Acupuncture: Canadian anesthetists report on visit to China

In April and early May this year one dental and nine medical anesthetists from Canada visited six cities in the People's Republic of China. This visit, one in the Sino-Canadian exchange series, was to study acupuncture analgesia. The following is a condensation of the delegation's report, which was written jointly by all members and collated by Drs. Leonard C. Jenkins and Wolfgang E. Spoerel.

Acupuncture has been used in therapy for several thousand years, but as a mechanism of analgesia it dates back to just 1958 when it was first used successfully during dental extractions in Chansi province.

Since that time, more than 600,000 surgical procedures have been done under acupuncture analgesia in the People's Republic of China.

Beginning with such modest procedures as tonsillectomies, the proponents of acupuncture analgesia soon extended their work to include appendectomy and herniorrhaphy, and now it is being applied to almost 100 standardized surgical procedures in clinical practice.

Though there are many limitations upon its applicability, it is considered by many Chinese physicians as the anesthetic of choice for such operations as thyroidectomy, cesarean section and glaucoma surgery. It is also used routinely in some institutions for gastrectomy, hysterectomy, meniscectomy, and even for cardiac and neurosurgical procedures.

There seemed to the delegation little doubt that acupuncture analgesia can, under certain circumstances, provide sufficient pain relief to allow even major surgical interventions. But it must be recognized that even the Chinese, who report a 90% success rate with the use of acupuncture analgesia, still consider it an experimental procedure with many problems yet to be worked out.

It must be recognized that there exist vast differences between Chinese and Canadian methods of providing medical care, just as there are differences in the expectations patients have of health services.

There are cultural, economic and political factors in China that enhance the acceptability of acupuncture for surgical analgesia. The development of acupuncture is a source of national pride, a part of China's "new medicine", a component of the Communist Party revolutionary program.

There is also the fact that conventional anesthesia of the high standard available in Canada is just not available in Chinese hospitals. Even in China only 20% to 30% of surgical operations are performed under acupuncture and these are done only on highly selected patients within a clearly defined range of surgical procedures.

Given the fact that acupuncture analgesia often provides only partial pain relief, it is somewhat doubtful that Canadian patients, far less stoic and far more demanding than the Chinese, would be prepared to accept such modifications in surgical procedures.

There is much to be learned about acupuncture analgesia before it can be considered more than an experimental process. And there are many questions this delegation has that it was impossible to answer within the framework and timespan of the recent visit.

But there seems little doubt that acupuncture analgesia can, under certain circumstances, provide sufficient pain relief to allow even major surgical interventions. For this reason it is recommended that serious experimental trials be undertaken in Canada in those areas where the Chinese have already had a high degree of success — neck, some ENT, dental, and possibly neurosurgery and some orthopedic procedures on the hip.

Only then will it be possible to compare acupuncture with other forms of anesthesia and determine whether it is a useful — or superior — anesthetic procedure for surgery.

During the six-city, six-week tour, the delegation visited surgical units in 16 hospitals and acupuncture therapy units in seven hospitals.

Throughout this tour the host physicians seemed impressed with the Canadians' interest in the techniques and results of acupuncture. It was an interest which obviously pleased the host lecturers and demonstrators to the point they exerted themselves even more to make the tour productive.

In each unit the delegates would find four to six patients awaiting surgery under acupuncture and would go to each patient in turn to observe the insertion of needles, define the points selected and photograph them. By the time all the needles had been inserted in the last patient, incision was about to start on the first, and the delegation would divide into groups to watch each procedure.

Without exception, the hosts were free, frank and full in their disclosure of facts, figures and problems, but throughout these discussions it appeared that there was a striking lack of controlled comparisons or analyses of collected data. It was apparently con-

sidered unethical to carry out controlled trials comparing acupuncture with other forms of anesthesia.

