

MEDICO-SURGICAL SUGGESTIONS

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MEDICO-SURGICAL SUGGESTIONS

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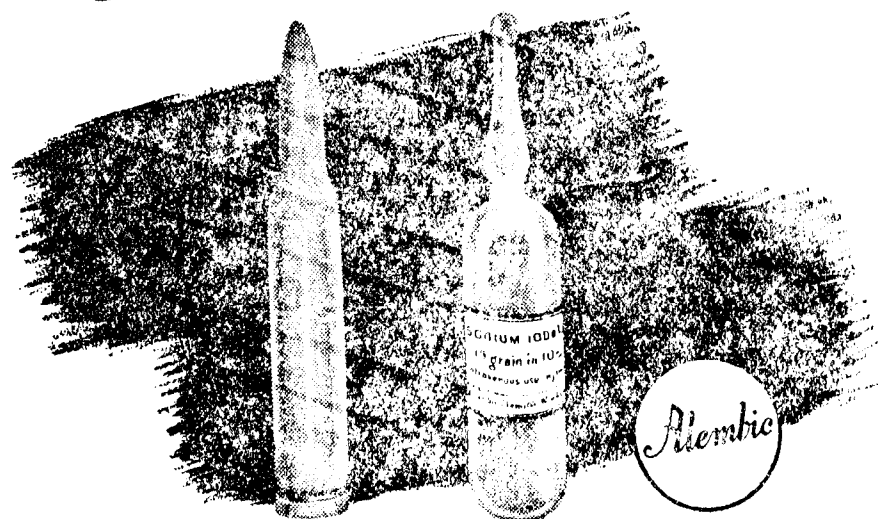
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MEDICO-SURGICAL SUGGESTIONS

(Established 1932.)

VOL. XIII

MAY 1944

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INJURIES OF CHEST INVOLVING PLEURA AND LUNGS AND THEIR TREATMENT*

BY S. B. GADGIL, B.A., L.M.S., F.R.C.S., (Eng.)
D.P.H. (Lond.)

Consulting Surgeon, J. J. Hospital, Bombay.

Mr. President and Gentlemen.

May I sincerely thank you for the honour conferred on me by selecting me to deliver a lecture as Emeritus Professor to this College. It is a lectureship, both unexpected and unsolicited, but which will remain in high estimation in the professional life of the recipient.

The subject of my lecture is influenced, as indeed most of our thoughts are in these days, by our involvement in the present war. Service to our fellow beings is the tradition of our profession and it is never more in evidence than in war. If I am successful in imparting some knowledge as regards diagnosis and proper treatment of such cases and if it results in saving the life of even a single individual at your hands, I shall feel more than justified in asking you to share your otherwise valuable time, to come here and listen to what I have to say on this subject.

The chest forms such an important part of the body on account of the vital organs inside such as heart and lungs, that the results of any injury to the chest are liable to be very serious. These injuries are fortunately not so serious in civil as in military practice. Statistical reports are of importance to give one an idea of the frequency and severity of chest injuries. In the last war, chest was involved in six per cent of all injuries, their frequency coming after those of limbs, head, face and neck. Mortality in chest cases in some armies was 56 per cent, coming after that of abdomen, where it was 88 per cent. The total mortality in wars is said to be eight per cent. Among the people immediately killed on the battlefield, chest cases were 20 per cent, abdominal cases 11 per cent, limb cases 9 per cent, but head cases were 47 per cent. The mortality rate varies in different armies as regards chest cases according to the standard of efficiency in their treatment. There has been definite improvement

* Being Emeritus Lecture delivered at the Grant Medical College, Bombay.

in the treatment of chest wounds. It is shown by the decrease in mortality in various wars since the Crimean, where it was as high as 79 per cent. In the American War of Independence it was 52 per cent. In the last war, in the British army, it was 37 per cent. In the present Sino-Japanese war it is said to be only 15 per cent. The death rate is of course highest in the field dressing stations than at the base hospital.

