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TRANSLATIONS ON COMMUNIST CHINA'S
SCIENCE AND TECHNOLOGY
No. 25
(Items from Chinese Journal of Surgery)
FOREWORD

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I. TITLES AND EXCERPTS OF ARTICLES FROM

CHINESE JOURNAL OF SURGERY

No 10, 1962
FATAL CASES OF BILIARY TRACT DISEASES AND THEIR THERAPEUTIC PROBLEMS

Cholangitis and Cholelithiasis are serious diseases with high mortality. In our hospital, there were 2,096 cases of death from biliary tract diseases (exclusive of the infections and pediatric cases) from 1951 to 1961. Among them, 124 cases were of cholangiohepatic nature, including 49 cases (39.5%) of primary hepatoma, 4 cases of metastatic carcinoma in the liver, 10 cases of pancreatic carcinoma, 4 cases of cholangiocarcinoma, 17 cases of liver abscess, 6 cases of congenital anomaly of biliary tract and 34 cases (27.14%) of cholangitis, ascariasis, and cholelithiasis. In the last 34 cases, only 10 cases underwent surgery: one of them died after cholelithotomy due to coronary complication; the remaining 9 cases were resorted to surgery after the conservative therapies had failed, and they died of persistent hypotension, shock, and hepatorenal syndrome postoperatively. There were 23 cases that were unsuccessfully treated by medical therapy.

A clinical pattern may be drawn from these fatal cases. The signs and symptoms consist of epigastric pain, nausea, vomiting, chills, high fever, and jaundice. The course generally progresses rapidly with no response to antibiotics. In the final attack, there are: excruciating abdominal pain, fever over 40°C, leucocytosis, marked jaundice, hypotension: later delirium, coma, syanosis, and finally death from circulatory collapse. Some cases may be saved for from 1-3 days by treatment, but they finally die of hypotension and hepatic and renal failure. Under such conditions, the surgeons are often hesitant to interfere and may have missed the last opportunity for operation.

At the surgical exploration as well as the postmortem examination, these cases are often found to have an obstruction in the common bile duct on the hepatic duct due to cholelithiasis, ascariasis, or stricture.
All of these cases may be classified as an acute obstructive supplicative cholangitis with obstructive and gram-negative rod infection inside the biliary tract. The high biliary pressure may cause necrosis of hepatic cells. The bacteria and their toxin may enter into the blood stream and cause severe hypotension. In this situation, the only rational approach is the reduction of biliary tension by draining plus other therapeutic measures. In clinical practice, it is not uncommon to notice a steady rise of blood pressure once the common bile duct is opened and depressed.

The primary cholelithiasis of the common bile duct and the hepatic duct is the most important etiology of obstructive supplicative cholangitis. Contrary to cholecystolithiasis, primary choledocholithiasis may affect the entire cholangiohepatic system. It is commonly seen in South China, and should be borne in mind in dealing with biliary tract diseases.

The surgical treatment of primary cholelithiasis of common bile duct and hepatic duct is usually not ideal, and repeated operation is frequently necessary. As a result of the transient surgical effect and complications involved in repeated operations, the surgeons are often discouraged to operate on these patients even when they are in shock, although an emergency operation is imperative for lifesaving under this condition.

In conclusion, there are still many unsolved problems concerning the treatment of biliary tract cholelithiasis, and it behooves us to try to reduce the mortality of biliary tract diseases.
There were 27 cases of acute biliary tract diseases with hypotension or toxic shock admitted and treated in our hospital from April 1960 to July 1961. Four cases were treated conservatively and died, and 23 cases were operated on an emergency basis and found to have acute obstructive cholangitis. The following is an analysis and discussion of the diagnosis, treatment and pathogenesis of this disease.
HEPATECTOMY IN THE TREATMENT OF THE MASSIVE HEMORRHAGE OF THE INTRAHEPATIC DUCTS

Pages 616-618

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There were 6 cases of massive hemorrhage of upper digestive tract due to cholangiohepatic diseases admitted to our Surgical Department from 1958 to 1962. All foci of hemorrhage were found to be located inside the intrahepatic rather than the extrahepatic ducts.

