers, nomenclature, and other business. A compatible group of us with our escorts therefore went sightseeing; Drs. Norlen, Kunc, Petr, Guiot, including a charming and very intelligent lady neurosurgeon from Warsaw, Dr. Tusow-Kuluiskia. She spoke with pleasure of a visit from Dr. Penfield during which he referred to Poland's neurosurgeons, because so many were trained by his former student Dr. Chorobski, as his "neurosurgical grandchildren." It was a pleasant Sunday; we saw hosts of cutely dressed Russian children in fur hats, brightly colored tassels, and high boots strolling with their families. We passed one or two ancient onion-domed churches, some still in active religious use, and visited the superb collection of French impressionist paintings at the Pushkin Museum. All the museums and art galleries were jammed, with long lines of patient Russians waiting to enter. Yet it is the custom to whisk foreign visitors directly inside ahead of the lines, apparently without a murmur from native citizens. Later we strolled around the Kremlin and Red Square (Fig. 3), packed with colorful crowds, all remarkably quiet, well-fed, and content. There was a scattering of Mongolian and other Russian soldiers, but no more of the military than we see in our own cities on a Sunday afternoon.

Fourth Day

Monday, November 28, was given over entirely to foreign guest papers, starting with Dr. Paul Bucy, who showed his excellent film illustrating the remarkably small deficit that follows pyramidal tract section in man and beast. My film on the microsurgery of aneurysms came next and seemed well received, largely because I had inserted many explanatory titles in Russian. It was gratifying to receive a really enthusiastic
outburst of applause from the packed house of some 500, after personally introducing the film with two carefully rehearsed sentences in Russian, expressing thanks for the invitation, and delivering it without notes. Dr. Norlen of Sweden then outdid us all by reading his fine address on middle cerebral aneurysms entirely in Russian.

Dr. Kunc of Prague showed a film illustrating splendid results following medullary tractomy for trigeminal and glosso-pharyngeal tic, while Dr. Petr of Czechoslovakia reported his excellent results in the treatment of Cushing’s syndrome, acromegaly, etc., by pituitary stereotaxic implantations of yttrium. Dr. Gass then described his technique for demonstrating posterior fossa tumors with pantopaque.

Late in the afternoon a number of us accompanied Professor Arutiumov, Dr. Kandel, and members of their staffs on a visit to Burdenko’s tomb in the fine cemetery across the river. Many simple, imposing, and dignified monuments marked the graves of famous men of science, literature, and other fields. Many plots, which lay in the shadow of an old monastery bedecked with gilded “onion” domes, were graced with fresh flowers. Because this year was the 20th anniversary of Burdenko’s death, a large wreath decorated his very handsome tombstone. As we were leaving, Professor Arutiumov smilingly remarked that it was a good thing to visit a cemetery at least twice a year for it made one better appreciate not only life but one’s obligations as a neurosurgeon!

That evening the banquet for members and guests of the conference was held at the large Hotel Astoria. It was a splendid affair. Five long tables stretched away from the head table at which we Americans and other foreign guests were given seats of honor. There were, of course, innumerable toasts, which Paul Bucy answered for us in a forthright, impressive, and most witty manner. After dinner, before the jazz band struck up, Guiot played the piano briefly but with gusto, followed by Norlen, an equally accomplished musician, and then by Mrs. Egoroff, a concert pianist in her own right.

Fifth Day: Visit to the Burdenko Institute

On the last day, we three Americans missed the morning session, because we had been invited to visit the Burdenko Institute with Professor Arutiumov. After donning white gowns and caps we were received at a long table in the Professor’s office where he explained the Russian system of neurosurgical training. He described things well and forcibly, being a very bright, able, dynamic, witty, “no-nonsense” kind of man.

The Burdenko Institute itself has 300 beds allotted to five separate clinics. Two
deal with brain tumors (120 beds); one with vascular problems such as aneurysms and intracranial hematomas (50 beds); one with trauma that includes disc problems and stereotaxic surgery; and one with pediatric neurosurgery. Patients are referred by the various neurological departments in Moscow and other cities. In Russia, Professor Arutunov told us through one of his translating assistants, there are now 100 or more neurological clinics, large and small; before World War II there were only 20. Including all trainees and those who take care of trauma only in small hospitals, there are today about 1000 neurosurgeons in the Soviet Union. (One should probably not say “in Russia” for Russia is simply one of the 16 states of the U.S.S.R.)

