THE NOVA SCOTIA MEDICAL BULLETIN

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The Section of Surgery

This issue of the *Bulletin* contains the papers presented at the 1966 meeting of the Section of Surgery of our Society. Ranging from case reports to survey articles on subjects of immediate interest, not only to every practising surgeon but to every practising physician, we believe that they will be of interest to our readers. We hope to have similar issues from other Sections and specialist societies from time to time.

Editor.

Why?

Why the specialist society? On the national and international level the needs for it are several, and obvious. But these — especially setting and maintenance of specialty standards — are not essential at provincial level. Or are they? The second need the specialist society fulfills is in giving its members opportunity to study and learn from one another through their own meetings and journals. With these being carried out on a national and international scale it seems unnecessary that it be repeated in less depth at provincial level. Or does it?

In medicine specialist societies on the North American continent are largely a product of this century. The demands which prompted the formation of the great organizations such as The American College of Surgeons a little more than fifty years ago are the same behind the creation of the smaller provincial societies today. The Provincial Medical Board has seen fit to set up its own specialist requirements in Nova Scotia. It is a natural corollary that those qualified set up their own society. Actually, the specialities recognized the need before the Medical Board did, and General Surgery, most recently formed of the specialty groups, anteceded the Medical Board's action by more than a year. Set up as a section of the Nova Scotian Medical Society, its main aims are three:

1. To increase the knowledge and skill of its members.
2. To raise and maintain high standards for the practice of surgery in this province.
3. To give its members a common voice in dealing with their confrères in other fields of medicine.

In Nova Scotia today there are more than sixty qualified surgeons recognized by The Provincial Medical Board. Forty-two are already active members of the society and the majority of the remainder will join. This is a large enough group to hold stimulating clinical gatherings, and the quality of the material presented at the two meetings held within the past year has been high. Meetings such as these do not take the place of larger gatherings such as the annual congress of the American College of Surgeons or the meetings of the Canadian Royal College, but they do create a more informal atmosphere where the member is more likely to participate actively in presentation and discussion.

While secondary to the clinical, the business problems of the general surgeon, as with all members of the profession, have grown more complex. Only a generation ago he was one of few specialists, almost the whole realm of surgery was his. He developed a greater pride, a bigger bank balance, and a more colourful temperament than any of his confreres. The temperament has long since gone out of fashion, the pride is less blatant, and the bank balance has shrunk to below that of his confrères as the specialty of general surgery is constricted more by each new surgical specialty that develops.

In its complacent, Nova Scotian way, the Surgical Section has confined its problems to the clinical, and thought little, as yet, on the cost of living index. Not all of its sister organizations across the country have been so disposed. Because the problems of the general surgeon are common to the whole of Canada it is likely that before long there will be a general surgical section to the Canadian Medical Association with its voice directed not so much toward the advancement of the surgical art as to the advancement of the surgical artist.

The Royal College of Surgeons of Canada, with general surgeons still in the majority, by its position and membership, has the qualifications for this task, but probably not the desire. On its more altruistic plane, it could be content leaving the mundane dollar problem to the Canadian Medical Association which, day by day, is forced down from its lofty clinical idealism to the level of big business. □

A.L.M.

Dalhousie Refresher Course

The 40th Dalhousie Refresher Course will be held in the Nurses Home Auditorium, Victoria General Hospital, November 21st to 24th inclusive. Again as last year it will constitute the clinical programme of the annual meeting of The Medical Society of Nova Scotia to be followed on November 25th, 26th by the meetings of the Council of the Medical Society.

The mornings will be devoted to Small Group Clinics in the Children's Hospital and Camp Hill Hospital on Monday; at the Children's Hospital and the Victoria General Hospital on Tuesday; at the Halifax Infirmary on Wednesday; and at the V. G. Hospital, the Children's Hospital and the Grace Hospital on Thursday.

Socratic luncheons giving an opportunity for informal discussion with a Faculty member are being arranged at Camp Hill on Monday, the Victoria General on Tuesday, the Infirmary on Wednesday, and the Children's Hospital on Thursday.

Four guest teachers will be featured during the general sessions in the afternoons. The major participant on Monday afternoon will be Dr. Bram Rose, Allergist of McGill. The Tuesday afternoon programme will feature Dr. Lloyd D. MacLean, Professor of Surgery of McGill who will present the John Stewart Memorial Lecture. On Wednesday, Otolaryngology in General Practice will be dealt with by Dr. P. E. Ireland, Emeritus Professor of Otolaryngology, University of Toronto. The closing afternoon of the Refresher Course Thursday will feature Psychosomatic and Psychiatric discussions, the guest teacher being Dr. Alan Mann of Montreal.

The Refresher Course Committee under the chairmanship of Dr. J. F. Nicholson have prepared an excellent programme. Your presence is all that is required to make it an outstanding success.

LEA C. STEEVES, M.D.,
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Chest Injuries

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Halifax, N. S.

Accidents are common causes of death among Canadians of all age groups. Increasingly, automobile crashes are the first ranking cause of serious accidental trauma. Table I is from the Cornell Automotive Crash Injury Research Project[1], and shows the frequencies of injuries to various sites in auto crashes; percentages total more than 100 because of multiple injuries. Head injuries are the leading cause of death among accident victims who reach hospital, while chest and abdominal injuries are the second and third commonest causes[5].

TABLE I
AREA OF BODY INJURED IN AUTO ACCIDENTS (1)

Area of injury	Frequency %
Head	70.9
Neck and cervical spine	3.6
Thorax and dorsal spine	18.2
Abdomen, pelvis and lumbar spine	12.2
Upper extremities	20.0
Lower extremities	33.6

The mechanisms of chest injury are variable. In war situations, open injuries predominate, but in civilian practice blunt trauma is most often seen[4]. Blast injuries result from either air or underwater explosions and may be considered as varieties of blunt trauma. Open injuries are most often knife or gunshot wounds. The perforating type is a "through-and-through" injury, while in penetrating injuries a foreign body may remain inside.

A useful classification of chest injuries is given in Table II. Injuries of the chest wall and pleural space can usually be managed by simple measures, while visceral injuries will frequently require major operation.

Soft Tissue Injury

These are handled according to established principles of management for soft tissue injuries. Interstitial emphysema is discussed below. An unusual but spectacular picture is given by "traumatic asphyxia", where the skin of the upper half of the body and conjunctivae show bluish discoloration. The condition is usually due to severe compression injuries of thorax and/or abdomen[2]. If soft tissue damage communicates with the pleural space, an open pneumothorax results.

TABLE II
TYPES OF INJURY

A – Chest wall and pleural space
  1 Soft tissue injury
  2 Bony injury
    – simple rib fracture
    – multiple rib fractures, with or without flail chest
  3 Pneumothorax – simple, tension, open
  4 Hemothorax
B – Visceral Injuries
  1 Lung – contusion, laceration, hematoma, atelectasis, pneumonitis.
  2 Mediastinal and subcutaneous emphysema
  3 Heart – contusion
    – hemopericardium
  4 Great vessel injury
  5 Diaphragm tear
  6 Esophageal tear
  7 Chylothorax
C – Thoraco – abdominal injuries
D – Other injuries associated
  1 Head
  2 Limb
  3 Renal

Bony Injuries

1 *Simple rib fracture* indicates a break of one or two ribs, not associated with pneumo- or hemothorax. Strapping the chest wall may be tried but pain is best relieved by oral analgesics combined, if necessary, with intercostal nerve blocks for the first day or so. It is wise to take a repeat chest X-ray seven - ten days after the injury, as some patients develop a delayed type of hemothorax.

2 *Multiple rib fractures without flail chest* are painful injuries and are often associated with hemopneumothorax. Management of the latter is discussed below. The pain may require epidural or intercostal nerve blocks, in addition to opiates, for the first few days. There is great danger of atelectasis in these cases because of pain interfering with coughing. It is as easy to undersedate

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as to oversedate these people; small repeated intravenous doses of meperidine are sometimes useful. A patent airway must be maintained, by any means, including: physiotherapy, naso-tracheal aspiration, bronchoscopy. A few of these patients will need tracheostomy with respirator assistance.

3 *Multiple rib fractures with flail chest.* Ribs must be broken at two points for a flail segment to occur. The flail segment may be lateral, when ribs on one side are broken at two points (one point may be a costochondral or chondrosternal separation, and so not visible on X-ray); or the flail segment may be anterior, when ribs are broken on both sides resulting in a flail sternal component. The flail segment moves "paradoxically" with respiration and is readily recognized. These patients may be in severe respiratory distress and the flail chest must be immobilized. In an emergency situation this may be done by holding the area inwards, either by a pressure bandage or manually. Another method, usually mentioned, is skeletal traction by applying a towel clip through the skin and around a rib in the flail area. Today, however, the best emergency treatment is by passing an endotracheal tube (general anesthesia is not necessary) and assisting respiration by an Ambu bag or mechanical ventilator. An endotracheal tube may be left in place for a day or two if necessary for transportation, with only mild sedation required. The definitive management of these cases most often is with assisted ventilation via an adequate tracheostomy[3], usually for a week or two.

4 *Sternal fractures* usually cause little deformity. They may, however, be associated with gross deformity, much pain, or with flail chest. In these situations, the fracture should be immobilized by exposing the site and passing wire sutures through both fragments.

5 *Fractures of vertebrae* will not be considered here.

Pneumothorax

Pneumothorax may be simple, open or tension. The best way to diagnose any pleural injury is by X-ray; physical signs, although always assessed, may be grossly misleading. Most traumatic pneumothoraces should be treated by water-seal drainage. The best and most convenient site is the second or third intercostal space in the mid-clavicular line. In an emergency a large bore needle may be inserted at this site, and connected to an intravenous tubing set; the drip chamber is cut off and that end placed under the water seal. Otherwise a regular closed thoracostomy is done using Nelson's trocar and cannula and a straight red rubber catheter.

Tension pneumothorax may be obvious from physical signs such as tracheal and cardiac shift or, if a syringe is connected to an intercostal needle, the barrel of the syringe will be forced outwards. Water-seal drainage is required.

An open ("sucking") pneumothorax will be obvious and the wound must be sealed quickly with a dressing. A water-seal drainage will probably be needed.

If a pneumothorax persists despite adequate water-seal drainage, an injury to a major bronchus should be suspected.

Chest tubes are generally not removed until they have stopped working, i.e., no more air or blood is draining, and chest X-ray shows the lung fully expanded. When these two conditions are met, the visceral and parietal pleurae are becoming adherent and the lung should stay fully expanded.

Hemothorax

Hemothorax is often associated with some degree of pneumothorax. Simple hemothorax may be managed by needle aspiration, repeated daily for several days if necessary. Alternatively, an intercostal drainage tube may be inserted, usually in the sixth or seventh space in the mid-axillary line. If a hemothorax recurs rapidly a thoracotomy may be required. If a hemothorax is not drained adequately it may become clotted or infected, necessitating later decortication.

Subcutaneous Emphysema (*Figure 1*)

This is due to air entering the interstitial tissues of the body. The usual causes are:

1 Pneumothorax communicating with a break in the parietal pleura; in this instance the emphysema is often of limited degree and most apparent at the site of chest wall injury.

2 Air escaping from a bronchial tear into the interstitium of the lung and tracking to the mediastinum; from there it continues to the root of the neck and then throughout the chest wall and subcutaneous tissues. The air may also burst the mediastinal pleura and cause pneumothorax.

3 An esophageal tear results in mediastinal emphysema, which spreads to the neck and elsewhere.

Air in the interstitial tissues causes great "bloating" and crepitus is felt on palpation. It is alarming to see but is not in itself serious and requires no treatment other than reassurance and occasionally the air must be pressed out of the eyelids to enable them to open.

Rapidly developing subcutaneous emphysema, especially if associated with persistent pneumothorax, suggests a major bronchial injury. Subcutaneous emphysema with severe retrosternal or epigastric pain suggests esophageal injury. Both these conditions require surgery.