Mr. C. S. Patel, in a recent paper on chest injuries, said that there were 313 admissions of cases of chest injuries at the J. J. Hospital, during three years. Unfortunately he did not mention the total number of all accident cases, neither the death rate among the chest cases admitted and treated there. Further inquiries show that the total number of accidents was 5,176 and the rate among them of the chest cases was 5 per cent.

Chest injuries are broadly classified as penetrating and non-penetrating. Penetrating cases are again classified as closed and open cases.

In civil life, chest injuries are caused by penknives, shot guns, crushes in crowds, collapse of walls of buildings and automobile accidents. They are of a close penetrating type and cardio-respiratory disturbance and chances of infection are minimum. In military practice chest wounds are caused by agents more dreadful, resulting in extensive loss of tissue and open pneumothorax. Hæmorrhage, shock and cardiac respiratory disturbance is more acute, contamination of wounds extensive and often there is retention of foreign bodies in the wounds.

The fundamental principles for the treatment of chest wounds in civil and military practice, though practically the same, yet on account of the difference in the nature of these injuries, conservative methods are more suitable in civil practice. The main principle of treatment remains the same to the treatment of surgical shock and hæmorrhage and (ii) the restoration of the Cardio-vascular physiology. An adequate knowledge of the anatomy and physiology of thorax is very essential from the point of diagnosis and treatment, but it would be redundant to include them in this paper. Damage to the important viscera such as heart, lungs and their important coverings, which lead to the arrest of their physiological function puts an extra responsibility on a surgeon treating the case. Thanks to the local and regional anaesthesia, the modern method of treating shock and the use of sulphonamides in the treatment of the sepsis, we are in a position to save several lives which were considered doomed only a few years ago. Our knowledge of the effects of such injuries their pathology and diagnosis has also increased, thanks to the opportunities we have had during the last war and casualty cases we received during the communal riots in our hospitals.

This paper is based on observations made by eminent surgeons and physicians, reviews of articles on the subject of chest injuries in the medical literature and what little experience I have had in dealing with such cases.

As compared to shock from other injuries, shock received from chest injuries helps to control intra-thoracic hæmorrhage and is desirable to a certain extent though the patient should not remain in it for long. Besides shock and hæmorrhage other complications met with are :—

1. Displacement of mediastinum.
2. Surgical emphysema.
3. Massive collapse of lung.
4. Hæmothorax.
5. Hydrothorax.
6. Contusion of lung.
7. Wounds of pericardium and heart.
8. Injuries of œsophagus.
9. Injury to thoracic duct.
10. Traumatic asphyxia.
11. Abdominal penetration with or without damage to abdominal viscera.
12. Fracture of the ribs.

Wounds of the chest are often multiple and one has to be careful that one does not miss some important second wound when one has been treating with great care and has spent a lot of time on one of them. Penetrating wounds get closed up when penetration has taken place through a thick pad of muscles as in the upper part of the chest. Wounds of the lower part of the chest if penetrating, generally remain open and allow air to be sucked in and hence called 'sucking wounds.' They need often immediate treatment. Immediate treatment consists of measures taken to enable to convey a patient to hospital from the place of injury, where adverse circumstances do not allow operations and means for the satisfactory management of such cases.