The training of a neurosurgeon begins after graduation from medical school and is of two kinds: one is a 2-year short course for those who will limit their work to trauma in small hospitals; and the other is a 5-year course including 2 years or more of laboratory work for those who will become full-fledged neurosurgeons. After completion of his training, a man may be retained on the staff of the parent institution or, as is more likely, be sent to any town or city where he is needed for at least 2 to 3 years. To ascend the academic ladder, considerable time and hard work on papers and a major thesis are required.

In Moscow itself there are eight neurosurgical services with a total of about 1000 beds. Before World War II there was only one, the Burdenko Institute, named for the first great Russian neurosurgeon, who died 20 years ago. Patients are sent to this institute by city ambulance and regional air ambulances or by air from distant cities. The total personnel in the Institute numbers over 800, including 130 doctors, and 72 trainees in ENT, electrophysiology, ophthalmology, as well as neurosurgery, while the remainder are technicians and nurses or aides. There are no neurologists, for the director feels that every neurosurgeon must be fully capable of making his own neurological diagnosis. This, said Professor Arutunov, was his “life creed.” There are 25 fully qualified neurosurgeons, about 40% of them women, but they do not perform every type of neurosurgery, for some are still developing their training. Apparently very little spinal surgery is done at the Institute.

There is no university or medical school affiliation with this or any other neurosurgical service in the U.S.S.R. as far as we could tell, although there are a few chairs (“cathedra”) of neurosurgery in some universities. The Institute therefore is practically independent, although under the ultimate dual jurisdiction of both the Ministry of Health and the Academy of Medical Sciences.

There were both clinical and research laboratories at the Institute. We visited the histology laboratory of Professor Baron and the neuroanatomy and experimental neurology laboratory of Professor Blinkov, a kindly gentleman who, in good English, explained his technique for recording delayed responses with one hand as compared with the other, for establishing the very early diagnosis of a parietal lobe lesion. He is now applying this promising technique to the early detection of temporal lobe tumors using a hearing lag on the affected side. We also visited a large electrophysiological laboratory, well equipped and staffed for both clinical and research EEG and oscillographic work. This laboratory was well run by a bright young woman, Dr. Soklova, who was especially interested in the microelectrode investigation of the motor cortex.

The morphological or pathology laboratory had over 20 technicians and looked neat and clean, with plants in the windows or on the tables, as in most laboratories we saw. It was pointed out that laboratories could be changed from time to time for different purposes depending on the need. A sizable X-ray department had four rooms, two with a biplane arteriogram unit, and facilities for high-speed cine-angiography. Dr. Gass and I saw three excellent demonstrations of the latter, at 48 frames per second. Electroencephalography was also available.

We were then treated to a film on experimental aneurysms prepared by Kikyt, a bright, pleasant young man from Latvia, who is just completing his 5 years of training before returning to Riga. Kikyt, in fluent English, showed how he prepared three-pronged acute experimental aneurysms by
suturing the trifurcation of a vein to the carotid artery in dogs. A small cannula was then introduced into the dome of each sac for pressure readings, and motion pictures simultaneously documented the pattern of blood flow and turbulence, as blood was allowed to displace saline from the parent vessel and aneurysm. This study indicated that pressures were highest at the dome of the aneurysms and the turbulence greatest close to the aneurysmal orifice. Kikyt is helping to develop a new plastic for the coating and even injection of aneurysms; so far it seems superior to others. It is similar to Eastman 910 but has an ethyl instead of methyl group. I gathered that pineal tumors are exposed by a transstentorial approach at the Institute.