Visceral Injuries

The lung may suffer contusion, laceration or hematoma. Operation is rarely necessary, the associated hemo- and pneumo-thorax being man-

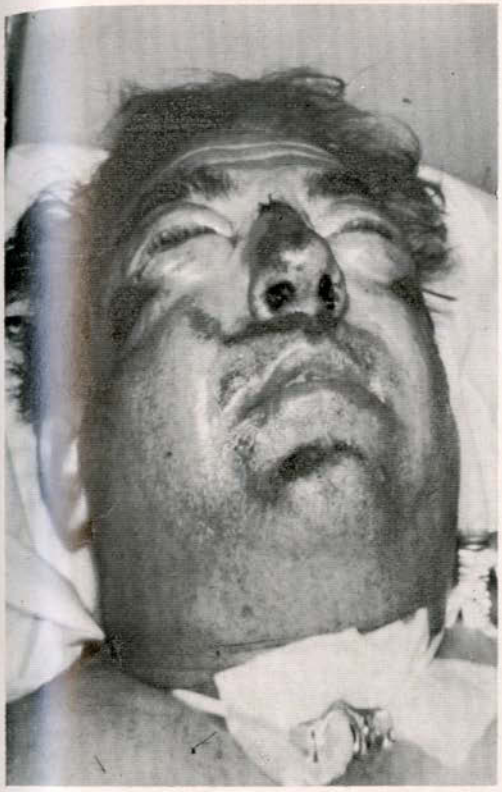

Fig. 1 Extensive subcutaneous emphysema

aged as above. Lung contusions are visible early on X-rays and begin clearing in a few days; this is not so with X-ray signs of atelectasis or infection, which are not apparent immediately and which become more obvious if not adequately treated. An intrapulmonary hematoma may take weeks or months to resolve and may later be mistaken for a "solitary nodule".

Cardiac contusions may be suggested by serial ECG changes. Hemopericardium, from cardiac laceration, is serious. Diagnosis is suggested by physical signs (tachycardia, muffled sounds, elevated venous pressure) as X-ray is misleading in the early stages. Confirmation of diagnosis and treatment is by aspiration, via the xiphisternal angle. Aspiration may be repeated if necessary but rapidly recurring hemopericardium requires surgery. Rarely, changing heart sounds suggest traumatic ventricular septal defect or detachment of atrioventricular valves.

Great vessel injury is often rapidly fatal. One type of such injury worth keeping in mind is traumatic rupture of the aorta. This is indicated by widening of the superior mediastinal shadow (figure 2) and requires urgent operation.

Diaphragmatic rupture results in herniation of abdominal contents into the thorax. This is seen on chest X-ray and requires operation (figure 3).

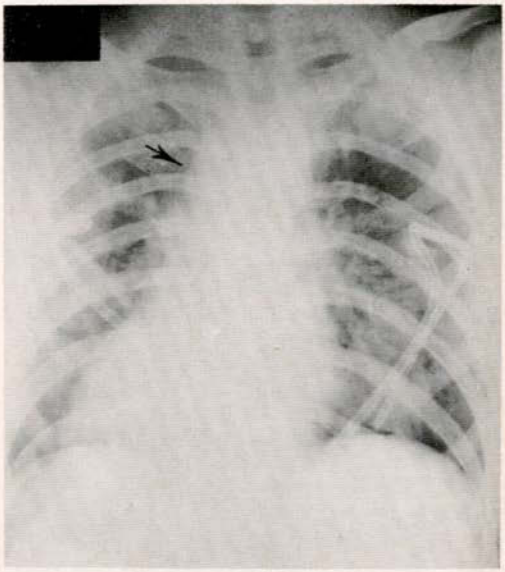

Fig. 2 Arrow shows widened superior mediastinum of aortic rupture

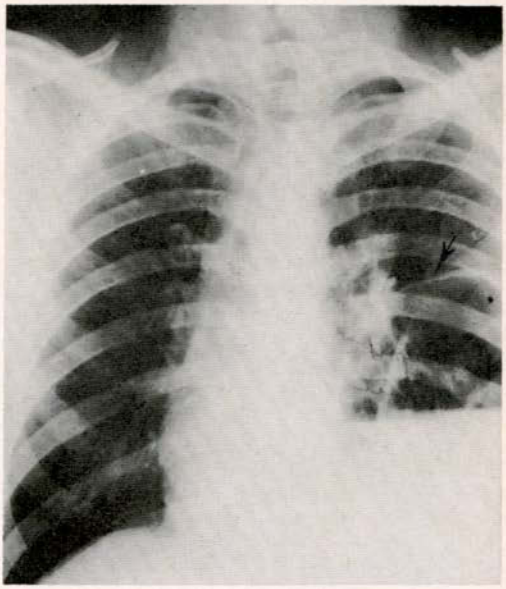

Fig. 3 Rupture of left hemidiaphragm. Arrow shows gastric air bubble.

Esophageal rupture is rare, being manifested by interstitial emphysema and severe epigastric pain. Gastrograffin swallow confirms diagnosis and surgery is necessary.

Chylothorax is very rare. It is diagnosed by aspiration of typical milky fluid. Treatment by aspiration is usually successful.

Thoracoabdominal wounds

Most of these will require operation. The abdominal organs usually involved are those in contact with the diaphragm. In this regard it is worth remembering that the solid abdominal viscera (liver, spleen, kidneys), although subdiaphragmatic, are intrathoracic as far as the rib cage is concerned.

Other injuries

These must always be searched for as so often chest injuries are found in "multiple-injury" situations. Head injuries are the most frequent, then limb fractures. The "order of priority" in such cases is usually (1) respiratory system, (2) circulatory system, (3) nervous system, (4) other (renal, skeletal, etc.).

TABLE III
PRINCIPLES OF MANAGEMENT

Two stages:		
1	Early stage	– immediate correction of profound physiological disturbances.
2	Late stage	– maintenance or restoration of lung function.

Principles of Management

The initial assessment is most important. After a brief history and careful physical examination, a chest X-ray should be taken as soon as possible. The principles of management are summarized in Table III. *The early stage* is where most saving of life occurs. This is the time when cardiorespiratory function must be secured by:

1. Adequate ventilation using the mouth-to-mouth technique, passing an endotracheal tube, or performing a tracheostomy, and immobilization of flail chest wall segments.
2. Cardiac resuscitation methods, such as external massage and defibrillation.
3. Restoration of circulating blood volume.
4. Drainage of air or blood from the pleural spaces; aspiration of hemopericardium.

It is well to remember *the causes of death* in chest injuries. *Bleeding* is into pleural, pericardial or peritoneal spaces. *Drowning* results from retained tracheo-bronchial secretions. *Suffocation* results from untreated hemopneumothoraces or flail chest. In assessing and following these injuries, close watch is kept for signs of acid-base disturbances. Metabolic and/or respiratory acidosis may develop (Table IV) and in addition some objective guide is needed in the use of respirators. The ability to measure arterial blood pH, PCO_2 and bicarbonate is essential. The Micro-Astrup technique

TABLE IV
FEATURES OF RESPIRATORY ACIDOSIS

1	Increase of arterial pCO_2
2	Fall of arterial pH
3	Tachycardia, systemic hypertension
4	Headache, confusion
5	Coma, hypotension, death

is most often used. The indications for operation are summarized in Table V. Later management involves (1) Decortication procedures, (2) Removal of certain retained foreign bodies, (3) Correction of conditions not diagnosed initially, e.g. tear of diaphragm, aortic aneurysm.

TABLE V
WHEN TO OPERATE

1	Continued bleeding into pericardial, pleural or peritoneal spaces.
2	Tear of aorta, diaphragm, bronchus or esophagus.
3	Most thoraco - abdominal wounds.

Prevention of Chest Injuries

Most serious chest injuries in civilian practice result from road accidents. Currently, the auto industry is being cajoled into incorporating additional safety features into cars. Nevertheless, most injuries are caused by the drivers themselves. The Committee on Traffic Accidents of The Medical Society of Nova Scotia has published in the Bulletin a "Guide for Physicians in Determining Fitness to Drive a Motor Vehicle,"[6] and it should be familiar to all physicians. A source of a distressing number of injuries to teenagers in this province is the use of motor-bikes and motorcycles; it is hoped that legislation will soon require that drivers and passengers of these vehicles at least wear crash helmets.

Summary

This has been a brief review of diagnosis and and management of chest injuries. Any physician interested in learning more of the techniques of resuscitation, intercostal drainage, etc. can arrange to do so through the Postgraduate Division of Dalhousie University. □

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Estimation of Blood Requirement

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Three methods of estimation of blood requirement in surgical patients have been found of value at Queen's General Hospital over the last few years. We believe that they can be used in hospitals of any size and although none of these methods is new, all deserve more attention and all meet three criteria which we feel are important. Namely; simplicity, low cost and, accuracy.

Early and accurate replacement of blood loss requires less blood than does the treatment of shock that is well established[1, 2]. Any period of shock and poor tissue perfusion carries with it a risk of renal and myocardial complications, especially in elderly, poor risk patients; but these same patients tolerate overloading of the circulation poorly[3]. A moderate degree of blood loss in the adult may be highly significant in the pediatric pediatric patient [4].

The clinical indicators of blood volume status should first be considered; nevertheless there is no *single* reliable clinical sign of impending shock due to blood loss. By the time shock is recognized a large blood volume deficit may exist [5,6].

For these reasons, over the past few years, we have instituted what we consider to be three reasonably accurate methods of blood loss extimation. These are:

1. Gravimetry, or weighing of sponges in the O. R. — this was introduced by Wangensteen in 1942, but it has never gained the universal popularity which we feel it deserves.
2. Blood volume estimation with Evans Blue Dye — a very useful procedure, which is not nearly so difficult or time consuming as is sometimes thought.
3. Continuous Central Venous Pressure Monitoring.

These techniques are described with an assessment of their value.

Gravimetry

This was instituted some three years ago. An ordinary dietetic scale is used with a light weight metal tray fastened to the weighing platform. Each gram of blood is considered as 1 ml. The blood in the suction bottle must be included and evaporation is a very important factor. The sponges should be weighed directly or placed in a water-proof bag until weighed.

At first moist sponges were used, but it was soon found that this rendered the procedure much more open to error. Therefore we abandoned the use of moistened sponges even though it had always been our practice.

Any routine procedure may become prolonged with extensive dissection, and the usual insignificant blood loss may insidiously become a shock producing one [1]. The longer and more extensive the procedure, the greater the tendency to error in blood loss estimation. A review of the literature is significant in that all of the investigators found that the measured blood loss was significantly greater than that estimated by the surgeon [3, 5, 7].

Weighing of sponges is a simple, inexpensive and reasonably accurate procedure which enables blood loss to be recorded quickly at any point during the operation. Measured blood loss by gravimetry is estimated by some investigators to be seventy-five percent of the true blood loss, the blood loss being under-estimated by twenty-five percent, chiefly because of evaporation before weighing and loss into the tissues. This would appear to us to be a reasonable assessment, certainly in an extended procedure. The blood loss as measured by this method then, is an indication of the minimal amount of blood which needs replacement.

Use of this method helps to prevent the unnecessary use of blood — we actually use less blood than we did before instituting this procedure; on the other hand needed blood is given sooner than it otherwise would have been. It renders the surgeon more aware of blood loss and more conscious of the value of hemostasis. For instance, after we began weighing sponges, the average blood loss in the next 25 Cholecystectomies was 206 ml; the average blood loss in the following 25 Cholecystectomies was 106 ml.

Blood Volume Determinations with Evans Blue Dye.

This is an excellent method of determining the status of the intravascular compartment, especi-

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ally in the preoperative surgical patient who may have a contracted blood volume. The generally used procedure for estimation of blood volume today is by means of radioactive Isotopes, but this equipment is not generally available to all hospitals. The Evans Blue method has been pretty well abandoned as being too cumbersome but in a review of the literature I have noted several recent articles describing the value of this procedure and many studies showing that the two procedures have an equal degree of accuracy [14, 16, 17].

We have used this procedure in a number of cases over the past two years, beginning with repeated determinations on normal volunteers so as to work out an accurate procedure, and going on from there to determinations in cases involving blood loss. As a result of these investigations we are satisfied that it is a reasonably accurate procedure as well as being relatively simple, safe, cheap and comparatively rapid. A certain number of serial determinations are quite feasible, the limiting factor being the residual circulating dye in the blood stream, which does contribute somewhat to error as it is increased. At any rate, we feel that CVP is better for continuous monitoring and blood volume determinations are usually reserved for pre-operative assessment with perhaps an occasional reading during or after a period of blood loss. The dye is perfectly harmless, even in large doses, which may cause a temporary discoloration of the skin.