Taking shock as the first such complication to deal with, it must be known that the nature and management of this shock is slightly different. The anxiety caused by interference to respiration, air hunger due to hæmorrhage and pneumothorax are great; painful respiratory movements and cough exhaust the patient. Morphine, even intravenously, may safely be given. Warmth and administration of oxygen both help a lot for the relief of shock. Restful and comfortable position for the patient is the propped up one as compared to Trendelenburg position generally adopted in shock from other causes. This combats it better and the respiration is also easier. When there is a fracture of ribs associated with this injury, means must be taken to relieve this pain of fracture. This is done by

strapping over the fractured rib or better by partial immobilisation of the whole thorax by an adhesive strip encircling the whole of the lower part of the thorax. The administration of saline and glucose or preferably blood or plasma must be done cautiously. Haemorrhage from parietal vessels has to be stopped and open pneumothorax has to be closed. (1) Adequate treatment of shock; (2) morphine to relieve pain; (3) immobilisation of thorax by strapping in case of fractured ribs; (4) propped up position to help easy breathing; (5) closure of open pneumothorax; (6) haemostasis of blood vessels of the parietes and (7) antitetanic serum are the steps of immediate treatment before the patient is sent to a proper equipped hospital for further treatment.

As regards prophylaxis from dangers of chest wounds, protection could be given against such missiles; a jerkin made of laminated steel or lighter material such as compressed fiber or bakelite has been given to soldiers in some armies.

I shall now proceed to deal in detail other important complications one meets with chest injuries. Fracture of rib and its treatment I have already mentioned. These fractures are to be diagnosed from symptoms only. They are demonstrated by X-rays only in 45 per cent of cases. For treatment, besides treatment by strapping, injection of alcohol or 2 per cent of novocaine along the intercostal nerves has also been found useful. "Stove in fractures" in which several ribs are broken anteriorly and posteriorly, are caused by motor car accidents and are very serious. They give rise to paradoxical breathing, the separated pieces of the chest wall, sinking at every inspiration and bulging out at expiration. Cardio-respiratory embarrassment may cause death unless immediate immobilisation of the chest wall is made as a first-aid measure. Fracture of the sternum with visceral damage is also known to happen with an automobile accident. The lower fragment generally protrudes forward. Hyperextension, traction of the upper fragment by a corkscrew or hooks attached to the ends of the fragments have been successfully tried. Sometimes an open operation is needed.

Contusion of the chest wall due to motor or aeroplane accidents may give rise to laceration of lung tissue by penetrating rib fragments or without any fracture. There may be haemorrhagic consolidation, massive collapse of homolateral lung, a rupture of bronchi or contracoup injury to the opposite lung giving rise to pleurisy with pleural effusion, bronchitis, pneumonia and massive collapse of the lung of the opposite side. Multiple small areas of atelectasis occur following trauma in the homolateral lung giving rise to difficulty in diagnosis. Bronchial spasm or bronchial obstruction must be the cause of such collapse. Contusion also causes injury to visceral pleura resulting in a closed pneumothorax. When there is no injury

to visceral pleura and only injury to lung it gives rise to haemorrhagic infiltration of lung. Injury to both visceral pleura and lung causes haemopneumothorax.

The clinical signs will be shock, dyspnoea and haemoptysis. Cough, haemoptysis and dyspnoea may be intense but unless there is pneumothorax there is not enough displacement of the mediastinum to cause such dyspnoea. The presence of air in the pleural cavity is very common but only when there is a valvular opening in the visceral pleura and air entrance in the pleural cavity is only in one direction, we get what is called tension pneumothorax, which is a potent cause of displacement of the mediastinum giving rise to severe dyspnoea.

I might state here the pathology of displacement of the mediastinum. Lungs by their expansion cause a negative pressure in the pleural cavity of each side. This negative pressure is well balanced and keeps the heart and the mediastinal partition in the middle line. When the intrapleural pressure is increased or diminished by any cause, such as penetrating wound of the lung, the lung collapses and pneumothorax with increase of intrapleural pressure takes place. The mediastinal partition is pushed to the opposite side with all its contents. This causes circulatory disturbance and the ventilating capacity of the opposite side is diminished. The condition is diagnosed by X-ray. If they are not available, the position of the apex beat or the position of the trachea in the jugulum will help the diagnosis. Diaphragmatic movements on the affected side are also stopped as seen by the X-rays. The treatment of this condition goes with the treatment of the pneumothorax which generally accompanies it. If the pneumothorax is accompanied with the presence of blood or any serous fluid with dulness in the lower part, rales from the opposite lung, which is generally congested, are heard through this dull area and the condition is diagnosed as pneumonia. This is a great danger, but displacement of the trachea will be a very valuable sign in such cases. Treatment of this condition is mentioned further.