This article is dealing with the treatment of this condition and bringing out some viewpoints concerning the judgment exercised during hepatectomy.
CONGENITAL CYSTIC DILATATION OF COMMON BILE DUCT
(A REPORT OF 30 CASES)

Pages 619-623

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THE ROENTGENOLOGIC SIGNS ON THE ABDOMINAL FLAT PLATE OF ACUTE CHOLANGITIS

Pages 624-627

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This article presents an analysis of 109 cases of acute cholangitis which were proved by abdominal flat plate examination and surgical exploration during the period from January, 1958 to December, 1960.
RECURRENT PAIN AFTER BILIARY TRACT SURGERY

Pages 628-630

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This is a report of the findings in and our experience with the operating-room cholangiography of 179 cases from January, 1952 to the end of June, 1959.
SUMMARY

(1) This article has reported 11 cases of stricture of extrahepatic duct due to surgical trauma treated in the hospital of the 7th Military Medical College from August, 1954 to December, 1955. One case died before operation. Ten cases had 18 operations, including cholangio-duodenostomy, Y-shaped cholangi-jejunostomy and intrahepatic cholangio-jejunostomy, and there was no operative death. One case was not followed. Nine cases were followed from one to 5½ years. One of the followed cases had recurrent stricture and died from hepatic failure. The remaining eight followed cases were found satisfactory.

(2) The diagnosis and treatment of traumatic stricture of extrahepatic duct have been briefly discussed on the basis of these cases and related literature.
A STUDY ON THE LOWERING OF OPERATIVE MORTALITY IN THE TREATMENT OF CHOLANGITIS AND CHOLELITHIASIS

Pages 638-639

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During hepatic surgery, the intratracheal ether anesthesia has been generally used. In this department, we used to adopt intratracheal ether anesthesia plus extracorporeal hypothermia. Later, we chose intra-abdominal and gastric hypothermia. However, in most of the cases, we prefer continuous epidural anesthesia. In our preliminary experience, the continuous epidural anesthesia plus, if necessary, tracheal intubation and intravenous reinforcement is considered as the easiest and most advisable method. The following is an analysis of our experience with a limited number of cases.
The closed reduction of old dislocation of joints is often difficult because of the following reasons: (1) spasm of the soft tissue surrounding the joint; (2) adhesions and abnormal arrangement of the soft tissue around the joint; (3) hematoma, fibrosis, and

* This article was presented at the Seminar of the National Combined Traditional and Western Orthopedics in Tientsin on January 4, 1962.
scarring tissue filling the joint space. Although the Western surgeons have attempted closed reduction on dislocation over 3 weeks old, they have managed it as if it were a recent dislocation and often failed. Consequently, they have to resort to an open procedure, which requires a longer convalescent period and can never fully restore the joint function.

Since April, 1959, our department has developed a combined traditional and Western method for closed reduction of dislocation. Up to August, 1961, 41 cases, including 6 cases from the training class of Orthopedic Department, Hsiang Yang Peoples' Hospital, had been thus treated. The results of this treatment are analyzed in Tables I and II.

(Page 647) Shoulder Joint Reduction:

The patient is supine on the operating table, and under ether anesthesia. A bed sheet is passed over the normal shoulder, across the chest, under the axilla of the dislocated shoulder joint, underneath the operating table and tied around the waist of the first assistant standing beside the patient.

The second assistant grasps the forearm of the dislocated shoulder with both hands, abducts the entire arm 50° - 60°, rotates it externally, and applies traction. The third assistant holds a rolling pin wrapped in cotton pads and placed under the axilla of the dislocated shoulder. The rolling pin is moved medially against the head of the dislocated humerus, and also moved upward as far as possible. The operator uses both palms to press the tip of the dislocated
shoulder downward. The second assistant applies traction with full force, and gradually rotates internally and adducts the dislocated arm. He repeats abduction and adduction and external and internal rotation of the dislocated arm several times and finally succeeds in reduction (Fig. 1). If the rolling pin is not used, the operator may use one palm to press on the tip of the dislocated shoulder and the other to press against the head of the dislocated humerus to reduce the shoulder in a similar manner.

The old dislocated shoulder may also be reduced by repeated procedures of Kocher reduction and Hippocratic reduction. It has been reported that when traction is applied to an old dislocated shoulder in abduction, the axillary nerve and artery may become injured because of their close contact with the head of the dislocated humerus. In the Kocher method, there is danger of fracturing the humerus when the arm is over-rotated. The Hippocratic method is relatively safe.

(2) Elbow Joint Reduction:

Set up a bamboo ladder. The rung that is at the level of the shoulder of the patient in sitting position and the rung that is one scale higher are wrapped with cotton pads. The patient under local anesthesia assumes a sitting position with the dislocated elbow resting on the rung of the latter at the same level as his shoulder. The first assistant stands on the normal side of the patient, grips the shoulder of the affected arm on the opposite side and presses downward and toward himself. The second assistant grasps the distal portion of the affected forearm, and applies steady traction along the longitudinal axis of the forearm. The operator stands near the dislocated elbow joint and grips the joint with both thumbs pressing on the olecranon distally for 5 minutes. Then the elbow is shifted to the immediately higher rung of the ladder. The traction is again applied along the longitudinal axis of the forearm and then downward to gradually flex the elbow joint. At this moment, the operator may hear the tearing sound of soft tissue. The operator continues to press the olecranon until the dislocated elbow joint is reduced.