The preparation may be used as recommended by the manufacturers (Warner-Chilcott) although we have reduced the dosage to one half, so as to increase the number of determinations possible, with corresponding alterations in the method. Accuracy in all measurements is particularly important. We now have a separate blood volume tray in the Laboratory; 20 minutes are required for plasma volume determination and 45 minutes for a blood volume reading.

Measurement of Central Venous Pressures

We have used this procedure for the past 18 months and have found it to be a very useful adjunct to the previously mentioned methods. It again is a simple, cheap and quick aid and is the best available guide to an adequate circulating blood volume [7, 9, 17].

Its use is based on a physiologic or hemodynamic classification of shock. One should not necessarily treat shock in terms of etiology for two reasons: First, you must sometimes treat it before the cause is apparent, e.g., shock of obscure origin, unsuspected myocardial insufficiency. Second, even if the cause is known, subsequent alterations in cardiac competency, blood volume or vascular tone may complicate the circulatory failure so that therapy directed only at the initial cause of hypotension is ineffective, e.g., if circulatory failure from hemorrhage persists long enough, hypoxia and metabolic acidosis may develop and depress myocardial function or vascular tone or both to the extent that blood volume replacement alone is quite ineffective. Subsequent brain ischemia may compound the problem further with respiratory depression leading to more hypoxia. Under such circumstances, correction of circulatory failure originating from hypovolemia may be quite impossible without temporary myocardial stimulants, vasoconstrictors and other agents, as well as blood volume replacement [3]. In other cases of shock which do not originate from blood volume disturbances, such as sepsis and myocardial infarction, hypovolemia may subsequently become a significant factor, especially following vasoconstrictor therapy. *The longer that shock persists, the more frequent and unpredictable will be the changes in relative importance of hypovolemia, cardiac insufficiency and deficient vascular tone* [18].

Clinical signs are not necessarily completely reliable. Consider these examples : (1) The patient with acute cardiac insufficiency may present with pale skin, thready pulse and clear lung fields, indistinguishable from hypovolemic shock and therefore subject to the hazard of over transfusion. (2) Early in the course of hypovolemia, blood pressure and pulse may be normal and vasodilation may preserve a warm dry skin, with no indication of shock until there is a sudden overwhelming collapse — we have all seen this. (3) Pre-existing bronchopulmonary pathology may give rise to symptoms and signs suggesting cardiac failure — when such signs accompany unrecognized hypovolemia, they may deter one from administering much needed blood volume expanders. (4) A poor risk patient with congestive heart failure may suffer blood loss, may require blood and yet may tolerate rapid administration poorly.

With these considerations in mind, one can appreciate the advantages of planning the therapy of obscure or refractory shock on the basis of the actual circulatory defects present [18].

Circulation is maintained by an effective combination of cardiac pump action, blood volume and vascular tone and CVP is determined by the interrelated effects of these same three factors. A deficiency of any of these factors or any combination of deficiencies of these factors will lead to shock and will cause a change in CVP, deterioration of cardiac function causing an elevation and inadequate blood volume and enlargement of the vascular space both leading to a dimunition in CVP. Restoration or maintenance of adequate circulation requires a co-ordinated support of these three factors [3, 10, 11, 17].

This procedure can serve as one of the simplest, most convenient and most reliable indices of the circulating blood volume relative to the heart action. A low CVP (0 to 5 cm. of water) indicates that the

blood volume is low in relation to cardiac capacity; and that blood or blood volume expanders may and should be administered. A continuing low CVP assures one that the circulatory system is not being overloaded and that administration of blood or blood volume expanders should continue. In cases such as this enormous amounts of blood or fluids can be given with safety and without fear of overloading the circulation, even in elderly, poor risk patients and even despite normal blood volume determinations.

If multiple transfusions have only a transient effect on shock, cardiac output and CVP, and one is certain that bleeding is controlled, then one must suspect that peripheral pooling has occurred (especially if there is hypotension in the presence of a warm, dry skin) and that the blood is not returning to the heart. This occurs most commonly with sepsis, severe brain injury and hypoxia and with prolonged shock from any cause. To improve vascular oxygenation, correction of biochemical derangements and control of infection should be instituted promptly. If hazardous hypotension persists, one may safely institute therapy with one of the vasoconstrictor agents [18].

An elevated or rising CVP (above 15 cm.) with hypotension, in the absence of increased intrathoracic pressure, indicates that the blood volume is high relative to the cardiac capacity and suggests imminent cardiac failure — further blood volume expanders in such a case may be hazardous and clinical judgement must be used to determine what measures are indicated. If there is no mechanical obstruction to cardiac filling such as pericardial tamponade, mediastinal compression or pneumothorax, then the two chief causes are (1) *arrhythmias* — an uncommon cause, often eliminated by correcting hypoxia, mechanical cardiac compression or biochemical derangements — if not, by anti-arrhythmic drugs such as procainamide HCl. (Pronestyl ®), lidocaine HCl. (Xylocaine ®) or quinidine. (*myocardial hypofunction*) — by far the most common cause of cardiac insufficiency, it is assumed to exist in the presence of an elevated CVP when the heart rhythm is adequate and obstruction to cardiac filling is ruled out. There are many causes for myocardial hypofunction and in treatment it is important to think in terms of correcting biochemical derangements such as hypoxia, metabolic acidosis and electrolyte deficiencies and eliminating myocardial depressants as well as using myocardial stimulants. Respiratory support is paramount. When myocardial hypofunction persists after correction of hypoxia and biochemical derangements, one must resort to myocardial stimulants such as digitalis preparations or the inotropic action of catecholamine agents.

Hypotension with normal CVP levels (5 to 15 cm.) requires a cautious trial of blood volume expanders, further observation and careful interpretation [17].

CVP does portray accurately and instantaneously the functional pressure of the return venous flow as it enters the right side of the heart and it reflects the competency of the heart to handle the volume of blood being returned to it at that particular time. In other words it has two separate values: it provides an index of tissue perfusion and it measures the ability of the heart to handle the venous return.

Applying the principles expressed in Starling's law of the heart, in which the strength of myocardial contraction is a function of the end-diastolic muscle fibre length, we can say that if filling pressure of the heart (i.e. CVP) is low, then the myocardium is less consistent in its function. By increasing the presystolic volume of the heart with blood volume expanders and thus stretching the length of the ventricular muscle fibre, the efficiency of the myocardial contraction improves and cardiac output increases. However, as the filling pressure rises to higher levels a point is reached where any further lengthening of the muscle fibre weakens the myocardial contraction, so that additional fluid administration becomes progressively more hazardous and could result in a failing heart.

Large amounts of fluids can be given with safety and without fear of overloading the circulation and careful continuous CVP monitoring has virtually eliminated inadvertent pulmonary edema from excessive parenteral therapy. The so-called normal levels of CVP vary considerably from one article to another; I feel that this only serves to emphasize an important point — that the *trend* of CVP and the *response to therapy* are often much more significant than the actual reading [3, 8, 11, 17].

The circulatory system in the critically ill patient is extremely unstable and the predominant cause for shock may change frequently during the course of treatment. One must be prepared, therefore, to recognize changes in circulatory dynamics as they occur and to change therapy accordingly. One should not accept the initial diagnosis as a final guide to all further therapy [18].

In general, this method is used whenever cardiovascular or fluid balance problems are present or ar anticipated, e.g., acute circulatory failure of obscure origin or shock which has failed to respond to treatment (some use it in all patients in shock); during massive blood or fluid replacement — even though the need is obvious, the rate of administration may be gauged by the responses of CVP; during oliguria or anuria both to rule out hypovolemia or dehydration as the cause and to avoid overhydration if there is true renal failure; it is also useful in many non-operative cases; for instance, the last two cases in which we used this procedure were a case of acute pancreatitis and a

patient undergoing peritoneal dialysis, both of whom required large amounts of fluid (in the neighbourhood of 10,000 ml. daily).

Peripheral venous pressure is not a reliable clinical measurement for several reasons, chief among them being interposition of valves between the right atrium and the point of measurement and the element of peripheral venospasm. The only accurate venous pressure determination is one in which the catheter lies either in the right atrium or in a vessel that is in continuity with the right atrium without intervening valves. Thus CVP may be measured anywhere in the vena cava system or the immediate valveless tributaries. The inferior vena cava is not usually used because of the danger of thrombophlebitis and because it may be affected by abdominal distension post-operatively. The superior vena cava or one of its major branches is customarily used. There is no valve between the superior vena cava and the right atrium and the innominate veins also have no valves [19, 20].

The commonly used sites of insertion of catheters are: the subclavian vein, the external jugular vein, the cephalic vein, and the basilic vein. The last two require a long catheter to reach the central venous system; the subclavian vein is quite popular although pneumothorax sometimes occurs. Its proponents state that this occurs infrequently and is no problem as long as it is recognized and the patient is watched closely. We use the external jugular vein, percutaneously usually, occasionally by cut-down; we have found it relatively easy to catheterize and have had no complications. An added advantage is the ease of fluid administration through the same catheter without the need for immobilizing an extremity.

We have modified the usual method somewhat (Fig. 1), chiefly in order to obtain the zero level, i.e. the level of the right atrium, more accurately, particularly at the bedside, by connecting a second intravenous tubing as a side arm into the regular intravenous administration system and placing the side arm against a centimeter scale, which in this case is a portion of a combination square (cost about $3.50). This incorporates a scale and a level and allows the zero point to be levelled quickly and accurately with the mid axillary line (which is taken as the level of the right atrium with the patient supine and the head lowered). A Kirschner wire may be attached for greater convenience in levelling. The central venous catheter is used for blood or fluid administration and the manometer tube is kept closed except when measuring CVP. Readings may be taken as often as desired by clamping the regular intravenous tubing and opening the manometer [17]. A free flow is shown by rapid free fall of the fluid in the manometer tube, fluctuation of the fluid column with breathing and the heart beat, and a free rise

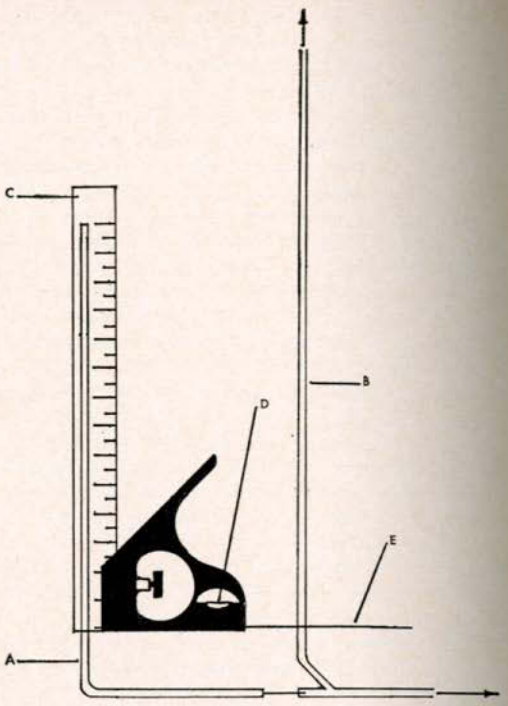

Figure 1. — The manometer tubing (A) is attached to the intravenous tubing (B) and placed against the ruled portion (C) of the combination square. The zero point is brought level with the mid-axillary line using the bubble level (D). A Kirschner wire (E) may be attached to ensure greater accuracy in alignment. (17).

of the fluid column with straining, coughing or compression of the abdomen.

CVP monitoring is superior to blood volume determinations in many respects : A blood volume determination gives one information which becomes obsolete very quickly in cases where blood volume is unstable. The number of repeat blood volume determinations possible with any method is limited. The stated "normal" blood volume for the patient's height and weight may be significantly higher or lower than the patient's optimal blood volume [2, 6, 11, 17]. For instance, patients in hypovolemic shock often require much larger amounts of fluid than that necessary to replace the fluid lost, and CVP will keep you informed of the continuing need. Some patients may actually be hypovolemic and yet have cardiac insufficiency — blood volume measurements alone might lead to circulatory overloading. In such a case as this, where hypovolemia and cardiac insufficiency coexist, CVP monitoring will allow the rate of transfusion to be properly adjusted.

Continued on Page 228.

Figure 1, courtesy of Canadian Medical Journal. Reproduced by permission of the Editor.