Surgical emphysema is a condition often found in chest injuries. It is of two varieties, subcutaneous and mediastinal. The first variety is caused by puncture of an adherent lung by a fractured rib or a stab wound, and though extensive should cause no anxiety. The air is generally absorbed. Multiple punctures of the skin are said to aid its disappearance. Mediastinal emphysema may develop in the absence of a rib fracture and may be so extensive as to need immediate operation. It is caused by an injury to a bronchus or lung in the mediastinum. It extends along the facial planes and ascends to the neck and from there to all over the body. A suprasternal incision exposing the trachea by tearing down the tissues round it is one of the ways of saving life. If there is a collection of air in the pleural cavity a small tube in the pleural cavity is also indicated.

In such cases X-rays should be used always for correct diagnosis. In cases of gas gangrene, a similar crepitant feel has clouded diagnosis. There is an open wound present on the chest wall in both cases but the patient in case of gas gangrene is very low indeed. In cutaneous emphysema, damage to the chest wall may be extensive, and there may be a fracture of a rib or ribs present, but the patient does not appear to be in a low state.

Traumatic pneumothorax is another important complication one has to deal with in injuries of the chest. It occurs in any injury in which the pleura is torn. The pleura may be visceral or parietal. Pneumothorax may also be bilateral. It may be also infected. Three varieties of pneumothorax have been recognised: (1) open, (2) closed, (3) valvular. The closed form is caused by a tear in the lung tissues by a closed penetrating wound or by a fractured rib without any external wound and generally needs no treatment unless there is hæmorrhage or infection accompanying it when an operation will be needed. In open pneumothorax the wound in the chest wall is so extensive that the air can enter and come out of the pleural cavity with the greatest ease. The mediastinal partition due to the positive pressure on the injured side is liable to be pushed over to the uninjured side and produce respiratory and circulatory distress. If this is great, due to the collapsed lung, due to loss of blood and some old disease of the uninjured side, an immediate operation would be needed. Oxygenated blood from the sound side mixes with the non-oxygenated blood of the collapsed side and brings such blood to the left side of the heart. This partially oxygenated blood is not enough either in quantity or quality for normal body function and metabolism. This distress is partly alleviated by closure of any external wound. This will convert it into a closed pneumothorax. An open pneumothorax with its collapsed lung has its advantage of being able to stop any bleeding from the injured lung and allow healing of the injured lung. Any hæmoptysis will also be stopped from that lung. The disadvantage is the conversion of an ordinary pneumothorax into a hæmorrhage or a tension hæmo pneumothorax. When one meets with such a case the first aid will consist of applying a moist air-tight dressing over the aperture, before the case is sent to the hospital. It is a very good thing to take intra-pleural pressure when the puncture is small. The ordinary pressure is .5 to .9 mm. of water. It may rise to plus 10 to 20 mm. of water.

Valvular pneumothorax is of two types—inspiratory and expiratory. In inspiratory pneumothorax air is sucked in at each inspiration from valvular opening in the chest wall and in the expiratory the glottis is closed and when coughing air escapes in the pleural cavity from the lung as there is a wound communicating with a ruptured bronchus or alveolus of the lung. The air-filled pleural cavity, the collapsed lung, the immobile diaphragm and displaced

heart are well seen in X-ray picture. In such cases the intrapleural pressure rises to a very high level resulting in cyanosis and extreme dyspnoea. Inserting a hollow needle in the pleural cavity and aspirating air from it is urgently needed until respiration becomes easy or the intrapleural pressure becomes nil. Sometimes the air will continue to collect rapidly after aspiration so that it becomes necessary to put in a small catheter through an intercostal space and connect it at its lower end to a water drain. This prevents collection of air in the pleural cavity and prevents a tension pneumothorax. The tube is to be removed when no more air is found to be collecting. Repeated aspiration generally serves the same purpose for such a condition.