(3) Hip Joint Reduction:

The patient is supine on the table and under ether anesthesia. The first assistant stands against the patient's head, puts his arms under both axillae of the patient, and applies countertraction toward himself. The second assistant grasps the lower leg of the dislocated hip joint and applies traction along the longitudinal axis of the leg. The operator stands near the dislocated hip joint, places hands on the joint with both thumbs on the greater trochanter. When the operator
has noticed the downward movement of the greater trochanter during traction, the third assistant is instructed to stand on the normal side of the patient and immobilize the pelvis of the patient by pressing on the anterior-superior iliac of the spine. The first assistant then discontinues traction. The second assistant keeps applying traction on the dislocated leg. The operator puts one of his forearms underneath the knee joint of the dislocated leg, flexes both the knee joint and hip joint 90° respectively, and tugs at the thigh upward for 3 minutes (Fig. 3). The second assistant holds the knee of the dislocated leg to increase the flexion of the affected hip joint and the knee joint, rotates internally and adds the posterior-superiorly dislocated hip joint until the anterior surface of thigh approaches the abdominal wall of the patient (Fig. 4), and then gradually rotates externally and abducts the affected leg. On this instant, a tearing sound of the soft tissue around the hip joint may be heard and the operator presses with his palm at the greater trochanter to help reduction of the joint, and then lets the affected leg gradually extend (Fig. 5). If the hip joint is anteriorly dis-
located, the procedure of reduction is a reverse of the previous one. The affected leg is flexed when it is abducted and externally rotated, then gradually adducted and internally rotated, and finally extended. In the third stage of reduction of the posterio-superiorly dislocated hip joint, the femoral head may slip anteriorly, and the hip joint becomes anterio-superiorly dislocated. This phenomenon indicates that the femoral head has become totally free. The femoral head is made posteriorly dislocated again. The assistant is instructed to trace the tract through which the femoral head becomes dislocated anteriorly, and has this tract closed by manual compression. The femoral head has no more free room to wander and is forced into the acetabulum. When the femoral head is impinged at the posterio-superior margin of the acetabulum, the reduction must be conducted with care or it may have to be started all over again. The external traction should be constantly applied to the affected leg in order to reduce the pressure on the femoral head. A hasty manipulation may damage the soft bone of the femoral head and cause traumatic arthritis of the hip joint with postoperative pain and lameness. At the third stage of hip joint reduction, the Kocher method may repeatedly be tried. The assistant is instructed to put his hands around the base of the affected thigh and pulls it laterally to prevent crushing of the femoral head during reduction. In the case of children the affected joint may be reduced by applying traction along the longitudinal axis of the leg at the third stage of reduction.

When the old dislocated joint is successfully reduced, there is some indicative sensation felt by the operator, but no sound is heard in the successful reduction of the recently dislocated joint.

Hemorrhage may become extensive during reduction due to tearing of the adherent soft tissue around the joint, and cause shock and rupture of blood vessels. For this reason, the blood pressure and change in pulsation of the patient should be carefully watched, during and after operation. The traditional medicines, such as Fu-yuen Ho-hsueh Infusion may be given at the early postoperative stage to improve the local circulatory condition, and Pu-sheng Chuang-chin Infusion may be given at the later postoperative stage to nourish the bone and muscle. When the swelling is severe, plasters such as Hsi-chang-sau or Nei-shang Kao may be applied externally in the early postoperative stage, and Shu-chin-t'ang used for washing and soaking in the late postoperative stage.

The joint should be immobilized for a certain period after successful reduction in order to prevent hemorrhage and pain.

The shoulder joint may be immobilized on an adjustable wooden framework in abduction position. The degree of abduction should be
properly adjusted. If the arm is immobilized in an hyperabduced position, the humeral head may become dislocated again. Therefore the abduction should be so adjusted that a proper position for the reduced humeral head is maintained and at the same time the upper arm is maximally abducted. Skin traction may be applied over the upper arm to prevent redislocation of the humeral head, and facilitate early active movement of the elbow joint. Two weeks after reduction, the shoulder joint may start active movement. The abduction framework is maintained until the upper arm can be abducted to $110^\circ$. It usually takes about 2 to 3 months.