Acupuncture therapy visits

The delegation would visit an outpatient or inpatient acupuncture treatment area, sometimes visiting as many as four rooms, each containing from four to 18 patients. In these units the patients would already have had needles inserted and it was often difficult to clarify which points had been used. Even when the delegation had the opportunity to look on, the needles were inserted so rapidly and expertly that it was again difficult to note the points.

Since each patient was seen only on one occasion it was not possible to make before-and-after comparisons. Similarly, no scientific validation of the success claims made for pain therapy could be obtained. There were no control groups and no statistical analysis of the work presented.

With such a wide variety of problems, it was difficult to discuss more than two or three topics adequately.

Clinical observations

There are wide variations in the acupuncture methodologies used in different hospitals. This is not surprising since the Chinese still consider acupuncture analgesia to be an experimental technique.

But current techniques of needle placement can be generally categorized:

- Those in which specific points on the ear are used, regardless of the site of surgery;
- Those based on the Ching Lo theory, in which points along the meridians of the body are used;
- Those points based on the principles of Tsang Fu functions and interrelations. These body points are often used in conjunction with "new points" — usually adjacent to the site of surgical incision or related to the segmental distribution of the relevant spinal nerves.

Once the needles are inserted, the techniques of manipulation and electrical stimulation (the latter of which is much more commonly used) are virtually the same in every institution.

According to estimates drawn from 12 hospitals visited, an average of 30% of surgical operations are performed under acupuncture analgesia. The overall incidence in these hospitals ranged from 12% to 40%.

In two maternity hospitals, 90% of all cesarean sections were done under acupuncture analgesia. In two hospitals 25% of gynecological surgery was also done this way.

In the hospitals visited acupuncture was mentioned as the routine anesthetic in cesarean sections, glaucoma surgery, detached retina, foreign bodies in the eye, nasal tumours, frontal sinus and maxillary sinus operations, thyroidectomies, laryngectomies, mitral commisurotomies, and prostatectomies.

Failure rates were reported as ranging from 1% to 10%. Failure was interpreted as inability to complete the surgery under acupuncture analgesia, or the introduction of certain amounts of local anesthetics or adjuvant intravenous analgesics in order to keep the patient comfortable.

A study of 269 cases at the Ninth People's Hospital in Shanghai asserted an overall success rate ranging from 92% to 96%, with 54% to 75% classified as excellent.

But whether or not such rates can be extrapolated for the country as a whole is questionable since, the delegation recognized, it had been focusing primarily on hospitals with special interests in acupuncture.

Much of the success of acupuncture analgesia depends on the very refined selection of patients and on cooperation of the patient, who must be completely informed of all the procedures he is to undergo. The surgeon or anesthetist must also feel that the patient is capable of withstanding the mental stress of the operation. Patients who are anxious and nervous are considered poor subjects, and so are children under the age of 10.

Acupuncture is also considered unsuitable for emergency surgery, pregnant patients (stimulation of certain points might induce uterine contractions), operations exceeding three hours and operations where complications are anticipated (adhesions in abdominal operations) or where the diagnosis is uncertain (possibly neoplasms which require more extensive surgery).

Attempts have been made, particularly at the Antituberculosis Research Institute in Peking, to determine preoperatively at a trial needling session the patient's suitability for acupuncture analgesia by measuring heart rate, respiratory rate, pulse rate amplitude and cutaneous galvanic reflex.

It has been reported possible to predict success in 15% of the tested patients and the likelihood of failure in a similar percentage. In the remaining 70% the technique was considered likely successful but not predictable with certainty.

Patient cooperation and knowledge of the procedure are critical factors in acupuncture analgesia for surgery. Preoperatively the steps are explained to the patient and he is prepared to anticipate the brief episodes of pain that may be unavoidable.

In preparation for abdominal surgery the patient is likely to undergo breathing exercises. This is mandatory for patients who are preparing for lung or heart surgery. The training, which involves slowing to five or six breaths a minute, usually requires at least a week.