Hæmorrhage.—This is one of the most common complications after chest wounds and varies in extent with the severity of the injury. The hæmorrhage comes from various sources. It may come from the lung tissue, from an intercostal vessel, internal mammary vessel or one of the large thoracic vessels. The hæmorrhage from the large vessels is often fatal. Hæmorrhage from the lung tissue is gradual, and gets less and less as the lung is compressed by the exuded blood in the pleural cavity. Bleeding from the intercostal and internal mammary vessels cannot be stopped by such collection. Decreased blood volume thus caused in the circulation and increased intrapleural pressure decrease the cardiac output of oxygenated blood, blood pressure falls, peripheral circulation fails and death will follow.

A progressive collapse of the lung causes decrease in vital capacity, an increase in the resistance to pulmonary circulation, pressure on the heart and great veins, interference to the return of blood to the heart, a rise in venous pressure, decrease in cardiac output, respiratory variation in the blood pressure resulting in cardiac failure and death. These can be avoided by decreasing intrapleural pressure or by increasing the amount of blood in the circulation.

The blood in the pleural cavity frequently does not clot even after repeated aspiration, it is said to be defibrinated due to the movements of the heart and lungs. In the more rapid and extensive hæmorrhage the process of defibrination is not adequate and clots are formed. Some attribute the phenomena to the anticoagulant quality of the pleura. For treatment in simple noninfected hæmorrhage, conservative therapy is advised by some and aspiration and filling of air to replace the blood removed is resorted to only when pressure symptoms are present. Tamponade by blood is supposed to stop hæmorrhage from the lacerated lung. Phrenicotomy has also been suggested for bleeding from a lacerated lung by giving it complete rest.

Protagonists for aspiration and filling with air in all cases say that with this treatment wounded lung heals quicker and better. It checks hæmorrhage better. Blood left may cause adhesions and air

is a better compressor of lung. Col. Yates of the U. S. A. army medical service thinks that compressed air causes adhesions due to irritation and the compressed lung is very difficult to distend after recovery. Diaphragmatic paralysis by infiltration of the phrenic nerve, after aspiration of blood or without it, lasts for a week and is enough for giving rest to the lung at the time. Disadvantages of allowing the fluid to be absorbed naturally has the following disadvantages: (1) Long stay in the hospital as the fluid to be absorbed is at least two to three pints; (2) danger of infection and thickening of the pleura. For this reason aspiration and air replacement therapy is now much in vogue. The greatest advantage being that a diagnosis of hæmorrhage from the vessels of the chest wall which recurs quickly after aspiration is determined quickly and operative treatment, the only remedy for this, is carried out in time. It also prevents late results of fibrosis of pleura and lung. Transfusion of blood is necessary in such cases but autotransfusion is not advisable.

Massive collapse of lung on the injured side or on the contralateral side is to be looked for after injury to the chest. Mucus or blood clots from the alveoli block the bronchi resulting in such a collapse. Patient is unable to cough out the material from the bronchus on account of the pain involved in coughing. Rolling the patient over on the uninvolved side and encouraging him to cough, may be tried but is difficult and ineffective. Postural drainage may help but intratracheal aspiration by bronchoscopy will have to be resorted to in order to remove such plugs of mucus or clots.