Roentgenographical examination of the reduced joints may reveal markedly widened space between the joints in some cases. This finding is due to some residual scarring tissue inside the joint space. This scarring tissue may be gradually worn out when the joint is in active movement.
AN ANALYSIS OF TREATMENT OF 81 CASES OF PERIPHERAL NERVE INJURIES

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The application of artificial kidney has become more popular in China, and there is an increasing amount of experience with this treatment in our hospitals. However, the opinions on the indications of this treatment are still divergent. This article attempts to describe our experience and viewpoints with the clinical application of an artificial kidney.
APPLICATION OF PHYSICAL THERAPY IN THORACIC SURGERY

Page 663-664

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This article is a review of our four-year experience with the application of physical therapy in thoracic surgery and a preliminary presentation of the problems and an analysis of the effect of this therapy.
Mediastinal pneumography is a roentgenological examination of the contrast produced by gas injected into the loose connective tissue of mediastinum. Many hilar and mediastinal lesions, which cannot be revealed by the routine chest film, can be detected by this method. Therefore, it is considered to be an effective diagnostic tool.

In June, 1957 we began to study the route of injection on the cadavers, and found that the best route would be paratracheal at the supramanubrial region. Then we injected gas into a dog by this route and made a fluoroscopy and tomography of the animal with barium inside the esophagus (Fig. 1). The anatomical study was also carried out. Since December, 1957 we have applied this method to 107 clinical cases, and our preliminary experience with and appreciation of this method is presented as follows...
Epidural anesthesia is commonly used in the abdominal surgery of children. However, when the puncture is not properly made or the dosage or the concentration of anesthetics are not properly controlled, a variety of complications may accompany this procedure. The following is a report of the complication encountered in 1,400 cases of pediatric epidural anesthesia in our hospital.
BLIND INTUBATION IN THE ANESTHESIA FOR PLASTIC SURGERY OF FACE, CHIN, AND NECK

Pages 673-674

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Tracheal intubation is often necessary in the anesthesia for plastic surgery of face, chin, and neck to insure an open airway and to prevent any interference of the surgical operation by the anesthesia manipulation. Since there are anatomical and functional anomalies in these patients, a great majority of them have to be intubated by the rather difficult procedure of blind probing through the mouth or the nose.

There were 135 cases of head and neck plastic surgery receiving blind intubation in our hospital from August, 1957 to August, 1961, constituting 18.6% of total number of cases receiving tracheal intubation. The following is the report of our experience and appreciation of this procedure.

(Page 674) The rate of successful intubation by this procedure in 135 cases is 94.8%.

The editor's note: This is a valuable introduction of the successful experience with blind intubation in anesthesia for plastic surgery of face and neck. However, it has to be pointed out that the patient under anesthesia may develop serious or total respiratory obstructions before intubation, especially when thiopental sodium is used in induction. The death caused by this procedure is not uncommon. Therefore, it is advisable to adopt some other anesthetic method or intubate the patient while he is awake. Tracheostomy before general anesthesia may also be recommended if it does not interfere with the operation.

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II. TITLES AND EXCERPTS OF ARTICLES FROM
CHINESE JOURNAL OF SURGERY

No. 11, 1962
A PRELIMINARY STUDY ON RENOVASCULAR HYPERTENSION

(A Report of Two Cases)

Pages 681-684

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Many authors have recently reported that the surgical treatment of renal vascular diseases can not only save the kidney and enhance the therapeutic effect, but also improve the pathological conditions that involve both kidneys. These reports have opened a new phase of the treatment of renal hypertension. This article is to report two cases of hypertension surgically treated at our hospital.

Summary

This article has made a preliminary study of hypertension due to renal vascular lesions, and reported the surgical treatment of two cases. One of these cases received an arterial graft of synthetic fibers between the abdominal aorta and left renal artery, and the result is satisfactory. The literature on renal hypertension has been reviewed, and the problems in the diagnosis and treatment of this disease have been briefly discussed. The significance of separate determination of renal function of each kidney and renal arteriograph is recognized. It is believed that the plastic surgery of the diseased renal arteries will be the major treatment of renovascular hypertension.
HYPERTENSION SECONDARY TO UNILATERAL CHRONIC PYELONEPHRITIS

Pages 687-688 Liu Kuo-chen (0491 0948 2132)
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Chinese Academy of Medical Sciences

Summary

(1) These cases of hypertension secondary to unilateral chronic pyelonephritis have been reported.

(2) In the diagnosis of hypertension, unilateral renal disease should be considered, and in the diagnosis of renal disease, hypertension should be considered as a possible sequel.