Central Venous Pressure

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Shock is a state of inadequate tissue perfusion which may be caused by a damaged myocardium, decreased blood volume or increased vascular capacity. In the treatment of shock, clinical assessment including blood pressure, pulse rate, hemoglobin, hematocrit and urine output are all helpful but do not give an accurate picture of the rapidly changing hemodynamics involved. They are affected by compensatory mechanisms and changes are delayed. Measurement of blood volume also gives delayed information and may not measure the *effective* blood volume. Fluid requirements may be many times that estimated by decrease in expected blood volume. What is needed is a measurement which gives a minute by minute picture of the hemodynamic changes which are taking place.

The venous return to the heart is dependent on the three factors mentioned: cardiac output, blood volume, and the state of the peripheral vascular bed. It does not reflect any one of these alone, but rather the interaction of them all. Cardiac output is dependent on an adequate venous return and can be increased, up to a point, by increasing venous return, if the heart is healthy. At this point further increase in venous return results in pulmonary edema. Venous return can be measured by placing a catheter in the superior or inferior vena cava, close to the heart, and measuring the pressure. This measurement is the Central Venous Pressure (CVP). Since the pressure in peripheral veins is affected by the presence of valves the peripheral venous pressure is not an accurate measurement of venous return to the heart.

Technique of Measurement

The technique is simple and no elaborate equipment is necessary. A No. 14 or No. 16 polyethylene catheter of sufficient length is placed in a peripheral vein which leads easily to the vena cava. This may be the basilic or cephalic vein of the arm, the external jugular of the neck, the subclavian just below the clavicle or the long saphenous at the groin. The basilic vein at the elbow is probably the most satisfactory because it leads directly into the superior vena cava with no major intervening bifurcations and no sharp turns. However, it is not always available. The catheter may be inserted percutaneously through a needle or by cut-down. The approximate length required to reach the vena-cava near the heart should be measured off and marked before insertion. When it is properly in place the meniscus in the catheter should fluctuate with respiration. The catheter is then attached to a manometer and to a bottle of intravenous fluid. Several arrangements are possible. A spinal fluid manometer may be inserted between the catheter and intravenous tubing using a three-way stop cock. When a pressure measurement is to be obtained the manometer is filled with intravenous fluid from the bottle. The fluid is then allowed to run into the patient until the meniscus stops falling. This level is read from the manometer in cm. of water. The zero point on the manometer scale is placed at the level of the mid axillary line of the thorax. Sterile, disposable venous pressure sets with attached centimeter scales are available commercially and are very satisfactory.

Several pitfalls must be avoided. If the meniscus does not fluctuate with respiration then the tubing must be obstructed or the catheter is outside of the thorax. Sometimes the end of the catheter will be obstructed intermittently by the side wall of the vein. This causes the meniscus to fall in a jerky manner and calls for adjustment of the catheter. If positive pressure breathing is being used CVP will be artificially elevated. Pericardial tamponade and other obstructions of venous return should be ruled out when CVP is elevated.

The catheter also acts as a convenient way to administer large amounts of fluid when necessary.

A graph is set up to record CVP, Blood Pressure (BP), pulse and urine output. The response of these measurements to treatment is of more value than any single measurement. The normal CVP varies from 5 - 13 cm. H_2O. Pulmonary edema has not occurred with a CVP below 14 cm H_2O and usually this can be exceeded.

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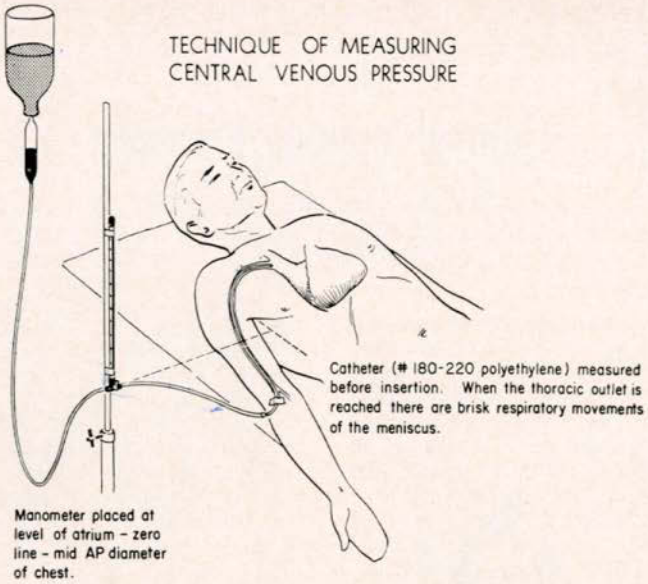

Use in Treatment of Shock

The cause of shock in a particular case is often obvious from the history and clinical findings, but this is not always so. In many cases of acute hypovolemic shock a central venous catheter is not necessary. Fluids are replaced and the patient quickly responds. But in any case in which the cause is not clear, or shock has been prolonged, or does not respond quickly to treatment, then a central venous catheter is helpful. If the CVP is low or normal in the presence of low blood pressure then a trial of rapid intravenous fluid infusion is given (usually about 2000 ml. of Ringer's Lactate solution in one hour) and the effect on the BP, pulse, CVP and urine output is noted. If BP rises and CVP does not then a diagnosis of hypovolemia can be made and fluids can be given rapidly until CVP begins to rise to the upper limits of normal. If CVP is high in the presence of low BP then myocardial failure is most likely and efforts must be made to improve myocardial function before fluids can be given. In some cases CVP may be elevated because of cardiac failure secondary to shock and anemia. Administration of oxygen, digitalis and blood or packed cells may improve cardiac function so that CVP falls and further transfusions can be given with confidence while CVP is being monitored. However myocardial infarction is the more common cause of shock associated with high CVP. Improvement of myocardial function may be difficult or impossible. Here again the CVP is a valuable guide to the state of myocardial function and to the amount of fluids that may be given safely.

Other Situations

Aside from the treatment of shock the CVP may be useful in other clinical situations, particularly in poor risk patients undergoing extensive surgery or when large fluid losses are expected. In other words it may be used as a prophylactic measure in situations where shock may occur. The treatment of renal failure also may be facilitated by use of the central venous catheter.

Illustrative Cases

Several cases seen recently at the Victoria General Hospital serve to illustrate the value of the CVP.

Case No. 1 . . . Mr. G. J., a 63 year old man, was admitted on February 16, 1966 for surgical repair of a large recurrent incisional hernia. He had a long history of chronic bronchitis and was a heavy cigarette smoker. He was treated preoperatively with bronchodilators and intermittent positive pressure breathing. Operation was difficult due to the large size of the hernia. 24 hours after operation he developed pulmonary problems requiring tracheotomy with positive pressure breathing using a Bird Respirator. 12 hours later he became restless, pale, cold and sweating. Blood Pressure and

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pulse were unobtainable. He was not excreting urine. A central venous catheter was inserted and CVP was found to be 14 cm H_2O. Since this was above normal it was thought that he was not hypovolemic and that he had probably had a myocardial infarction. Electrocardiogram showed no evidence of infarction but this is not unusual in the early stages. Hemoglobin was 16 Gms.%. He was seen by the medical consultants and treated with digoxin and intravenous Aramine. Blood Pressure rose to 90/60 mm. of Hg. but he remained cold and sweaty. There was no urine output. After several hours it was realized that the positive pressure breathing might be affecting the CVP. The respirator was stopped and CVP was measured at one cm H_2O. 3000 cc. Ringer's Lactate and one bottle of blood were given rapidly bringing the CVP up to four cm. H_2O and BP to 130/70. 25 ml. of urine were excreted in one hour. It was noted at this time that large quantities of fluid were being lost into the operative area where extensive dissection had been done. Large amounts of intravenous fluid were given over the next few days. The CVP remained below six cm. H_2O. His condition improved rapidly and BP remained stable.

This case illustrates the value of CVP monitoring when hypovolemia may be unsuspected. It also demonstrates the effect of positive pressure breathing on the CVP.

Case No. 2 . . . Mr. L. E. D. This 64 year old man came in to the Out-Patient Department, on his own, complaining of feeling weak. He had a five day history of epigastric pain, nausea, vomiting and diarrhea. On examination he was cold, sweating and pale with peripheral cyanosis. Blood Pressure was 80/50, pulse 140 and thready. He was blind and could give no information as to the nature of the vomiting and diarrhea. The most likely diagnosis was thought to be gastro-intestinal hemorrhage. An intravenous infusion of glucose in saline was started, blood was taken for cross-matching, and he was admitted to hospital. A central venous catheter was inserted and CVP was found to be twenty cm. H_2O. BP could not be obtained and there was no urine output. Hemoglobin was fifteen Gms.%. An Electrocardiagram was done revealing evidence of a massive myocardial infarction. He expired after three days and autopsy confirmed the diagnosis. The CVP had remained elevated to about 27 cm. H_2O in spite of all efforts to improve myocardial function. In this case the elevated CVP in the presence of low BP was the first indication of the correct diagnosis. The CVP can be useful in treating myocardial infarction, a falling CVP indicates improvement in myocardial function.

Case No. 3. . . . Mr. S. G. This 55 year old paraplegic had a long history of indigestion and recurrent melena. A nephrectomy had been done in 1961 for chronic infection. Since that time his Blood Pressure was known to be about 220/130. For five days prior to admission he had been passing tarry stools and complained of feeling weak. He was admitted to the emergency department at night where examination revealed severe dyspnea with air hunger. He was restless, cold, sweating and cyanotic. Rales and rhonchi were heard throughout both lung fields. The heart was clinically enlarged. BP was 160/100, pulse 140. Hemoglobin was six Gm.%. There was tarry stool in the rectum. A central venous catheter was inserted, CVP was thirty cm. H_2O. EKG showed evidence of myocardial ischemia. . . This man obviously needed blood but equally obvious was his congestive heart failure. Since his condition was critical it was decided to give a bottle of O-negative blood while keeping a close watch on the CVP. Digoxin, diuretic, and oxygen were also given. The CVP began to fall thus proving that the myocardium was capable of responding to treatment. As the CVP fell the blood was given at a faster rate and was followed by two bottles of packed red cells. CVP fell to thirteen cm. H_2O after two hours and continued to fall to six cm. H_2O. Transfusions were continued until hemoglobin was normal. Signs of congestive failure cleared quickly and his general condition improved rapidly. Without the CVP it would not have been possible to treat his anemia so vigorously in the face of congestive failure. This case also demonstrates the importance of following the response of CVP rather than accepting a single measurement.

Summary

The technique of measuring Central Venous Pressure is described. The value of this measurement in the treatment and prevention of shock is illustrated by several case reports. □

Estimation of Blood Requirement

continued from page 224

CVP monitoring can be done continuously and gives an indication of the patient's effective blood volume and of the ability of the heart to handle the circulating blood volume.

Conclusion

Any combination of these procedures may be useful, and occasionally all three procedures may be desirable in the same case. Blood volume estimation with Evans Blue Dye has its greatest value in preoperative assessment; weighing of sponges is pretty well restricted to the operating room; measurement of CVP is of most value in the post-operative course although useful in the operating room and at times in pre-operative cases and in non-operative cases.

These methods are valuable additions to the established methods of clinical assessments and can be used in hospitals of any size at any time. □

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CASE REPORT

Eosinophilic Gastro-Enteritis

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A fifty-six year old man (H. J. O.) gave a twenty-five year history of episodes of heartburn, bloating, gaseous rumblings and crampy abdominal pain. X-Rays of the G. I. tract were negative in 1947. He had reasonably good health until 1961 when he developed acute abdominal pain which was diagnosed as acute cholecystitis and for which a cholecystectomy was performed. A review of the pathology report did not suggest anything unusual in the microscopic picture. He continued to be in fairly good health until December 1965 when he developed epigastric and lower abdominal pain, anorexia, heartburn, epigastric fullness and generalized abdominal distention. These symptoms were intermittently present until his admission to hospital 26 February 1966. At this time he complained of crampy abdominal pain and examination revealed ascites with ill defined abdominal tenderness. Bower function was variable but he expelled flatus normally.

General physical examination was normal, rectal examination was negative, sigmoidoscopy up to six inches did not reveal any abnormality. The pertinent laboratory findings were as follows:

Urinalysis — Normal.

Haemogram — W.B.C. 13,075/cmm. Haemoglobin 14 gms.

Differential counts revealed 39% and 34% eosinphilia with a total eosinophil count of 5,469 cmm.

Blood chemistry — Normal.