Traumatic asphyxia follows sudden brief compression of chest or chest and abdomen both. Crushing weight of heavy objects or doubling up of an individual so that the thigh and knees are brought together and pressed against the chest and abdomen, results in such a clinical condition. There is bluish black or violet discolouration of face, neck, upper part of the chest and shoulders with swelling and œdema of tissues specially of lips and lids. Examination reveals numerous minute ecchymotic spots on the buccal and pharyngeal mucosa as well as in the auditory meatus. This discolouration fails to appear on parts supported by collars, suspenders or any bands. Sub-conjunctival hæmorrhages, retrobulbar hæmorrhages with exophthalmos and visual disturbances have also been noted due to retinal degeneration.

Intrathoracic lesions such as hæmothorax, pericardial hæmorrhage, laceration of lung and pneumonia, in the abdomen, rupture of spleen, liver and kidneys, have been noted in fatal cases of traumatic asphyxia. But in non-fatal cases fading of the discolouration starts on the second or the third day and disappears completely in ten or fourteen days. No pigmentation is then left behind. The discolouration of face and other parts is supposed to be caused by not any extravasation but by stasis in venules and capillaries.

Injury to lungs by blasts of bomb explosions.—During the present war this form of chest injury has been found to occur in individuals exposed to the bursting of heavy bombs producing characteristic clinical symptoms with pathological conditions. Bodies of dead soldiers were found after explosions without external injuries but with blood-stained fluid in the mouth and nose. On further examination the injury seemed to involve lungs and pleura. Blood-stained fluid was due to traumatic hæmorrhage in the lung.

In the last Spanish war such injuries were very often found in the civil population due to indiscriminate bombing. The escaped gases from the high explosives spread as a pressure wave, which spread with extreme rapidity for a short period followed by a suction wave. The effects of such explosive waves were more marked nearer the person was to the exploded bomb and diminished as he went farther and farther. Animals are immediately killed in the vicinity but survive the longer they happened to be from the seat of the explosion. They suffer from air hunger and dyspnoea and blood-stained froth comes out of the respiratory passage. On post mortem lungs show confluent zones of hæmorrhage and look hepatized. Anterior borders of lungs were more affected. These lesions are caused by the forcible sudden distension of the alveoli, or according to others due to the following suction wave acting on the capillaries. According to a third theory lung lesions are due to the impact and pressure on the chest wall from outside. This theory has been supported by an experiment on rabbits protected by air filled jackets and placing them near an exploding shell. The jacketed rabbits do not get these lesions in their lung.

Therapeutic management of such cases is confronted with difficulties. Shock is invariably present and usual procedures of resuscitation are liable to increase bleeding from the lungs. Schafer method of artificial respiration is not to be used for asphyxia in such cases. Morphine is to be used to its full effect and oxygen administered. The patient should not be allowed to walk or exert in any way or hæmoptysis will increase. After thirty six-hours' rest they may be fit for transportation. Transfusion of blood or plasma is to be withheld for fear of congestion of lungs. Patient should rest in sitting position. If anæsthetic is to be given, local or intravenous, anæsthesia is to be preferred; otherwise the case is to be treated as that of pneumonia.

Commotio thoracica is a clinical entity after injuries to the chest which though not penetrating may prove fatal. No post-mortem injuries are noted. There is unconsciousness, cold clammy skin, feeble irregular pulse and shallow respiration. Treatment of shock is given. Complete recovery or death may follow.

Injury to the heart is fairly common but the tolerance of the heart to a great amount of trauma prevents the diagnosis of heart

injury except when the patient succumbs to such injury. The injury to heart may result from fracture of the ribs, from contusion to the heart between sternum and vertebrae and earlier concussion. The results would be rupture of the heart, valvular lesions, pericarditis, angina and change in the rhythm. A full detail of the results, their diagnosis and treatment will need a separate paper on the subject. So also is the case with injury to the big blood vessels, thoracic duct, oesophagus and abdominal viscera in case of penetrating wounds.

After describing in detail the important complications of chest injuries I shall proceed to describe what in my opinion, is the best way of dealing with such cases when any operative treatment is needed.