(3) The decision of surgical treatment of this disease should be made on the basis of course of illness, age of patient, signs and symptoms, pyelogram and abdominal aortogram. Both contraindicated operation and over conservatism should be avoided.
ANATOMICAL STUDY OF URETERAL ARTERIAL BLOOD SUPPLY IN 103 CASES

Pages 689-691    Fang Tzu-chin (2075 1311 2953)

Anatomy Department
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AN ANALYSIS OF INJECTION TREATMENT OF 400 CASES OF HYDROCELE

Pages 692-696

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Since Kilbourne and Murray reported injection treatment of hydrocele and spermatocele in 1933, this method had received worldwide recognition and widely favorable recommendation. However, there is scarcely any report on this method in recent years, or in China. Since 1954, we have satisfactorily treated over 1,000 cases of hydrocele and spermatocele by injection at the clinic. The following is an analysis and discussion of 400 recorded cases.
A PRELIMINARY REPORT ON PARASACRAL PROSTATECTOMY

Pages 697-698

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After total cystectomy due to malignancy, it is necessary to make a detour of the urinary flow or to rebuild a urinary bladder. After Gourelaise (1951), Pyrah (1956), Mellinger (1959), and Renold (1960) reported that uretero-ileo-urethral anastomosis has greatly lifted the morale of the patients with total cystectomy since they urinate as usual. Unfortunately, there are certain technical difficulties involved in the end-to-side anastomosis between the ureters and section of ileum (artificial bladder). Mellinger suggested to preserve the distal third of the prostate to facilitate anastomosis.

We have successfully treated three cases by uretero-ileo-period prostatic anastomosis and are reporting our experience with this technique as follows:
BLADDER NECK SPASM

Pages 702-705

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Bladder neck spasm has received our attention because it is one of the important urinary tract obstruction diseases. In the last three years, we have made accurate diagnosis on 9 cases, and successfully treated them. Our experience with this disease is reported as follows.
From our study of 68 cases of lumbar herniation treated by traditional manual manipulation and 128 cases of similar lesion treated by surgery, we have concluded that the treatment should be based on the pathology of the lesions. These are three pathological types of intervertebral herniation: (1) slightly bulging type -- the herniated nucleus pulposus is small and soft and can be pushed back into the intervertebral space by pressure; (2) cystic type -- it is large with thin elastic wall, and can be ruptured by injection of a small amount of procaine; (3) hemispherical type -- the hernation assumes a hemispherical shape and has a thick wall with abundant fibrous tissue in the posterior portion of the vertebra. Traditional manual manipulation is effective in the treatment of the first two types by reducing or rupturing the protruding mass or freeing the compressed nerve root. This method is contraindicated in the third type of herniation. We have also compared the results of treating 34 cases under general anesthesia with those of treating 23 cases without anesthesia, and concluded that in applying the traditional method, general anesthesia is necessary. Under anesthesia, the patient can be cured by one treatment of the traditional method, while, without anesthesia, the patient may need two or three such treatments. The traditional method consists of pulling, shaking, shifting, and lifting movements of the leg. After operation, the patient lies in bed under traction for two weeks. Then
he arises out of bed to strengthen the paravertebral muscles, lift the
legs, and take other physical therapy. In 68 cases given this treat-
ment, one third were cured, one third improved, and one third unrespon-
sive. Twenty-seven unresponsive cases underwent surgery and were found
to have hemispherical protruding mass in 13 cases, ruptured herniation
in 3 cases, herniation with marked thickening of ligamentum flavum in
4 cases, simple thickening of ligamentum flavum in 3 cases, herniation
with adhesion to the nerve root in 2 cases, protruding mass anterior
to the first sacral vertebra in 1 case, and negative finding in 1 case.

In the surgical procedure, local anesthesia is commonly used.
The patient is in a knee-chest position with the lumbar curvature
bulging posteriorly. To determine the location of herniated inter-
vertebral disc, we observe the following three criteria: (1) Marked
narrowing or widening of the intervertebral space, as shown in the
roentgenograph; (2) roughening and loss of gloss of ligamentum flavum;
(3) increased sciatic pain upon injection of anesthetics epidurally.
Following these measures, we have determined the site of lesion by
examination of only one intervertebral space in 48 cases, and found,
in a total of 120 cases, 82 cases with L-4 herniations, 27 cases with
L-5 herniation, and 11 cases with both L-4 and L-5 herniations. In
most cases, the protrusion is lateral. The protruding mass is inside
the intervertebral foram in 4 cases and the vertebral processes
immediately superior and inferior to this lesion have to be removed.
The findings are negative in 2 cases. Intervertebral bone graft has
been carried out in 5 cases; in these cases the cartilaginous plates
around the space left by the removed nucleus pulposus are partially
resected, and the bone graft is then inserted in place. In 11 cases,
vertebral fusion with bone graft has been done. We cannot follow up
the patients properly, however, judging on the degree of elevation of
extended leg and Laseque's sign, we believe that 64% of the cases are
entirely free from symptoms, and 28% are improved -- a therapeutic
efficiency of 92%.
After open cardiac surgery with extracorporeal circulation, the patients suffer and even die from dysfunction of many major organs. Therefore, a proper postoperative management of these patients is peremptory for their survival.