For short surgical procedures the patient normally is not premedicated, while for major surgery intramuscular phenobarbital sodium (usually 100 mg

This visit to China was part of the Sino-Canadian exchange of medical personnel initiated in the early 70s by the Canadian Medical Association and formalized during the visit last year to China of Prime Minister Pierre Trudeau. Other exchanges have included last year's general delegation from Canada to China (see *CMAJ* 109: 150A, 1973) to study health care delivery, a visit of limb reimplantation experts from China, the Canadian anesthetist delegation and a group of Chinese physicians recently in Canada to study renal dialysis, organ transplantation and neurophysiology. There are also hopes that expert Chinese acupuncture teachers — analgesia and therapy — will accept visiting professorships at Canadian medical schools in 1975.

The anesthetists who travelled to China were selected by a committee formed by the CMA, Department of National Health and Welfare, Association of Canadian Medical Colleges and the Medical Research Council of Canada. The delegation was led by Dr. André Jacques of Hôtel-Dieu, Québec, and his deputy, Dr. Ian Purkis, Victoria General Hospital, Halifax, both of whom are former presidents of the Canadian Anaesthetists' Society. Delegation secretary was Dr. Leonard C. Jenkins, Vancouver General Hospital.

Other medical members of the delegation were Drs. Wolfgang E. Spoerel, University of Western Ontario, London, Fred Brindle, Sherbrooke University, Gerald Edelist, New Mount Sinai Hospital, Toronto, John McIntyre, University of Alberta, Edmonton, Y. K. Poon, University of Manitoba, Winnipeg and André Sindon, Hôpital Maisonneuve, Montreal. Dr. John Locke, University of Toronto, was the dental member.

Delegates met in Ottawa for a briefing, after which they travelled to Peking via Paris. They visited hospitals in Peking, Shih Chia Chuang, Nanking, Shangai, Hangchow and Canton. There were also lectures and practice sessions in which trial needling of the delegates took place.

The itinerary included several official receptions hosted by the Chinese, the Canadian Embassy and the delegation itself. There were an overnight visit to the Norman Bethune memorial in Hopeh Province and various visits to cultural and sports events, concerts and scenic and historical areas.

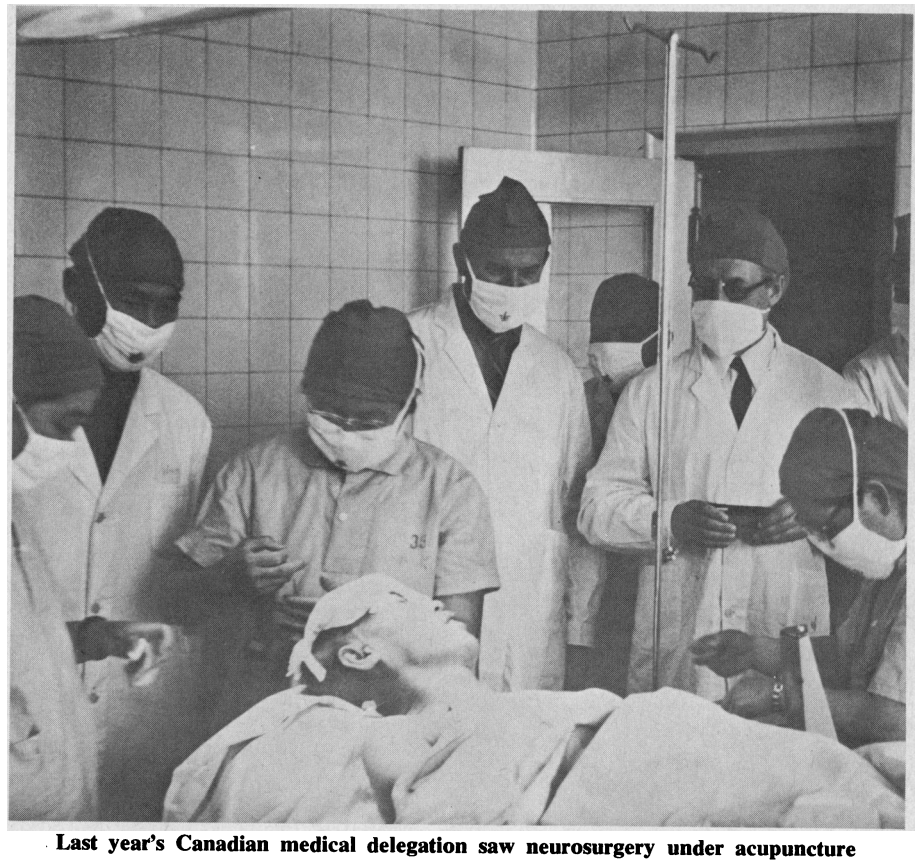
one hour preop) and meperidine (50 mg either intramuscularly or intravenously a few minutes before start of surgery) are given.