Anæsthesia.—The anæsthetic recommended in these cases when needed will be a local one, one per cent novocaine to about 100 cc. can be used without danger. It is also safe in operation theatres where diathermy is used for cutting tissues and also for hæmostasis.

Injuries to chest vary in their severity and urgency as regards any operative treatment. Some of these penetrating wounds caused by sharp instruments or by gun shots will get better without any intervention. There are others where a big blood vessel may have been damaged in the mediastinum and death is so rapid that a surgeon has no time to intervene but every case that comes to a surgeon is of urgency. It may be to prevent death from asphyxia, hæmorrhage or gross infection of the wounds. There is no routine as to the exact amount of intervention. The conduct of the surgeon depends on the seriousness of the symptoms. When a case of recent injury to the chest arrives, one looks for the main indications for intervention above stated, viz., dyspnœa, menacing hæmorrhage or extensiveness of the external wound. In their absence which is fortunately fairly often the case in civil practice, the wise course is to wait and watch. The anxiety of the patient is to be allayed by encouragement. No exploration of the wound should be carried out at this stage. The patient should not be moved unnecessarily except for transport by an ambulance to the nearest well-equipped hospital, as soon as possible, keeping him reclining all the time. When taken to the hospital the regions of the entrance and exit wounds are to be disinfected with the greatest care and minutest detail, using alcohol, ether and iodine to clean the parts, and covered with dressing kept in place by adhesive plaster. The patient is kept as quiet as possible in an isolated room, no visitors being allowed. Morphine may be given if found necessary. The patient is to be watched from hour to hour very carefully. As a result of such treatment the patient will have been placed at a place where all the needed attention could be given, and everything will be ready at the slightest indication for immediate intervention. While under observation, full examination of the patient should be carried out at least twice in twentyfour

hours and this must be thorough. The pulse must be noted. This is small and rapid and in the beginning of poor volume, becomes, quieter after rest. If the progress is not satisfactory it becomes small and rapid again. Temperature up to 100 Fahr. is not of much consequence, but when it rises to 102 Fahr. accompanied with shivering the case is to be considered serious and infection is to be suspected. Respiration which is also shallow and rapid also quietens down but becomes rapid again with effusion and may cause dyspnœa. The fæces of the patient is also to be noted. Paleness should disappear as shock is overcome but with hæmorrhage it appears again. Dyspnœa with cyanosis appears when action of the heart is impeded due to collection of fluid in the chest. Examination with percussion and auscultation will help us to find out the amount of fluid in the chest also if it is increasing or decreasing. Inhalation of oxygen, cardiac tonics like cardiazol, camphor and caffeine, transfusions of blood or plasma are available adjuvants in such cases.

This daily examination will be carried out with as little disturbance to the patient as possible. He will be assisted by a nurse in all his movements. She will support his neck by slipping her hand behind and thus cause him less exhaustion at percussion and auscultation.

If the surgeon comes to the conclusion that the effusion is increasing, at every examination his anæmia is getting worse, respiratory difficulties have increased notwithstanding all the remedies to counteract the same have been taken, there will be still one more method of relieving such a patient and that is exploratory puncture followed by evacuation. This puncture will be made by an exploratory needle. It will show the nature of the fluid in the pleura and all its contents. It is remarkable how much mistaken we generally are if we depend on the naked eye appearance of this fluid. One may think that the fluid is pure blood, but when examined by the microscope the number of R. B. Cs. are only a few thousands per cubic mm. instead of a few millions.

This is because the irritation caused to the pleura by even a small quantity of effused blood leads to effusion of serous fluid and dilutes the blood to a great extent, and no major operation is needed as when the blood in a pure state is filling the chest cavity to ligature the bleeding vessel. A large amount of serous fluid indicates that the bleeding is stopped. If the serous effusion is causing distress, evacuation by a needle is the only treatment. A rapid evacuation must be accompanied by replacement of the fluid by oxygen in the pleural cavity. This keeps the injured lung collapsed for several days and conduces to its healing. The aspirated fluid will need also to be examined each time as there is chance of real bleeding taking place though not present at the first evacuation, when a ligature on the bleeding vessel would be needed.