We performed 21 open cardiac operations with extracorporeal circulation from July 1958 to February 1961 in our hospital. We have encountered many problems in postoperative management of these patients and a preliminary report of our experience is presented as follows:

Summary

This article has reviewed the literature on management of patients after open cardiac surgery, and incorporated the experience of the author and colleagues with 21 such cases in Shanghai Thoracic Hospital. Since the patients generally suffer a great deal of physiological disturbance after extracorporeal circulation, the postoperative management of these patients has to be properly organized, closely supervised, and accurately executed.

The accurate determination of blood volume, maintenance of adequate cardiac output, open airway and proper balance of body fluid, electrolytes, and acid and base are most critical in the postoperative care of the patients.
PUNCTURE WOUND OF HEART
A 1961 CASE REPORT

Pages 716-717

Yen Chih-K'un (0917 1807 3940)

Thoracic Surgery Department
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Chekiang Medical College
THE OPERATIVE TECHNIC OF PRESSURE ARTHORDESIS OF KNEE JOINT

Pages 718-721

Chou Jen-hou (0719 0086 0624)

Chung Hua-chieh (6945 5478 0599)

Orthopedics Department
The First Hospital
Peking Medical College
The following is an analysis of 100 cases of fracture of the lateral condyle of humerus treated and adequately recorded at Kuangtze Hospital, Jen-chi Hospital and Hsin-hua Hospital of the Shanghai Second Medical College from 1952 to 1959.
The following is an analysis and discussion of the clinical observation and treatment of 30 cases of osteochondritis dissecans in our hospital from 1953 to 1960.
CHOROID PLEXUS PAPILLOMA

Pages 728-731

Huang Wen-ch'ing (7806 2429 3237)
T'ien Ch'in-sheng (3944 1987 3932)

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Shenyang Army General Hospital
The pH of cerebrospinal fluid differs from that of the local anesthetics. In order to identify the backflow fluid during the epidural injection we have used several indicators to determine its pH. After two years of experimentation, we have found bromothymol blue is the best, and wish to recommend it for clinical use.
RESCUE OF FOUR CASES OF ACUTE RESPIRATORY DYSFUNCTION

Page 734-735

Chin Ping (7246 0393)
Chang Hsiu (1728 2500)
Chia Wau-chung (6328 5502 1813)

Anesthesiology Department
Liberation Army General Hospital
The incidence of tetanus has been greatly reduced in recent years due to extensive vaccination of tetanus antitoxin. However, once the patient has succumbed to this infection, the prognosis is often grave. In the First Hospital and the Second Hospital of the Second Military Medical College, 34 cases of tetanus have been treated since June, 1958. Among them, 5 cases died. Our appreciation of the treatment of these cases is reported as follows:

III. Combined Therapy

(A) Control of tetany—muscular spasm may cause sudden suffocation, exhaustion of physical strength, metabolic disturbance, lowering of resistance, and death. Therefore, its control is a very important step in the treatment.

1. Hibernating drugs—The hibernating drugs can not only reduce muscular spasm and pain, response to the stimuli, but also induce sedation and hypothermia. When it is used with the sedatives, they potentiate each other and produce less untoward effects. The patients with tetanus are given hibernating treatment immediately after admission. Fifty to 100 mg of each of the following drugs: Lū-liū Erh-pen, an literal translation of this drug is chlorothiodiphenylamine; possibly chloropromazine or thorazine; I-pin-tseng literal translation is isopropyl hydrazide; but highly unlikely to be iproniazid; Mo-ting possibly mephenesin. These drugs are dissolved in 250-500 ml of 5% dextrose and given to the patients by intravenous drip. The rate of dripping is 40-50 drops per minute at the beginning of the therapy or when the spasm is relatively severe. This rate can be adjusted later.
when the spasm becomes ameliorated. When the patient is quiescent, this mixture of drugs may be replaced by regular intravenous fluid. Usually, a tranquilizing effect is obtained in 20 minutes after the administration of these drugs, and it may last 304 hours. If necessary, these drugs may be repeated 2-3 times daily. In individual cases, they were repeated 4 times daily without any deleterious effect. Some patients may develop tolerance to these drugs after prolonged use (over one week), and require larger doses. These drugs cause urinary retention, which may be corrected by catheterization.

2. Thiopental Sodium -- This drug has a marked effect in relieving laryngeal spasm and restoring normal respiration of the patients with tetanus. 0.5 -- 1.0 gm of thiopental sodium is dissolved in 1000 ml of 5% dextrose and given by intravenous drip at a rate of 20-30 drops per minute. It is also effective in controlling the generalized tetany and may be used alternately with the hibernating drugs in a set-up as shown in Fig. 1. When the spasm becomes persistent, and the patient shows respiratory arrest and cyanosis, 2-3 ml of 2.5% thiopental sodium may be given intravenously in 40 seconds. This method has helped us relieve the laryngeal spasm in several cases. In one case, the skin of the patient was already incised for trachectomy, but since the intravenous injection of thiopental was prompt enough to relieve his laryngeal spasm, this operation was avoided. For relatively frequent and severe spasms, 2.5% thiopental sodium injection should always be prepared and connected to the 3-way joint as shown in Fig. 1. The unused thiopental injection may lose its strength overnight, therefore fresh ones should be prepared each day.