What struck the Canadian delegation about these operations was the obvious confidence placed in acupuncture once it was chosen to be the anesthetic. In most operating rooms, for example, no equipment to administer drug anesthesia was present even as a backup, though intravenous narcotics and local anesthetics were available if needed.

Throughout the operation the anesthetist remains in close contact with the patient, reporting on the steps and progress of surgery. The anesthetist furnishes constant comfort by his immediate presence; he frequently reassures the patient verbally or by stroking the brow.

In one hospital it was the custom to chant repetitively to soothe and relax the patient during intra-abdominal operations.

The Chinese also repeatedly stressed the importance of delicate and gentle surgical techniques as a consequence of the limitations of acupuncture in inducing total pain blockade. During abdominal surgery, for example, no significant intra-abdominal exploration is possible due to the extreme discomfort it would produce. Even with extreme gentleness, patients undergoing abdominal surgery frequently experience nausea and vomiting when subjected to the exploration and traction necessary to expose the stomach and duodenum.



Last year's Canadian medical delegation saw neurosurgery under acupuncture

Postoperative assessment

The Canadian delegation found the possibility of postoperative assessment of surgical patients extremely limited primarily because the patients were returned directly to their wards following surgery. Only one of the hospitals visited had a recovery room.

Many of the advantages of acupuncture emphasized by the Chinese are reported to occur in the postoperative period — early alimentation, early ambulation, little postop drug analgesia, no abdominal distension, no respiratory complications. But, lacking statistical evidence of this, the delegation had to rely on empirical observations of the host physicians. The delegates observed 106 operations, but saw only two patients postoperatively.

At one hospital, reporting on a series of 850 gastrectomies, quite specific postop advantages of acupuncture analgesia were cited:

- Less pain (150 mg of meperidine was the average amount of analgesia necessary in the first 72 hours postop);
- No difficulty with micturition, quick return of peristalsis (the majority of hospitals do not use gastric drainage);
- Most patients sleep in the immediate postoperative period and are mobile by the third day.

Certainly it appeared incontestible to the delegation that patients immediately following major surgery, including laparotomy, were comfortable — judging by their smiles and easy, natural movements.

Canada and China: the differences

As a simple technique acupuncture analgesia does not require complicated equipment; it is economical and adaptable to any operating room situation. For the Chinese this is an important consideration since the anesthetic equipment seen by the Canadian group was certainly antiquated.

But it was the stoicism of the Chinese in response to acupuncture analgesia which so greatly impressed the delegation — even when the needles were inexpertly inserted or manipulated.

Thus the first big difference between Canada and China is the patient himself. The Canadian patient tends to demand more from society than does the Chinese patient, who appears to have great faith and confidence in the medical worker.

This is a patient who will remain quiet, motionless and uncomplaining during procedures lasting as long as three hours. It is difficult to imagine many Canadians submitting to the insertion of needles followed by 30 minutes of electrical stimulation, the result only a partial state of pain relief.

There is also the very important consideration that the Chinese are a proud people who have faith in their traditional medicine, of which acupuncture is a part. Its development is part of their "new medicine", a manifestation of their revolution.