Liver function tests — Normal.

Flat film revealed air fluid levels in the small intestine suggesting a partial small intestinal obstruction. Barium enema — On first examination the barium could not be made to flow beyond the hepatic flexure; on the repeat examination it was considered that an obstructing lesion was present proximal to the hepatic flexure. An abdominal paracentesis obtained 1000 ml. of amber coloured ascitic fluid, examination of which was as follows:

Reaction — alkaline, protein +++, sugar +++. Cytological examinations were normal except for an increased number of eosinophils and numerous atypical cells. Following removal of the ascitic fluid, there was a suspicion of a mass in the right upper quadrant.

The decision was made that a laparotomy was indicated and although the diagnosis was obscure, the most strongly held was that of a neoplasm of the right colon with possible peritoneal seeding.

Laparotomy was performed through a right-para-median para-umbilical incision. There was a marked straw coloured ascites but a mass was not found in the right colon nor was there any evidence of malignancy. The small intestine was generally thickened and this was most prominent in the terminal ileum, the terminal three feet of which was rubbery, greyish red in colour with a thin exudate upon the serosa; one area of ileum, eighteen inches proximal to the ileo-caecal valve showed a degree of torsion which was considered to have possibly caused small intestine obstruction and five inches was resected at this point, restoring continuity by end to end anastomosis. The pathology was confined to the bowel, the mesentery of the small intestine being normal. The caecum, transverse colon and sigmoid loop showed the same abnormality as the small intestine although not as marked as the terminal ileum. The gastric antrum and pylorus were identically affected and the latter was quite rigid and stenotic with obstruction not far off. A decision against gastro-jejunostomy was made; biopsies were taken from the gastric antrum and liver and the abdomen closed.

Gross examination of the resected small intestine showed normal mucosa and a greatly thickened sero-muscular coat.

Pathological diagnosis:— Eosinophilic Gastro-enteritis.

The mucosa of the gastric antrum and ileum was normal. There was extensive eosinophilic infiltration of the sero-muscular coat of both the stomach and small intestine. There was no evidence of tuberculosis or malignancy.

Therapy

The man recovered from the operation very satisfactorily, bowel function being established by the fifth post-operative day. However, he continued to have abdominal pain similar to that which he experienced before surgery. Because of the probable allergic nature of this disease, Benadryl was tried for five days but it had no therapeutic effect, nor did it have any effect upon the blood eosinophilia. This was discontinued and prednisone 10 mg. q.i.d. was begun; dramatic improvement followed its use, he became symptom-free, and the blood picture returned to normal with absence of the eosinophilia. On 3 May 1966 about two months following operation the haemogram was normal, W.B.C. 8,000 cmm. Hb. 15.6 gms. and the total eosinophil count was 50/cmm. He felt well, was free from abdominal pain, and continued on prednisone 5 mg. t.i.d.

Discussion

This is the first case of eosinophilic gastro-enteritis which I have encountered. There have been reports of circumscribed and diffuse types since 1950. A. L. Ureles *et al*, American Journal of Medicine, June 1961, present two case reports, review the literature and suggest the following classification:

Class I — Diffuse Eosinophilic Gastro-enteritis.
- Group A. Polyenteric
- Group B. Monoenteric
- Group C. Regional

Class II — Cimcumscribed Eosinophilic Infiltrated Granuloma.
- Group A. Regional
- Group B. Polypoid

It is possible that the condition is due to a hypersensitivity reaction. Some authors place the disease under the broad category of allergic disorders. An association with Loeffler's syndrome of eosinophilic pneumonia may exist. Asthmatic breathing, cough, fever, and eosinophilia were noted in two cases reported by Ureless *et al* from Rochester. A history of allergy is frequently obtained but may be absent. The patient in this report exhibited a urticarial reaction to strawberries. The severity of the disease does not appear to be related to the presence of a history of allergic disease. Within the abdomen, the gastric antrum and pylorus appear to be the most frequently involved structures. The gallbladder and urinary bladder are stated to have been involved in this disease. Patients with a profound haemophilia have the most extensive bowel involvement. Factors which provoke the eosinophilic response persist in the diffuse type of disease. Before the use of steroids recurrence of symptoms was common sometimes leading to a second laparotomy. A maintenance dose of prednisone may be necessary to control the disease. Recurrence after a remission can be controlled by steroids without surgery. There is almost total absence of peripheral blood eosinophilia in the localized group of eosinophilic granulomas.

The differential diagnosis of this disease would concern the following:

1. Regional Enteritis
2. Whipple's disease (lipodystrophy)
3. Amyloid disease
4. Hypoproteinaemia with oedema
5. Henoch's purpura

There is no record of another diffuse Eosinophilic Gastro-enteritis at the Victoria General Hospital. There is a record of one patient with a circumscribed granuloma of the stomach. □

I am indebted to Dr. Ian MacGregor and Dr. R. C Dickson for their assistance and cooperation in the diagnosis and management of this patient.

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Malignant Disease of the Vermiform Appendix

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Malignant disease of the vermiform appendix is rare. The majority of surgeons of wide experience have not encountered a single case of true, invasive and metastasising, primary neoplasms of the appendix.

A review of the literature discloses that it consists mostly of the reporting of single cases.

Primary malignant disease of the appendix may be carcinoma or Sarcoma. Experience with one of each, in a short period of time prompted the writing of this short communication.

No attempt will be made to completely review the literature for the reason as stated above.

True primary carcinoma of the appendix was first described by Berger some eighty years ago.

Uihlein and McDonald reviewed the occurrence of carcinoma of the appendix at the Mayo Clinic between the years 1910 and 1941 and found one hundred and forty – four cases of malignant diseases of this organ. The following classification was suggested:

1. Malignant carcinoids.
2. Carcinoma of the cystic type (papillary adenocarcinoma) and
3. Carcinoma of the colonic type (true adenocarcinoma).

Of these 144 cases, 127 or (88.2%) were carconoids, twelve (8.3%) were papillary cyst adenomas (malignant mucocele and five (3.5%) were adenocarcomas of true malignant disease — namely local invasion and spread combined with distant lymphatic and blood born metastasis.

Niceberg *et al* reporting in 1956, found only one adenocarcinoma in 2,301 appendectomies.

Roger Wilson, reporting from the Vancouver General Hospital in 1962, stated that during the previous fifteen years, 17,000 autopsies and 208,000 surgical examinations revealed only seven carcinomas of the appendix. Carcinoids were excluded from the study but apparently mucocele were not. The true incidence of adenocarcinoma of the colonic type is not indicated but from such statistics its rarity is emphasized.

A review of the literature would indicate that, as yet, a preoperative diagnosis of adenocarcinoma of the appendix of the colonic type has yet to be made. When eventually made, the primary or secondary operation should be right hemicolectomy. McGregor *et al*, reporting in 1960 showed that operations of less magnitude gave poor results. Of fourteen patients who underwent hemicolectomy after their first operation, only one had recurrent disease.

Clinical Picture

The symptoms usually are those of acute appendicitis, and the primary operation is usually a simple appendectomy. In most cases the presence of carcinoma is unsuspected at the time of operation, the true nature of the disease being later discovered by the pathological examination.

Lymphosarcoma of the appendix is still more rare than carcinoma. It was first described by Kundrate in 1893. Ewing, in 1939, divided them into two groups, malignant lymphocytoma and reticulum cell sarcoma. Other classifications are suggested in a paper published by Clarke & Simmonds in 1951. They suggest a classification into two groups, lymphosarcoma of the lymphocytic or reticulum cell type, and giant follicular cell lymphoblastoma.

Up until 1951 only twenty cases of sarcoma of the appendix were reported. Of them, seventeen or 74% were lymphosarcomas.

Of the two groups the first is far more malignant than the second and no record of long term survival in this group is to be found. Joynt & Williams (1961) stated few survive beyond two years. Again the symptoms are indefinite and are usually those of subacute or acute appendicitis. In our case, the tumour was discovered by the doing of a routine appendectomy at the time of cholecystectomy.

Case Reports

Case I: H. H. — Age 60

This man was transferred to the Blanchard Fraser Memorial Hospital on May 17, 1965. On April 12, 1965, he complained of epigastric distress and nausea. This was not severe until April 15 at which time he became acutely ill with severe pain in the right lower quadrant with vomiting with fever. He was seen by his family physician who found him markedly tender over McBurney's point. He was taken to hospital and an emergency

appendectomy performed. The appendix was acutely inflamed and this was considered to be his whole trouble at the time. Pathological examination however showed that the point of section of the appendix traversed an adenocarcinoma.

Recovery from this operation was uneventful and at the time of transfer on May 17, 1965 he felt well.

Laboratory and general investigations in this hospital showed nothing of importance.

On May 21, 1965 a right hemicolectomy was performed. There was no evidence of glandular or hepatic metastasis.

Grossly the tumour (about the size of the end of one's little finger) was confined to the inverted stump and did not extend through to the caecal mucosa. (Pathological report: Adenocarcinoma of the colonic type).

A "second look" was afforded in this case as he was operated upon on February 7, 1966 for a deep penetrating duodenal ulcer — a gastric resection being done at this time. There was no evidence of metastatic disease on this date.

Case II — C. P. — Age 72

This woman was admitted to the Blanchard Fraser Memorial Hospital on November 17, 1965 and discharged on December 23, 1965. She stated that she had not felt well for months during which time she experienced almost constant epigastric distress and "gas". There were no episodes of acute, severe pain and no history of chills or jaundice. As an outpatient, a complete gastrointestinal series was reported as normal. X-ray of her gall bladder failed to visualize this organ on two occasions and on one of these, double contrast was used. It was noted by her physician that she had an asymptomatic hypertension (210/120). She was admitted to hospital for investigation of this condition, and the usual investigations were carried out with no unusual findings. While under investigation she rapidly became normotensive without specific treatment.

Due to persistence of her gastrointestinal symptoms, cholecystectomy was advised and accepted.

There was nothing unusual in her laboratory or physical findings. She was operated upon November 29, 1965 through a Kocher incision. Without going into the complete operative findings, the gall bladder was distended, omental adhesions to the under surface were found. It however was blue walled and contained no stone. The common duct was normal. The gall bladder contained thick black bile. It was removed.

The caecum was bound down and could not easily be delivered into the incision. The appendix lay over the brim of the pelvis and its tip was adherent to the anterior surface of the sacrum. It was freed with some difficulty and when this was accomplished its tip was found to contain a tumour about two centimeters in diameter. This was very solid and whitish. There was no evidence of glandular or liver metastasis. The patient was later sent to the Radiotherapy Department of the Victoria General Hospital, Halifax where she received a course of radiotherapy.

The following is the pathological report of the specimen: "A vermiform appendix 9 cm. long, with the distal part uniformly swollen to 2 cm. diameter, although the proximal end is of normal calibre and color. The swollen end is white, firm and wet throughout the wall and this tissue extends in places into the fat of the mesoappendix.

Microscopic appearances proximally are normal and there is no lymphoid hyperplasia, but distally the whole wall is replaced by cords of cells in scant stroma and no mucosa remains. The tumour cells vary in nuclear size, often have mirror-image double nuclei and produce no mucin. The appearances are those of lymphosarcoma of the large-celled type, primary in the appendix. Such lymphosarcomas in intestinal sites were formerly classified as reticulosarcomas." □

CASE REPORT

Regional Intravenous Anaesthesia

An Indication for its Use

J. A. NOBLE, FRCS (C)*

Halifax, N. S.

Amputation of an extremity is occasionally indicated for no other purpose than to relieve or improve nursing care. Such a circumstance is usually associated with a chronic bedridden patient, in poor condition to withstand a major operative procedure with routine anaesthesia.

A recently encountered patient in these circumstances was a 69-year old man admitted to Camp Hill Hospital with a history of having had a cerebrovascular accident five years previously. He had been nursed at home, and was disorientated and in cardiac failure. His lower limbs were contracted in flexion and there were "pressure sores" on the back and both heels.

After two months of energetic care on the medical ward, and with concentrated efforts to obtain healing of the decubitus ulcers, although his general condition improved, the ulcer on one foot progressed to a spreading osteitis. It became obvious that the local antiseptic dressings and specific antibiotic medication were ineffective, and after consultation it was agreed that amputation of the extremity would be in his best interests.