After visiting the laboratories and wards where we could see and ask what we liked, we returned to the director’s office for a coffee break. Not only cakes and coffee greeted our eyes and palates, but also an abundance of fine Armenian brandy which the Chief insisted on pouring personally for each of us. The pleasant series of mid-morning toasts (Fig. 4) was spiced with a number of pithy witticisms, such as the one by Arutiunov: “a clever man can learn even from a fool, but a fool cannot learn even from a clever man.” He wound up by saying he hoped the International Neurosurgical Congress 4 years after its 1969 meeting in New York (which he was eager to attend) could be held in Moscow, “for by that time we shall have a large new building with 12 operating rooms where specialists from each country can do their favorite operations for all of us to watch.” Lavishing gifts of fine wine and cognac on us, he bade us farewell, and we in turn thanked him and his staff profusely.

Session on Neurosurgical Anesthesia

That afternoon the 5-day conference closed with a session on neurosurgical anesthesia. We deduced that throughout the U.S.S.R. intratracheal anesthesia is used in about one third of all operations, although at big clinics it is used (usually with Halothane) for most major procedures. It was clear that hyperventilation and problems related to cardiac arrest were well understood, together with the importance of respiratory volume, pCO₂, and so forth, as well as the use of the Urea when indicated. Hypothermia (28 to 30°C) was induced by ice bath and the usual supplementary blocking agents. There was a report of 37 operations at the Burdenko Institute using moderate hypothermia. Of 11 operations for very large tumors, there were 5 deaths; of 20 for convexity meningiomas, 2 deaths; and of 6 for craniofaryngioma, 3 deaths.

An excellent paper given by Dr. K. K. Xaritonova on superior vena cava pressures illustrated the alarming, rapid rise and slow fall of venous pressure after intubation. (Obviously this study was made without the use of muscle relaxants like curare.)
report from a large clinic in Leningrad stated that general anesthesia was used for all angiography including tomoangiograms.

Operations at the Burdenko Institute

I stayed in Moscow an extra day, along with Norlen, to watch operations at the Burdenko. Professor Arutjunov, again most courteous, insisted that both of us squeeze through the crowd to stand next to him. He was an extremely rapid operator; he had totally removed a suckable tuberculum sella meningioma within 40 minutes after making the skin incision. Urea was not used, and no transfusion was necessary. Teamwork was superb, and his two assistants, one a young lady, did the closing. We then went to another operating room where Professor Salazkin was removing a sizable acoustic neuromina with the patient upright. He used a rather small, vertical incision; after tapping the ventricle, some of the inferior rather than the lateral surface of the cerebellum was removed. The rather soft yellowish brown tumor was totally excised.

The simplicity of the instrument set-ups in the operating rooms would have delighted Dr. Semmes; there was only one small instrument table not much larger than a Mayo stand and no surfeit of tools such as we see here so often.

Some of us then toured the wards, which were clean, simple, and well staffed with nurses. Extremely sick patients were kept one or two to a room.

Altogether, this was a most interesting and worthwhile trip, because of the warm welcome we received and because we gained so much additional insight into Soviet neurosurgery since the last publications on the subject in this Journal some 7 years ago. For example, from the splendid 1960 articles of Gass and Poppen we had learned that there were only about 500 neurosurgeons in the Soviet Union. Now there are 1000 or more. It was also clear from discussions with Professor Arutjunov and Dr. Kandel of Moscow, Dr. Nikiforoff and Dr. Kyznetzova of Leningrad, and Professor Klotnik of Minsk, that aneurysm surgery is now beginning to flourish, and that intracranial surgery rather than carotid ligation in the neck is preferred. Familiarity with American techniques was indicated by the fact that a bifrontal approach was being used for anterior communicating aneurysms in some clinics, but without the routine use of temporary clips. Interest in aneurysms was also indicated by experimental and clinical studies of intraneurysmal pressures and by an apparently successful search for better plastics for coating or injecting aneurysms.

Another change is the present use of intratracheal anesthesia, hyperventilation, Urea, and occasionally hypothermia, which is increasing. The upright position is now being favored for acoustic tumor surgery. Surgical treatment for herniated discs, infantile hydrocephalus, and myelo-meningocele continues to be relatively infrequent, while the relative isolation of neurosurgical units from medical school, university, and general hospital affiliations also continues. Nevertheless, the meeting indicated that the quality as well as the quantity of neurosurgical procedures throughout the Soviet Union have shown considerable gains in the past 7 years. We would do well to become as conversant with Soviet neurosurgical literature as they are with ours.

References