Western-type anesthesia has not been developed on a large scale in China. There is a shortage of trained personnel, medication and anesthetic agents. Modern machinery and equipment is lacking. The use of acupuncture analgesia thus allows surgical benefits to be brought to a great many people who would otherwise go unattended.

One of the most striking features of the hospitals visited by the delegation was their surgical load. It was estimated that the number of surgical cases per hospital bed was less than one half that of a Canadian hospital. On numerous occasions, hospitals of 500 beds each reported fewer than 3000 operations a year.

Considering the much heavier surgical load placed on Canadian hospitals and personnel, it is difficult to see how the Canadian anesthetist would be able to carry out the very time-consuming, preoperative discussions and pretrial needling which are often used to determine a patient's candidacy for acupuncture analgesia.

Wider use of this procedure would also present significant problems when

considering existing modes and expectations of medical personnel and patients.

In abdominal surgery, for example, Canadian surgeons stress the importance of preliminary abdominal examination. Much abdominal surgery necessitates wide exposure of intestine to permit resections and anastomoses. It is difficult to imagine a Canadian patient's tolerating a subtotal gastrectomy under acupuncture. It is even more difficult to believe that a Canadian surgeon would carry out a gastrectomy without an accompanying vagotomy. The delegation did not see one vagotomy performed.

But it must be emphasized that the Chinese are keenly aware of the shortcomings of acupuncture analgesia. In their own reports they cite incomplete pain relief, traction reflexes and discomfort, and poor muscle relaxation as drawbacks of acupuncture. These inadequacies limit the use of the technique in intra-abdominal procedures and, to a large extent, in limb surgery. The effect of a pneumothorax also tends to discourage enthusiasm for its use in cardiopulmonary procedures.

This leaves the head and neck area and the vertebral column. Some hospitals reported doing vertebral surgery with acupuncture, procedures in the cervical area being more successful than those in the lumbar area.

As the delegation sees it, acupuncture analgesia is most successful in intracranial procedures and thyroid surgery. More than a dozen of these procedures were seen and all appeared to be well tolerated.

Two areas of acupuncture analgesia that appeared most promising and should receive high priority in Canadian tests were dentistry and maxillofacial surgery.

Among the 106 surgical procedures observed by the group were 19 teeth extractions, four maxillofacial operations and 11 ENT operations involving the paranasal sinuses and oropharynx. The operations observed included simple extractions, impacted wisdom teeth, maxillary sinus operations with an intraoral approach, dentigerous cysts, submaxillary gland resection, parotid tumour resection, resection of carcinoma of the tongue and ameloblastoma of the mandible.

The induction time ranged from three to five minutes for a single extraction. The delegation noted that dentistry lends itself easily to controlled studies of this type and observed that the clinical and research facilities of the faculty of dentistry at the University of Toronto would certainly be able to provide the requisites for an evaluation of acupuncture analgesia.

One of the problems which emerged soon in the tour was the Chinese physicians' reluctance to allow the unskilled delegates to practise on patients. To them it was clearly unethical. Consequently it was necessary to acquire such experience by other means; a series of five practice sessions was set up to facilitate trial needling by the delegates. These sessions were held under the guidance of skilled acupuncturists.

Almost three weeks after arrival in China the delegates underwent the first of these sessions — at the Peking Antituberculosis Hospital and Research Institute.

The Chinese assume that if the insertion of acupuncture needles and their stimulation result in minimal change in the galvanic skin response, if the respiration remains undisturbed and the rate and amplitude of finger pulsations unchanged, then it is very likely that acupuncture analgesia will be successful for surgery. The result is even more likely to be favourable if there has been an increase in the amplitude of finger pulsations during the acupuncture stimulation.

Using these parameters, the Chinese interpreted the recordings of the 10 delegation members. They found that for one person acupuncture was very likely to be successful; for another, unsuccessful; and in eight the outcome would have been uncertain. This ratio is in keeping with their previous observations that one expects 15% excellent, 15% poor, and 70% equivocal.