Confronted with the necessity to carry out the minimum procedure with the least disturbing anaesthetic, Dr. A. Trias of our Othopaedic Department suggested that we attempt a new technique for us, and perform a quick amputation through the knee joint using intravenous regional anaesthesia. Dr. Trias argued that there would be little danger of toxic reaction since almost all the agent injected would be removed with the amputated limb.

Procedure

One hour prior to operation the patient was given 50 mg. of demerol and 1/150 grain of atropine. A pneumatic tourniquet was applied to the thigh and immediately below this a blood pressure cuff was placed and inflated to distend the long saphenous vein. A needle was then introduced into the vein and held in place by a tape. After removing the blood pressure cuff the leg was elevated for three or four minutes to obtain venous drainage, following which the tourniquet was inflated to above arterial pressure. With the limb now in the horizontal position on the table, 80 ml. of 1% xylocaine without adrenalin were infused into the venous system. After routine skin preparation and draping we allowed ten minutes to elapse before making skin incisions to outline the flaps, the anterior one extending to the tibial tubercle, the posterior one somewhat shorter. The limb was disarticulated through the knee joint with ease, the two main branches of the sciatic nerve being injected with xylocaine before transection. The popliteal artery and vein were separately ligated with silk. All obvious vessels were clamped and ligated but the smaller vessels could not be identified because of tourniquet control. After closing the skin flaps with interrupted black silk sutures and inserting a Penrose Drain, a pressure dressing was applied as after a knee arthrotomy, and the tourniquet was removed.

The entire procedure lasted one-half hour and during this time the patient experienced no discomfort, remaining awake and answering questions. The post-operative course has been most satisfactory with good wound healing, absence of pain and general improvement in health.

Comment:

Intravenous Regional Anaesthesia has become accepted as a routine procedure in certain selected conditions, particularly in emergency situations. A major operative procedure such as amputation, in elective circumstances, may present a serious problem in obtaining adequate anaesthesia. The technique as performed in this case, described above' calls for a minimum of equipment, very little assistance, and gives good assurance of safety.

The two important factors are: first, by amputating in this manner through the knee joint, tourniquet time can be limited to 30 minutes, beyond which pressure pain is felt by the patient; and second, with good tourniquet control and the application of a pressure dressing before releasing the tourniquet, the limb can be removed with little chance of toxic reaction by the analgesic agent escaping into the general circulation.

Variations in the technique as well as studies in toxicity and pharmacology of xylocaine are reported by Bell, Slater and Harris of Boston, based upon their experience with 56 patients. □

References Next Page

*From the Department of Surgery, Dalhousie University and Camp Hill Hospital.

Regional Intravenous Anaesthesia

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From the Reminiscences of Doctor Murdoch Chisholm.

Public Health News

Continued from page 238.

The Department of Public Health supplies free of charge to Health Units epinephrine bitartrate solution, 1/1000 in single dose vials for use in immunization clinics in case of anaphalyctic reactions.

All Tuberculin tests and materials are distributed from the Division of Tuberculosis Control, N. S. Sanatorium, - Kentville. All the other materials are distributed from the Central Office, Halifax, through the local Health Unit Offices. □

FORTY YEARS AGO

From the Nova Scotia Medical *Bulletin*
September, 1926.

It is a great calamity when a Doctor or Teacher becomes too self-centered. Not over ten years ago a doctor in this city shocked me by raving against Antitoxine. On the same plane are our Anti-vaccinationists and I have heard one, who took his F.R.C.S. of Edinburgh, say that one of his examiners had the reputation of plucking students if they prescribed Mercury for Syphilis. Self-centering, revolving about one's past, neglecting or refusing to receive or learn or keep pace with modern progress. Getting stuck upon one's self is one of the temptations of age to which most men succumb. I remember being called to a case of Diphtheritic Croup. One of our oldest city doctors had been in attendance and gave the little patient up to die, whereupon they ran for another doctor, and indeed death was marked upon the little one's face when I got there. There was no time to lose. I rushed for my intubation set and was fortunate enough to be in time with the insertion of the tube. The doctor came next day expecting to find the patient dead. They told me his eyes stood in his head when on opening the door, he saw the child sitting in bed playing with its toys. □

CASE REPORT

Peutz-Jeghers' Syndrome

S. T. Norvell, Jr., MD, FRCS (C)*

Halifax, N. S.

INTRODUCTION

In 1921 Peutz[1] described polyposis of the gastrointestinal tract associated with melanin mucocutaneous pigmentation in three generations of the same family. In 1949 Jeghers and Associates[2] reported 12 patients with the same entity. Since then, about 200 cases of what is now known as the Peutz-Jeghers' syndrome have appeared in the literature.

The Peutz-Jeghers' syndrome consists of three cardinal features:

1 Melanin pigmentation is found in abnormal locations, chiefly around the mouth, on the lips, in the mucous membrane just inside the mouth, and sometimes on the hands and feet.

2 Multiple polyps are found throughout the gastrointestinal tract, often from the stomach to the rectum, but involving mainly the small intestine.

3 Familial occurrence is the rule, the syndrome being transmitted as a non-sex-linked Mendelian dominant.

CASE REPORT

Miss H. M., age 15, was admitted as an emergency in January, 1962, for abdominal pain of four hours duration. The pain woke her at 3:00 a.m., was situated all over the abdomen, and was probably cramping, although a clear history could not be obtained due to her excitable condition. Shortly after the onset of the pain the patient vomited five or six times, bringing up small amounts of watery-green material, and subsequently retched. Her bowels moved the day before admission and the stool was normal.

Two days before admission the patient had a similar attack which woke her at 5:00 a.m. and lasted until noon; the pain was associated with nausea but not vomiting. For many years she had had bouts of abdominal pain, several times per year, and these attacks were noted by the mother to be associated with loud intestinal noises.

Examination disclosed a thin, adolescent girl who was tossing about the bed and complaining of pain. She could be examined properly only after sedation. She was noted to have freckles (Figure 1), but no clinical significance was attributed to this observation at the time. She had brown eyes and a dark complexion.

Temperature was 98.6° F. Pulse was 94 and regular. Respiratory rate: 20 per min. Blood pressure: 130/80. Her tongue and lips were dry. The pharynx was normal and there was no cervical lymphadenopathy. The chest was normal. The abdominal wall moved well and there was no guarding. There was minimal tenderness to deep palpitation in the right lower quadrant. No masses could be felt in the abdomen. Rectal and pelvic examinations were non-contributory.

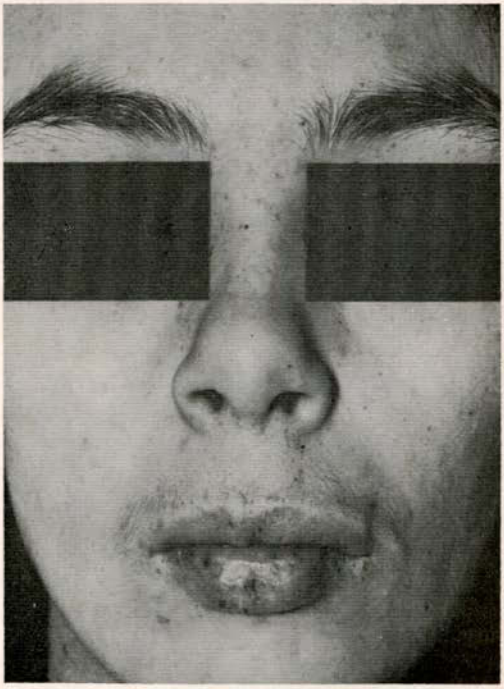

Fig. 1: Miss H. M. The melanin pigmentation on the vermillion borders of the lips should lead to examination of the buccal mucosa.

*From the Department of Surgery, Dalhousie University and the Victoria General Hospital.

Investigations: Urinalysis was normal and the urine contained no porphoblinogen. Hemoglobin was 14.9 gm.%. The WBC was 14,500 with 93% neutrophils.

Hospital Course: She gradually developed increasing tenderness in the right lower abdomen associated with some rebound tenderness and guarding. She also developed some rectal tenderness high and on the right. Her temperature went to 99°. Her pulse was never above 100, and at no time did we detect an abdominal mass. She was taken to the operating room the day following admission with a diagnosis of "probable appendicitis".

Operation: Laparotomy was carried out through a right lower quadrant skin-crease and gridiron incision. The appendix and pelvic organs were normal. The small bowel was moderately dilated and there was some serous transudate. There was an ileoileal intussusception about 15 cm. long and just presenting through the ileo-caecal valve. The intussusception was reduced without difficulty by retrograde compression. The distal ileum was red and oedematous due to strangulation. The bowel appeared viable except for a single small black area which was inverted with a seromuscular suture. A polyp was felt at what had been the leading edge of the intussusception. Exploration of the rest of the small bowel disclosed three more intussusceptions, one of these retrograde, but all easily reducible and nonstrangulated. There were a dozen more polyps palpated over the whole length of the small bowel, the largest being 4 cm. in diameter and in the proximal jejunum.

At this point the anaesthetist was asked to look in the patient's mouth for pigmented areas. When he found them (Figure 2), the diagnosis of Peutz-Jegher's syndrome was established, in a manner of speaking, "at laparotomy". The abdomen was closed.

Postoperative Course: On the sixth postoperative day she suddenly developed steadily lower abdominal pain with physical findings of localized peritonitis. The abdomen was re-opened and a perforation of the ileum about 1 mm. in diameter and about 8 cm. from the caecum was found and closed with a purse-string suture. Following this her recovery was uneventful.

Further Investigation: According to the mother, the patient had had the spots on her lips since infancy and is the sole member of the family so affected. Examination of the mother and siblings failed to disclose perioral melanin pigmentation or other stigmata of the syndrome. The paternal side could not be traced.

Sigmoidoscopy and barium enema disclosed no polyps in the rectum or colon. An upper G. I. series and cineradiography showed multiple polyps in the stomach, duodenum, and small bowel. A large polyp in the upper jejunum was demonstrated, and a small bowel intussusception, which reduced spontaneously, was observed.

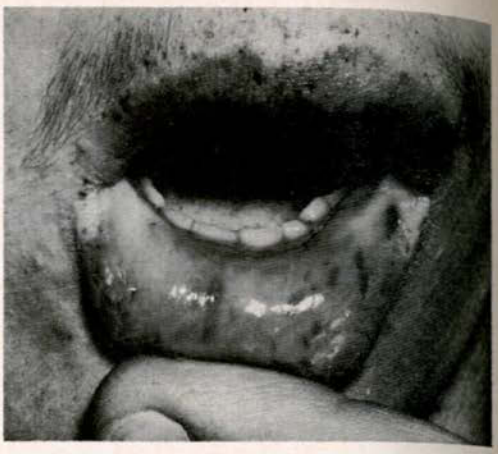

Fig. 2: Pigmented spots on the mucous membrane inside the mouth cannot be freckles and are highly suggestive of the syndrome.

Later Observations: She was readmitted electively in June 1962, although she had had no severe attacks of abdominal pain in the interim. At laparotomy hundreds of polyps, varying from 1 mm. to 4 cm. in diameter, were seen and felt throughout the small bowel. The largest polyp was removed along with a short segment of jejunum (Figure 3.). No other small bowel was resected, but several of the larger polyps were removed through multiple enterotomy incisions. The appendix was also removed. Polyps were palpated in the stomach and duodenum but none were found in the colon. Her third postoperative course was uneventful.

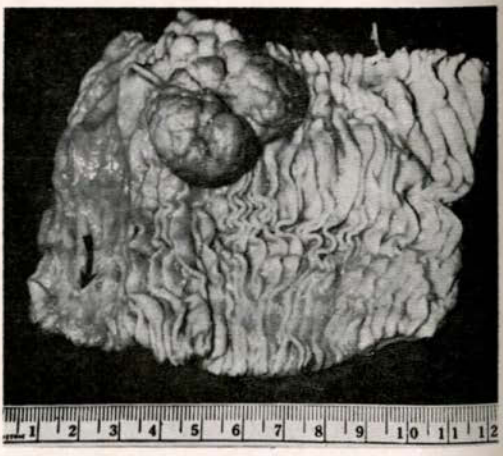

Fig. 3: Resected segment of jejunum with large polyp. Not obvious are many micro polypi, one of which is indicated by arrow.

Histology: Microscopically, the polyps were hamartomatous malformations typical of the Peutz-Jegher's syndrome. The characteristic abnormal admixture of epithelial and smooth muscle elements was specifically noted.