3. Other drugs, such as 10% chloral hydrate enema or 5% paraldehyde injection, may have prompt effect and keep the patient quiescent for 2-3 hours. They should be used alternately with barbiturates (especially amytal) to get potentiating effect and prevent intoxication. We had three cases that developed nausea, regurgitation, and exodus of ascarids to the throat, resulting in violent laryngeal spasms, after being given chloral hydrate through the nasal stomach tube. For this reason, chloral hydrate enema has been used, and the result is more satisfactory. In some other cases, when the patients showed progress, an equal volume of the physiological saline was substituted for chloral hydrate as an enema and achieved a similar hypnotic effect.

(B) Tracheostomy-- Since laryngeal spasms may cause respiratory tract obstruction and the coughing reflex may be inhibited by large doses of anesthetics, resulting in an accumulation of secretion inside the respiratory tract, the patient may die of suffocation or pulmonary complication. Consequently, a properly-timed tracheostomy to insure an open airway would greatly reduce the mortality of these patients. We are even inclined to carry out tracheostomy on all patients.
with laryngeal spasms. We used to believe that as long as we put the patients in a hibernating state, sucked out the secretion from the respiratory tract, and had the tracheostomy set ready at the bedside, we did not have to start tracheostomy too early. However, we had three cases in succession that died because of belated tracheostomy. One of them was a 16-year old peasant. He still had frequent spasms 20 hours after being hospitalized. There were copious secretions in the throat and also signs of dyspnea. The tracheostomy was about to start. However, the patient's respiratory condition showed some improvement at that moment after we had given him large doses of sedatives, sucked out secretion, and pulled out an ascarid from his mouth. While we were hesitant, the patient developed another laryngeal spasm in 10 minutes and died in spite of our immediate tracheostomy. Therefore, we believe that an early tracheostomy is indicated in severe cases with frequent spasms, copious secretion in the respiratory tract, or pulmonary complication, especially anarasis as is usually found in peasants and children. We have treated 9 cases with tracheostomy, and 3 of them died due to improper timing of operation.

(C) Nutritional supplement — The patients with tetanus may develop malnutrition due to dysphagia with inadequate intake, or excessive exhaustion during spasms. In order to maintain proper nutrition of these patients, we prefer feeding through the nasal stomach tube to intravenous injection. After the patients have been observed for 1-2 days in the hospital, and found unable to feed themselves, they are given the stomach tube through the nose. A solution of 2.5% thiopental sodium may be given intravenously to prevent laryngeal spasms during intubation. We have successfully treated 18 cases by this method, and thus avoided gastrostomy. The nasal feeding is carried out by dripping and the rate and amount of drip should be not too rapid or excessive, otherwise bloating and regurgitation may occur. In winter, the temperature of feeding fluid should be kept constant. The nasal stomach tube may also be used for administering drugs. Since the critical period of tetanus spasm lasts only about 10 days, no serious complication has been encountered in intubation for such a length of time.

(D) Closure operation — We have tried closure operation on wounds in the scrotum, neck, masseters, limbs, and trunk and found they have variable effects in relieving spasms. Intravenous drip with 1:1000 procaine is also effective in this respect. It has to be pointed out that large doses of sedatives have to be given before these operations. We had one case that was free from spasm after 5 days of hospitalization and, when he was receiving a scrotal closure operation, suddenly developed spasms and suffocation and died because of inadequate preoperative sedation.
(E) Antitoxin -- They are used in small dosage or not used at all in the treatment of tetanus in China. We believe large doses of antitoxin may be beneficial to the patient with this infection. After admission, the patient is immediately given 50-100 thousand units of antitoxin in 1,000 ml of 5% dextrose intravenously, 30-50 thousand units intramuscularly, 10-20 thousand units around the wound and then 20-50 thousand units intramuscularly every day until the symptoms are ameliorated. The total dose averages 400 thousand units. For the prevention of recurrence, tetanus toxoid is given soon after the control of spasms, one ml at first time, 2 ml a week later, and another 2 ml two weeks later. There has been no recurrence in our cases.