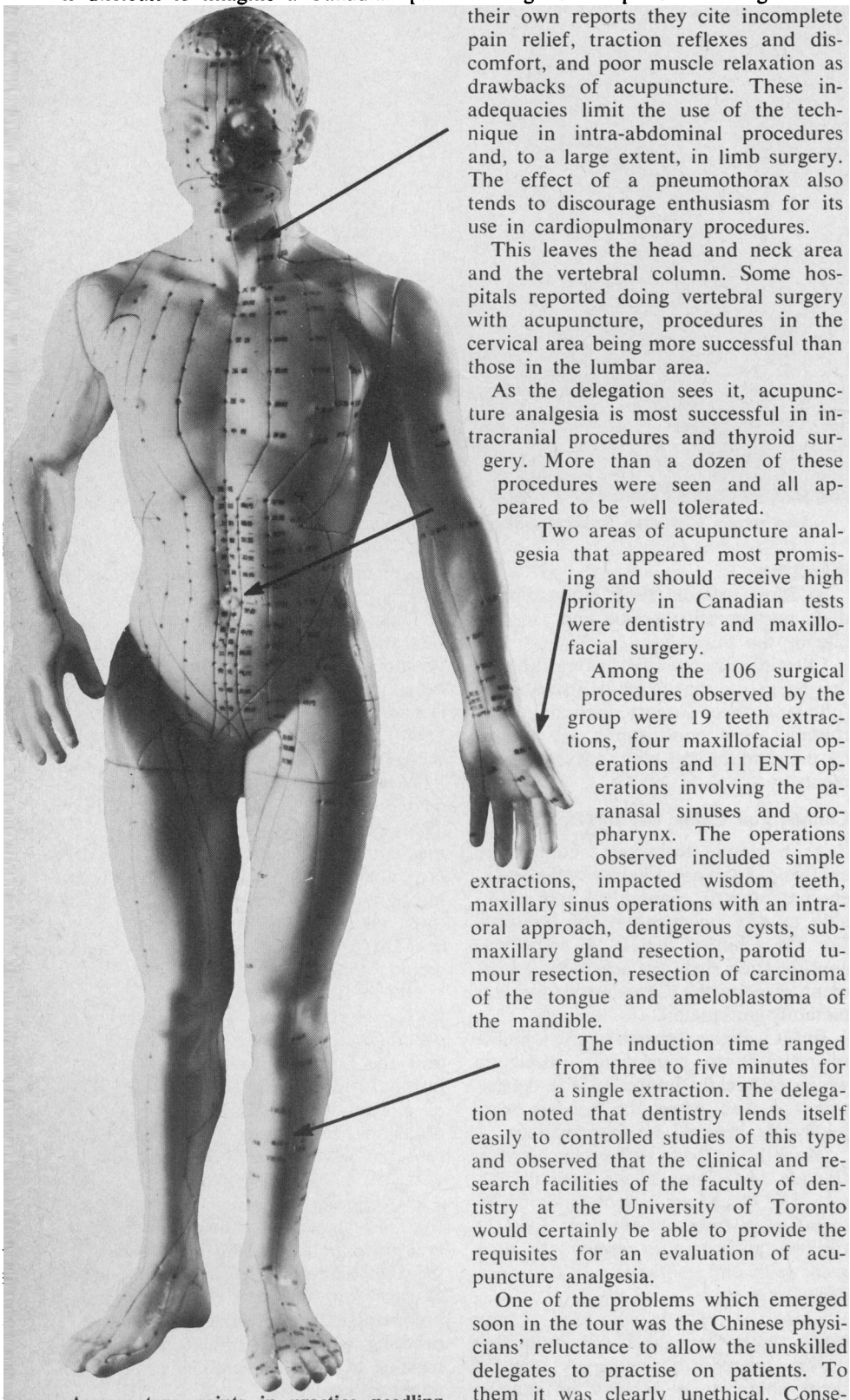
Following all the needling tests this is how the delegates reported the sensations they felt according to the points of needle insertion.