Readmitted electively July 1966. Patient had been fairly well for over 3 years and then began to have attacks of cramping adbominal pain. Physical findings were much as previously described except that now additional melanin pigmentation could be seen over the tips and touch pads of several fingers. Haemoglobin was 12.5 gm.%. An upper G.I. series and cineradiography disclosed multiple polyps in the stomach, duodenum, jejunum, and ileum. One polyp in the duodenum and one in the proximal jejunum were particularly large. A polyp in the ileum was noted to lead a spontaneously-reducing intussusception. Laparotomy was undertaken and three polyps from the stomach, two from the duodenum, two from the jejunum, and one from the ileum were removed. Again, her postoperative course was uneventful.

Histology: Polyps of stomach, duodenum, jejunum and ileum, compatible with Peutz-Jegher's syndrome.

DISCUSSION

The diagnosis was not established prior to the patient's initial emergency operation. Dormandy[3], in his excellent review, points out that this is commonly the case. Most surgeons routinely examine the pharynx of a patient with an acute abdomen but fail to inspect the buccal mucosa. Although the melanin spots were not as obvious as the photographs may suggest, the evidence was available on which a preoperative diagnosis might have been made.

The polyps of the stomach and small intestine are of clinical importance because they may give rise to intestinal obstruction or to frank or occult gastro-intestinal bleeding. Intestinal obstruction is usually the result of intussusception. While an occasional intussusception becomes strangulated, the majority are reduced spontaneously, giving rise to recurrent bouts of cramping abdominal pain associated with borborygmi.

Prior to 1957 the view was widely held that the polyps of the Peutz-Jeghers' syndrome become malignant in about twenty percent of cases[4]. This was based on the microscopic appearance of epithelial elements extending deeply into the bowel wall, sometimes into the muscularis propria, which was interpreted as evidence of invasion. A realization that these "malignant" polyps do not metastasize to lymph nodes or other organs, and that patients who harbour them rarely, if ever, die of malignancy of the small intestine, lead to re-examination of the basic nature of the polyps. The most widely held view, at the present time, is that advanced by Bartholomew and associates [5], that the polyps seem to be hamartomata rather than neoplasms. Within the polyps there are abnormal arrangements of normal cells and an abnormal admixture of epithelial and smooth muscle elements. The hamartomatous polyps found in the small intestine and stomach in this syndrome have exceedingly low potential for malignant transformation. This is most fortunate, since extensive involvement of all of the small intestine by hundreds or thousands of polyps and dormant micropolypi is the rule. Any of these innumerable polypi may enlarge at any time throughout life and give rise to symptoms.

Because of the considerations outlined above, it follows that surgical treatment should be reserved for patients who have symptoms of either acute or recurrent intestinal obstruction or G. I. bleeding. When polypectomy is undertaken, it is important that small bowel be conserved, as there is virtually no threat of malignant transformation, and since a patient may require many future operations for relief of symptoms produced by enlargement of some of the innumerable polyps scattered throughout the length of the small bowel.

Patients with the Peutz-Jeghers' syndrome transmit the trait to fifty percent of their children of either sex. It would be expected that one parent and half of the siblings of our patient would be similarly affected. While some cases are believed to arise from spontaneous mutation, this is likely not the explanation in our patient.

SUMMARY

A case of Peutz-Jeghers' syndrome in a 15 year old female has been presented. Following her initial presentation with a strangulating ileo-ileal intussusception, she has undergone two elective operations for removal of small bowel and gastric polypi. The features of the syndrome are described and the symptoms produced by the polyps are discussed. The exceedingly low malignant-potential of the hamartomatous polyps is emphasized. □

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Public Health News

RECOMMENDED SCHEDULE OF REGULAR ELECTIVE IMMUNIZATION

Department of Public Health
Province of Nova Scotia
For Infants, Pre School and School Age Children

Age	Diphtheria Toxoid	Pertussis Vaccine	Tetanus Toxoid	Polio (Salk) Vaccine	Polio (Oral) Vaccine	Smallpox Vaccine
3 Months	x	x	x	x		
4 Months	x	x	x	x		
5 Months	x	x	x	x		x
1 Year	x	x	x	x		
3 Years	x	x	x	x		
5 - 6 Years	x	x	x	x	x	
10 Years	x		x	x	x	
15 Years	x		x	x		x
18 and Over			x	x		

SUPPLIES AVAILABLE TO PHYSICIANS

The following toxoids and vaccines are available free of charge, to physicians in the Province, from their Health Unit Directors by signing from C.D.C. 4 which states that the material will be administered free of charge or at a reduced rate. Physicians who prefer to pay for these materials and not sign C.D.C. 4 may do so. Price lists will be supplied from time to time.

Diphtheria Toxoid, dilute 4 x 1 cc. ampoules
Schick tests — 25 persons
Smallpox Vaccine, 1 point
Smallpox Vaccine, 5 point
Smallpox Vaccine, 10 point
Typhoid and paratyphoid vaccine, 1 person, 3 ampoules
Typhoid and paratyphoid vaccine, 5 - 7 persons, 10 cc.
Diphtheria and tetanus toxoids combined with pertussis and polio vaccines - 10 cc. vial
Diphtheria and tetanus toxoids combined with polio vaccine - 10 c.c. vial.
Tetanus toxoid and polio vaccine combined - 10 c.c. vial
Tuberculin: P.P.D. Solution (Protoderm) for Heaf Testing 1 c.c. (for surveys 100 - 200 tests per vial)
Tuberculin Purified Protein Derivative (P. P. D.)

a	Bio 483 - First Strength	10 tests
b	Bio 481 - Intermediate strength	20 tests
c	Bio 484 - Second Strength	10 tests
d	Bio 488 - First Strength	100 tests
e	Bio 482 - Intermediate Strength	100 tests
f	Bio 489 - Second Strength	100 tests
	Tuberculin Tine Test	25 tests per pkge.

The Department of Public Health maintains a supply of the following materials which may not be supplied to physicians free of charge, but may be sold to physicians and hospitals at cost price to the Department of Public Health:

Diphtheria Antitoxin	1,000 unit vial
Diphtheria Antitoxin	40,000 unit vial
Tetanus Antitoxin	1,500 unit vial
Tetanus Antitoxin	20,000 unit vial
Tetanus Immune Globulin (human)	2.5 c.c. vial at 100 unit per c.c.— 250 units

A very small supply of the following materials will be kept at the central office in Halifax and may be obtained by the Directors of Health Units on consultation with the Director of the Division of Communicable Disease Control, if a need for them should arise:

Anti-rabies Vaccine - Duck Embryo 7 dose treatment (Lilly)
Rabies Immune Serum (Lederle) 1000 u vials
Cholera Vaccine - 2— c.c.
Diphtheria Toxoid - one person
Tetanus Toxoid - one person

The Department of Public Health maintains a supply of gamma globulin in 2 c.c. rubber stoppered vials. Physicians may obtain this material free of charge for the following purposes by signing form C.D.C. 4 *and giving the name and address of each case.*

(1) Prevention of infectious hepatitis in close contacts. This does not include classroom contacts in public schools.
(2) Prevention of rubella in expectant mothers.
(3) Prevention of measles in dehabilitated children and children under two years of age.
(4) Prevention of infection in persons with hypogammaglobulinemia.

When gamma globulin is needed for treatment purposes, such as in cases of hypogammaglobulinemia, eczema vaccination, etc., it may be obtained from the Red Cross Society.

Gamma globulin is expensive and the supply is becoming more and more limited. In the case of infectious hepatitis, therefore, this material will not be given to large numbers of persons in institutions or elsewhere except after conferring with the Director of Communicable Disease Control.

The Department of Public Health supplies directly to hospitals, free of charge, silver nitrate solution for prophylactic use in the eyes of the newborn.

The Department of Public Health provides Sabin Oral Vaccine to the Health Units for use in authorized programs.

The Department of Public Health no longer maintains supplies of:

Diphtheria Toxoid and Pertussis Vaccine combined
Polio Vaccine (Salk)
Diphtheria Toxoid and Tetanus Toxoid combined 10 cc. vial
Diphtheria Toxoid and Tetanus Toxoid combined — 1 person
Volmer Patch Tests
Tetanus Toxoid 30 c.c. vial

Continued on Page 234.

Postgraduate Division Notes

Dr. Paul Cudmore, Assistant Director of the Postgraduate Division, Faculty of Medicine, Dalhousie University is on leave of absence this year to take postgraduate work in Medical Education at the University of Illinois under Dr. George Miller, author of the provocative monograph "Teaching and Learning in Medical Schools". Dr. Cudmore's visit will be of great benefit to all practitioners in the Atlantic area through improved Postgraduate Division services arising out of his experiences in Chicago. During the current academic year every effort is being made to maintain the expanded programme that resulted when Dr. Cudmore joined Dr. Steeves in the Division. The following advance notice of fall programmes for example includes a number of items that are tentative as of August 5th, but will be confirmed with the groups concerned as soon as possible.

Preliminary listing 1966-67 programmes

Clinical traineeships — can be individually arranged in a wide variety of specific fields for periods of two weeks to six months work under the supervision of a clinical tutor in the Univesity teaching hospitals in Halifax. Tuition $100.00.

Short Courses in Halifax

Sept. 19 to 22	– Anaesthesia
Oct. 21 and 22	– Renology
Nov. 4 and 5	– Diagnosis and Management of Trauma
Nov. 21 to 24	– 40th Dalhousie Refresher Course (Scientific Programme, Annual Meeting of The Medical Society of Nova Scotia)
Dec. 9 and 10 1967	– Rheumatology
Jan. 23, 24 and 25	– Pyschiatry in Practice
Feb. 3 and 4	– Special Programme for Radiologists
Feb. 17 and 18	– Short Course for Community Hospital Surgeons.
Feb. 27 to Mar. 2	– Medicine (topic to be announced)
Mar. 17 and 18	– Short Course in Paediatrics
Mar. 31 and April 1	– Short Course in Obstetrics
April 14	– Day in Cancer

(Approximately 9 Guest Faculty will be participating in these Short Courses).

Regional Courses are already planned or available upon request in — Antigonish, Sheet Harbour, Lunenburg, Bridgewater, Liverpool, Shelburne, Yarmouth, Digby, Middleton, Kentville, Windsor, Truro, New Glasgow, Inverness, Sydney, North Sydney, Glace Bay, New Waterford, Amherst.

(Requests from other centres able to guarantee a registration of six will be accommodated if possible.)

For further details please contact:

Lea C. Steeves, M.D.,
Director,
Postgraduate Division,
Faculty of Medicine,
Dalhousie University □

Personal Interest Notes

Automated Medicine

St. Paul's Hospital, Vancouver, has entered the field of automated medicine by starting 14 routine tests almost as soon as a patient is admitted. The results of the tests, exploring virtually every organ in the body are swiftly performed and the results recorded on the hospital profile ready for the doctor. Most of the tests are those that would ordinarily be ordered by the doctor during two or three days. Dr. John Sturdy, director of laboratories instituted the system on June 1. He says that it provides fast, highly accurate laboratory work to provide clues to hidden diseases, helping quicker diagnosis, and cutting down a patient's stay in hospital. The system will be extended and perhaps eventually include use of a computer. Nova Scotia is not lagging — In Kentville a busy doctor "keeps in touch" during his rounds with an MT & T mobile radio installation.

Cape Breton

Dr. **John M. Williston** and Dr. **E. B. Skinner** have opened a new medical centre which will have six physicians. Dr. Williston is a native of Sydney, while Dr. Skinner formerly practised in Louisbourg.

Dr. **Daniel Nathanson,** Mayor of the town has won new acclaim for having initiated New Waterford's most ambitious and most needed educational project.

Colchester-East Hants

Dr. N. A. Morrison was the only Nova Scotian to win recognition at the 1966 Physician's Art Salon, sponsored by Frank W. Horner, pharmaceutical company and held in conjunction with the CMA Annual meeting. Dr. Morrison won award for a colour transparency of which 270 were submitted. We shall all have a chance of seeing some of the award winning entries when our attractive Horner calendar arrives.

Halifax

Dr. Ralph Ballem and **Dr. L. Steeves** took part in two canoe trips sponsored by the Nova Scotia Provincial Boy Scouts of Canada. The trips lasted a week and were on Lake Rossignol, Queen's County.