(F) Care of wounds -- In 34 cases, there are 16 cases with completely healed wounds, 7 cases with clean shallow wounds, and 5 cases with infected wounds (2 cases being severely infected). No care is necessary for the healed wounds. The shallow clean wounds should remain uncovered and painted with some oxidizing agents. The severely infected wounds should be widely excised, debrided, and drained under local anesthesia. One of our cases had a high voltage electric burn and compound fracture with extensive necrosis of the right tibia and abundant tetanus bacilli in the discharge of the wound as revealed under the microscopic examination of the smear. We contemplated on bloc excision of the wound or amputation of the leg. However, after repeated debates, we decided to save the leg and remove the necrotic tissue stepwise with the dead bones last excised when the condition of the patient was stabilized. We were successful in this instance, and saved both the leg and the life of that patient. Early skin graft should be carried out over the granulation tissue of a widely excised wound. However, in severe cases, the patient may not tolerate skin graft, and heterologous skin graft is recommended for closure of wound. When the patient is asymptomatic and the heterologous skin sheds off, the homologous skin graft may be resumed. Two cases have been so treated with success.

(G) Antibiotics -- its role in direct combatting the tetanus bacilli is still controversial. However, it undoubtedly plays an important part in controlling the wound infection, septicemia, and pulmonary complications. The dose has to be large, the spectrum broad, but the frequency of injection may be reduced. The time for injection should be so adjusted as to avoid inopportune excitation of the patient. The commonly used antibiotics are penicillin, streptomycin, and chloromycetin.

(H) Other measures -- The onset of tetany is unpredictable and may be aroused by the slightest stimulation. Therefore, a special nurse should be available at all times for emergency treatment. The examination and treatment are carried out in the morning. The patients are given large doses of sedatives to prevent overstimulation by repeated manipulation. If any emergency situation arises during
manipulation, it would be easier to get enough help for treatment in
the morning. The daily therapeutic procedure may be planned in the
morning, and both the physicians and the nurses would feel more at
ease when they have a plan to follow.

As regards muscle relaxants and corticosteroids, we have limited
experience with them in the tetanus treatment. Their usefulness will
be determined in the future.

VI. Analysis of Fatal Cases (Table 1)

Out of 34 cases treated, 5 cases died, constituting a mortality
rate of 14.7%. The relationship between the mortality and the period
of incubation is not clear. However, in our cases, there was no death
in all cases with an incubation period less than 5 days. The mortality
of the young and the elderly is high. The ages of all 5 cases are
either below 20 or above 50. These cases of death consist of: laryng-
geal spasms with suffocation in 3 cases; unexpected spasms occurring
during closure of scrotal wound in one case; and pneumonia, septicemia,
and exhaustion in one pediatric case. The first three cases died 36
hours after admission, at which time the spasms most frequently occur,
and the nursing care should be intensified.
For the Encouragement of Academic Exchange and Reinforcement of Friendship between the Peoples of Canada and China, the Chinese Medical Association Awards Prof. Wilder Penfield an Honorary Membership

(On the inside page of back cover)

The Chinese Medical Association was convened in the afternoon of 5 October, and awarded an honorary membership of the Chinese Medical Association to Prof. Wilder Penfield from Canada, who was invited to visit China.

Dr. Fu Lien-chang, the president of the Chinese Medical Association, spoke at the ceremony and said that we are grateful to Prof. Penfield for his four most valuable lectures given during his visit in China, and this award will certainly encourage academic exchange and strengthen the friendship between the peoples of Canada and China.

After he had accepted the honorary membership of the Chinese Medical Association, Prof. Penfield said that he came to China with a hope, in fact all of us hope, to seek friendship, understanding, and cooperation in academic as well as other activities between the medical workers of Canada and those of China. Now he was glad that he had become a member of the Chinese Medical Association and felt he belonged to this country.

In the same afternoon, Prof. Penfield gave a report on the etiology and surgical treatment of localized epilepsy and was warmly received by over four hundred Chinese medical specialists, professors, and workers.

Prof. Penfield was invited by the Chinese Medical Association to visit China in the middle of September. Since then he has visited the Medical Societies, Medical Colleges, and hospitals in Peking, Nanking, Shanghai, Tientsin and Shih-Chia-Chuang.
AN ANNOUNCEMENT OF REPUBLICATION OF THE CHINESE JOURNAL OF OBSTETRICS AND GYNECOLOGY

(On the inside page of back cover).

The Chinese Journal of Obstetrics and Gynecology is a national academic periodical edited by the Association of Obstetrics and Gynecology, the Chinese Medical Association. It has been approved by the superior organization to be re-published in the United series of Volume VIII in 1960. It remains as a bi-monthly at 50 yuan per copy. It can be subscribed through all post offices in China. All obstetricians and gynecologists are urged to submit their writings to the Editing Committee, the Chinese Journal of Obstetrics and Gynecology, the Chinese Medical Association, East Four Pig-Mark Avenue, Peking.

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