Fuh-t'u: Neither the insertion nor the presence of the needle was perceptible, but in almost all instances the electrical stimulation produced a strong sensation, variously described as soreness, muscular pulling and buzzing, which was unpleasant. There were no residual effects.

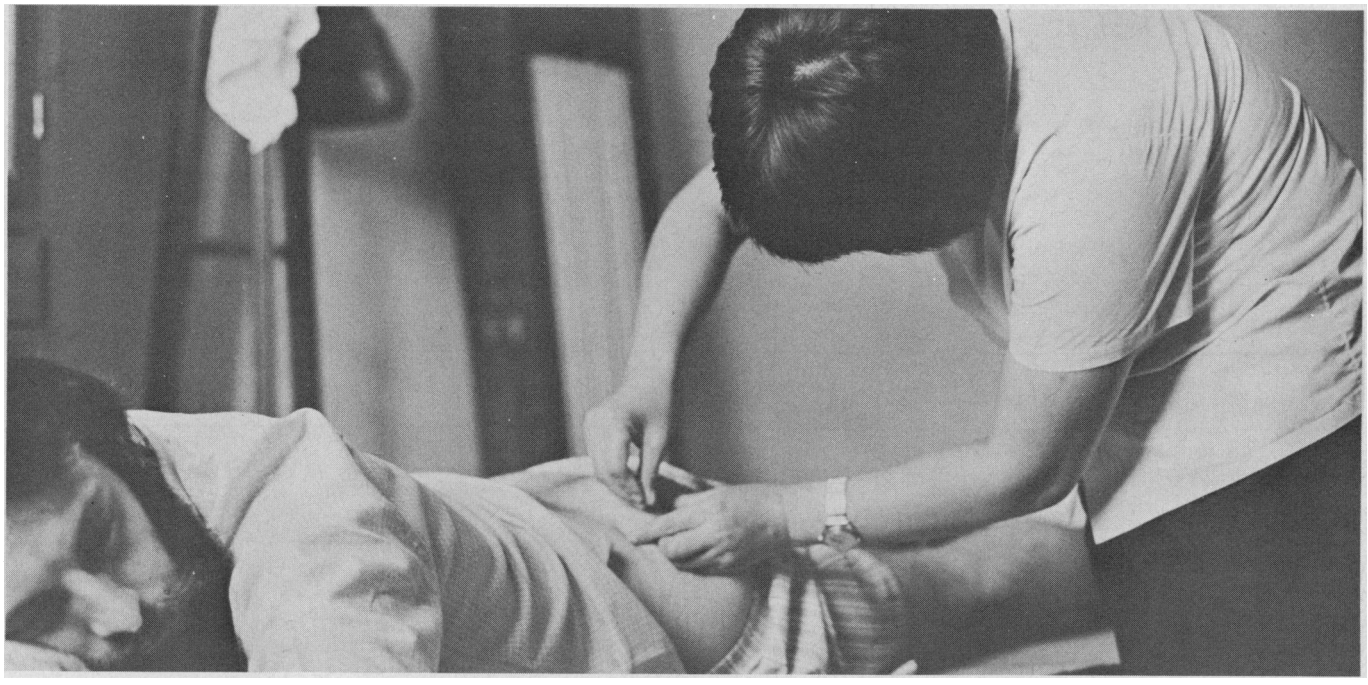
Zhong-zhu and para-incisional needles: Insertion of the needles produced few sensations. Opinions about the period of stimulation varied. It was pleasant or unpleasant and associated with a local numbness with or without aching. There were no residual effects the following day.

Ho-ku: Though the initial needle insertion was hardly perceptible, the presence of the needle was often unpleasant and associated with a curious feeling of soreness and local distension. Twice, painful paresthesia was elicited. During the 20 minutes of manipulation, sensations were almost invariably strong and painful.