Dr. Bernie Miller and the "Meredith Ann" was but the first of the various medical yachtsmen who have been winning races this summer.

Lunenburg-Queens

Dr. M. A. Bari has commenced practice in Bridgewater. He is associated with **Dr. R. M. Rowter.** Dr. Bari recently completed six month's training in Pathology at Pathology Institute, Halifax.

Dr. J. H. MacLeod recently resigned as President of the Lunenburg-Queen's Medical Society. He is leaving Liverpool to take further postgraduate studies.

Dr. G. Mohi-ud-din recently opened a practice in New Germany, Lunenburg County. He is known as "Dr. Dean". "Dr. Dean" is a native of Kashmir, India.

Western Nova Scotia

Dr. Norman J. Belliveau of Belliveau Cove, president-elect of the CMA, is captain of Canada's seven-man team who hope to win the 17th International Tuna Cup Match off Wedgeport on August 16 - 19. Dr. Belliveau was on the 1965 team. Dr. Ray N. Lawson, F.R.C.S. of Montreal is also on the team, which is made up of a judge, a civil servant, a pharmacist, a manufacturers' agent and an outdoor writer-sportsman. Let's hope next month we can report their success.

Dr. Douglas Waugh became the first representative from the Atlantic provinces to be elected to the board of directors of the National Cancer Institute.

Dr. and Mrs. W. D. Stevenson have recently returned from Toronto where Dr. Stevenson delivered the presidential address to the first Canadian Congress of Neurological Sciences meeting, after which their children joined them for a short vacation in Toronto and Muskoka.

In recognition of his historic pioneering work in spearheading the Nova Scotia mental health plan, **Dr. Clyde Marshall** received a national recognition award at the national annual meeting of the Canadian Mental Health Association. Under his direction as administrator, the N. S. Mental Health plan provides for community mental health centres financed largely by government funds and administered by a community board of directors. As this system has developed, in-patient psychiatric services have been established in local general hospitals throughout Nova Scotia. This year as a final stage, municipal mental hospitals qualifying as approved active treatment hospitals, operating under the N. S. Hospital Commission, therefore are covered by hospital insurance. To quote the C.M.H.A. — More than any other province, Nova Scotia, under Dr. Clyde Marshall's direction, has developed mental health services which meet the

criteria of psychiatric treatment as expounded and recommended in the C.M.H.A. study, "more for the mind."

Therefore it is no surprise to learn that the first conference on mental health education in Nova Scotia is planned to be held in Antigonish early in September with about 75 delegates.

During this summer **Dr. Thomas A. Lambo** of Ibadan, Nigeria, Dean of the medical school, and also professor and head of the department of psychiatry at the University of Ibadan, met with **Dr. A. H. Leighton,** head of the new department of behavioral sciences at the Harvard school of Public Health, who has for some years been carrying on a survey in Digby County.

A pilot project for the study of emotionally disturbed children has been established at the Nova Scotia Hospital, Dartmouth. The unit has been established in what was formerly the residence of Dr. Murray MacKay, superintendent of the hospital, and has been renovated to accommodate 22 children. Early this summer 12 children were there though upwards of 60 have been studied and assessed since the first was admitted in late November. The admittance committee is chaired by **Dr. Harry Poulos,** clinical director of the hospital. With him is associated **Dr. Romaldo Anselmo,** a Filipino psychiatrist who specializes in treatment of children.

Dr. Helen Hunter and **Dr. Roberta Nichols** were two of the delegates from Canada to attend the tenth annual convention of the Medical Women's International Association held in Rochester, N. Y. early in July. **Dr. Anne Hammerling** — who brought her husband along — was there as observer. Nearly 400 women from all over the world — 33 countries — were the guests of the Canadian and American Federations of Medical Women. **Dr. Maureen Roberts,** past president of the Canadian Federation and formerly of Halifax, was one of the special speakers. It was felt by the congress that with the widespread need for physicians some way should be found to make better use of the medical knowledge of those doctors, who because of domestic help problems are not available for full time work, but who could be of great use on a part-time basis.

To help that widespread need for doctors, **Dr. C. B. Stewart,** Dean of the Dalhousie Medical School announces that the enrolment of the first year class is to be pushed to 82 or 83, despite the fact that the facilities were built to take care of a class of 50.

COMING MEETINGS

American College of Surgeons

CHICAGO — The largest meeting of surgeons in the world, the 52nd annual Clinical Congress of the American College of Surgeons, will be held in San Francisco, October 10 - 14.

Every phase of surgery will be presented during the five-day program.

Major addresses during the week include: speech of the incoming president, **Dr. Walter C. MacKenzie,** Edmonton, Canada, on "Our Destiny Is To Build"; the I. S. Ravdin Lecture in the Basic Sciences by Dr. Paul A. Weiss, professor emeritus at The Rockefeller University, New York, on "The Cellular Mechanics of Wound Healing"; the Scudder Oration on Trauma by Dr. Tord G. Skoog, professor of plastic surgery, University of Upsala, Sweden, on "The Surgical Treatment of Burns"; and the Martin Memorial Lecture by Gov. Howard A. Pyle, president, National Safety Council, Chicago, on "Safety — Preventive Medicine."

The College was founded in 1913 by 450 surgeons of Canada and the United States to elevate standards of surgery. Membership in this voluntary association of surgeons now numbers 27,000 in 83 countries.

Canadian Cardiovascular Society and Canadian Heart Foundation

The joint annual meetings and scientific sessions of the **Canadian Cardiovascular Society and Canadian Heart Foundation** will take place at the Palliser Hotel Calgary, Alberta, from the 22nd to the 26th November, 1966.

Further details may be obtained from:

Dr. John B. Armstrong,
Executive Director,
Canadian Heart Foundation,
1130 Bay Street,
Toronto 5, Ontario.

ATLANTIC PROVINCES CHAPTERS – SECOND SCIENTIFIC ASSEMBLY

Bigger and Better Scientific Assembly For Maritime Family Doctors

Plans are now progressing rapidly for the Second Scientific Assembly for family doctors of the Maritime Provinces, to be held in Confederation Centre, Charlottetown on October 10th and 11th, 1966.

Dr. John Williston of New Glasgow, Nova Scotia, is Chairman of the Planning Committee, appointed by the New Brunswick, Prince Edward Island, and Nova Scotia Chapters of the College of General Practice of Canada, which is being assisted by the Postgraduate Division of the Faculty of Medicine of Dalhousie University.

A feature speaker, both at one of the banquets and during the Scientific Sessions will be **Dr. Hyman Caplan,** a specialist in Child Psychiatry, and the Director of the Department of Pyschiatry at the Montreal Children's Hospital.

The National President of the College of General Practice of Canada, **Dr. D. E. Hunt** of St. Catharines, Ontario, will also attend the Assembly and be a feature speaker at a special Thanksgiving dinner. The National Executive Director, **Dr. D. I. Rice** of Toronto, formerly of Halifax, will also attend.

The Scientific Sessions will include a section with emphasis on Endocrinology, to be led by **Dr. William Nicholas** of Halifax, Nova Scotia.

Closed circuit television will be used to facilitate some of the clinical demonstrations and teaching.

Between 26 and 30 pharmaceutical manufacturers and suppliers of medical equipment will be showing extensive displays of equipment and drugs during the two day meetings.

Doctors' families have not been forgotten. A day nursery will be available for the care of small children. This will be staffed by student nurses and Red Cross volunteers. Families will have a conducted tour of Confederation Centre and there will be a Ball in the Memorial Hall, most likely preceded by a feature presentation in Confederation Theatre. The ladies will also be entertained to tea and bridge and be taken on an extensive tour of Prince Edward Island.

The American College of Physicians

1966-67 Postgraduate Courses

PHILADELPHIA, PA. — The American College of Physicias (A.C.P.), whose 13,000 members are specialists in internal medicine or in closely related fields, will sponsor 20 postgraduate courses and 30 Regional Scientific Meetings which run for one to three days, two of which will be held in Western Canada during the coming academic year.

The postgraduate courses run from three to five days and are held in cooperation with medical schools and teaching institutions throughout the United States.

The courses are open to all physicians. However, in each case enrollment is limited — and priority given to members of the American College of Physicians.

Annual Clinical Congress

October 9 - 14, 1966.
San Francisco, California

1967

SAN DIEGO, CALIFORNIA January 23 - 25. Sectional Meeting. Del Coronado Hotel.

COLORADO SPRINGS, COLORADO, February 15 - 17. Sectional Meeting. Broadmoor Hotel.

NEW YOTK CITY, February 27 - March 2, Annual Four-Day Sectional Meeting for Doctors and Graduate Nurses. Americana and New York Hilton Hotels.

CONGRATULATIONS

Dr. J. P. McGrath, Kentville, was made a Senior Member at the C.M.A. Annual meeting in Edmonton in June. Dr. McGrath was born in Lower Stewiacke and graduated from Dalhousie Medical school in time to serve in the Canadian Army Medical Corps. He then established a general practice in Kentville, later going to be personal assistant to Dr. W. S. Syme in Glasgow, Scotland. He became a specialist in Ophthalmology and Otolaryngology and is a Fellow of both the American and Canadian Academies. He was awarded a senior membership in the N. S. Medical society in 1964. He was organizer and first president of the N. S. Society of Ophthalmologists and has served the medical society in various capacities and was on the General Council of the C.M.A.

A few months ago we reported on honors paid to **Dr. Arthur Hines** of Cheverie and the Noel shore. Now, in the middle of July, over 800 persons coming from Noel and Windsor, gathered on Cheverie beach and watched the familiar figure step, as so often before, from a "horse and buggy," to be honoured on "Dr. Arthur Hines Night." Groups from several communities presented entertainment. Dr. Hines was given a gold watch and chain and a cheque of $1,000.00 to be used toward purchasing something in his honour in the proposed new Payzant Memorial Hospital. Dr. Hines was thanked for the many gifts he had given residents over the years — and especially "for the greatest gift of all", his son, Dr. Charles Hines, who has taken over his father's practice.

BIRTHS

To Dr. and Mrs. R. Brewer Auld, (née Joan Andrews), a daughter, Alison Joan, at the Grace Maternity Hospital, Halifax, on July 31, 1966.

To **Dr. and Mrs. Amal Bhattacharyya,** a daughter, Sheela Marissa, at the Grace Maternity Hospital, Halifax, on July 24, 1966.

To **Dr. and Mrs. Charles Brown,** (née Faye Peveril), a daughter, at the Grace Maternity Hospital, Halifax, on July 8, 1966.

To **Dr. and Mrs. F. A. Burke,** (née Lynda Bryson), Charlottetown, P. E. I., a daughter, Leslie Anne, at the Charlottetown Hospital on July 5, 1966.

To **Dr. and Mrs. John B. Carver,** (née Daphne Ash), a son, Paul, at the Grace Maternity Hospital, on August 5, 1966.

To **Dr. and Mrs. Niels Hansen,** (née Jean Aitken), a daughter at the Grace Maternity Hospital, on July 29, 1966.

To **Dr. and Mrs. M. W. Hogan,** (née Diane Page, R.N.), a son, Shawn Michael, at Placentia, Newfoundland, on August 1, 1966.

To **Dr. and Mrs. Khandker Hoque,** a daughter, at the Grace Maternity Hospital, Halifax, on July 6, 1966.

To **Dr. and Mrs. Herbert Lang,** (née Cynthia Prodis), a son, at the Halifax Infirmary, on July 19, 1966.

To **Dr. and Mrs. J. Graham McCleave,** (née Louise Atkinson), a daughter, Karen Lynn, at Victoria Public Hospital, Fredericton, N. B. on July 7, 1966.

To **Dr. and Mrs. Carlyle Phillips,** (née Virginia Coffin), a daughter, Heather Marlene, at the Grace Maternity Hospital, Halifax, on August 11, 1966.

To **Dr. and Mrs. Albert Prossin,** (née Andrea Mombourquette, R.N.), a son, Adam Louis, at St. Rita's Hospital, Sydney, N. S. on July 12, 1966.

OBITUARY

Dr. Ralph Leaman Smith, aged 60 years, died suddenly on July 7, 1966. He was the radiologist-in-chief of the Children's Hospital since 1950. Until 1963 he was also at Camp Hill but since then has given his full time to the Children's where he will be sorely missed by his fellow staff members. We extend our sympathy to his wife and family. □

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