Tsu-san-li: Needle placement produced a sensation described as a local ache or distension. It was almost invariably considered unpleasant. Subsequent stimulation caused variable effects, sometimes a soothing sense of warmth and numbness, but in other instances an unpleasant ache. One subject reported persistent pain during the following day.



Acupuncture points in practice needling session in Peking were, from top, *Fuh-t'u, Zhong-zhu, Ho-ku* **and** *Tsu-san-li.*



The speed with which a Peking acupuncturist works hampers learning by observation

The delegates concluded that though the effects of the needling and stimulation were often unpleasant, many would find it tolerable if it had been indicated that it was a necessary part of their surgical treatment and would protect them from the pain of surgical operation.

Acupuncture therapy

The delegation had from the outset maintained a high interest in an understanding of acupuncture therapy as a prerequisite to acupuncture analgesia. Consequently, acupuncture therapy was observed at several hospital locations. In all, 81 cases of acupuncture therapy were presented to the group.

It was difficult to assess the efficacy of acupuncture for chronic pain conditions, largely because of different disease classifications between Western and traditional medicine as well as the lack of meaningful documentation (in the sense of Western medicine) and statistical evaluation of patients.

Usually, no statistics were available indicating the success of such treatment other than the doctor's assessment and the patient's corroboration of it.

Nonetheless, crowds of waiting patients in these institutions clearly indicated the popularity of traditional Chinese medicine. The conditions most often seen were headaches, neuralgias, musculoskeletal disorders of the back, neck and shoulders, sciatica and osteo- and rheumatoid arthritis.

In respect to neurological disorders, the delegation saw examples of poliomyelitis with some recovery of useful function — in one case about 10 years after onset of paralysis; Bell's palsy was treated with needling of facial points resulting in more rapid and consistent recovery; hemiplegia caused by cerebral embolus or hemorrhage was treated with body and scalp needling. Some of these cases showed remarkable functional recovery.

At the Traditional Hospital in Peking, it was reported that, of 340 paraplegic patients, 50 were able to walk again and 93% of the group had shown various degrees of response, particularly improved bladder and bowel control.

In the area of internal diseases, a survey of 252 patients with peptic ulcer treated by acupuncture and herbal medicine at the Chan Chiang Medical College at Canton reported a cure rate (based on radiological evidence and relief of symptoms) of 41% after five weeks of treatment and 57% symptomatic improvement.

Though it was impossible for the delegation to make any definite assessments about the effectiveness of acupuncture for pain relief and therapy, it does believe that the simplicity of this form of therapy and its lack of side effects would seem to justify clinical trials under Canadian conditions.

It would seem that acupuncture might find a place in the management of acute and chronic musculoskeletal disorders; its applicability should certainly be explored in respect to headaches, some neuralgias and, possibly, intractable angina pectoris.

One of the deficiencies of the tour felt most keenly by the delegation was the lack of observation of the process by which acupuncture is taught in Chinese medical schools.

The delegates were told that barefoot doctors had three- to six-month courses and that the medical acupuncturist course took longer. But there was no discussion of either the theory or the technique of acupuncture teaching.

It appeared that medical school curricula and even the length of time required to graduate a doctor varied from place to place.

At Canton Medical School, a Western-type school, 100 hours, over a full three-year course, were devoted to the study of traditional medicine — most of this to the teaching of acupuncture.

In one traditional medical college visited, of 2000 teaching hours over a three-year period 150 hours were devoted to acupuncture.

In respect to this learning component, the delegation was critical of the fact that few opportunities were present for them to spend time in hospital, working and learning as physicians-in-training.

As the report notes, the delegates don't really feel confident that, on the basis of their limited learning experience, they could really begin to apply or teach acupuncture in Canada.

Despite some of the tour's limitations — such as lack of individualized learning mechanisms and paucity of controlled studies in relation to acupuncture — there emerged a strong feeling that some aspects of acupuncture analgesia and therapy seem applicable to Canada.

It may be a limited application, says the delegation, but acupuncture ought to be tested in the Canadian context to see how best this country might take advantage of the developments already made by the Chinese.■