Other complications such as asphyxia, cyanosis, and pus formation will need thoracotomy in most of the cases. I will now proceed to describe the technic of thoracotomy which I consider most convenient and efficacious. In cases of thoracotomy for bleeding from parietal vessels where there is generally no hæmoptysis, as when lung injury is present the procedure would be to enlarge the wound making a fairly extensive exposure. The debridement of tissue injured is carried out fairly extensively in such a way as to enable us to tackle the lung tissue itself, should one find the lung is involved in the injury.

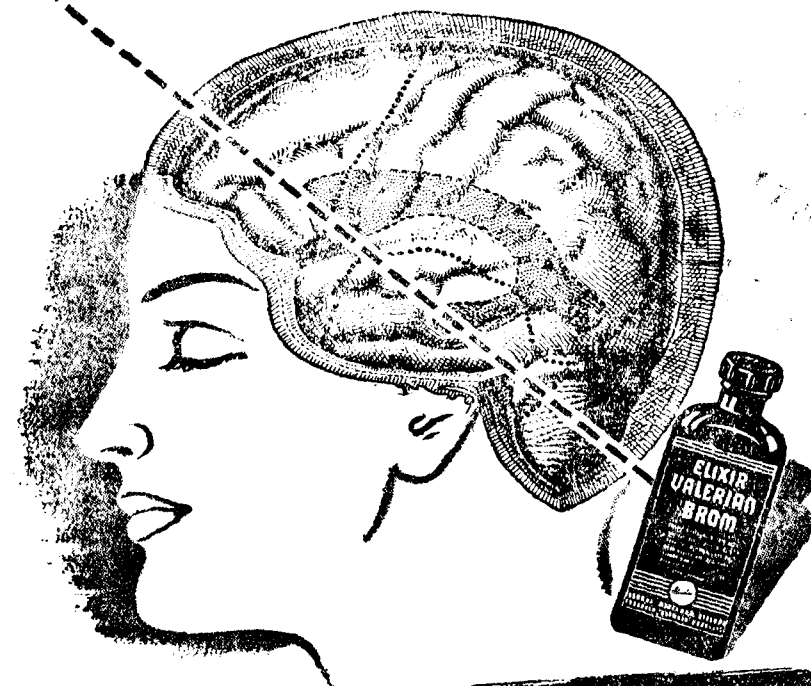
The old method of stopping hæmorrhage from an intercostal vessel by inserting a Miculiez or Desault plug in the intercostal space and then pulling on it to exert pressure on the bleeding vessel is permitted only when patient is to be transported to a hospital and first aid is to be given before transmission.

The extent of the enlargement of the wound should be such as to enable us to expose properly the two ribs in between which the bleeding is taking place. One need not trouble to catch any bleeding points, but to proceed boldly to resect the upper rib and then the lower one. This resection gives good exposure of the area involved. It now remains to see the bleeding vessel and ligature it. Resection of the ribs is very easy. Division of the periosteum over the middle of each rib is first made, and then the same is separated from the ribs by a periosteum elevator or by a Doyen's raspator taking care while clearing the deeper surface not to damage the bundle of nerves and blood vessel from the subcostal groove. The ribs are then cut by rib shears to the extent needed.

If the parietal hæmorrhage is from the internal mammary artery which runs a finger's breadth from the margins of the sternum and under the costal cartilages or one of its intercostal branches, the cartilages will have to be removed and the vessel which is outside the pleura will be ligatured. In case of hæmorrhage from the deeper parts, it will be either from the lung or one of the pulmonary vessels. This is of course a grave situation. No operation is possible except in a well-equipped hospital. The pleural cavity is generally filled up with blood in a very short time to its full capacity. Hæmothorax is increasing while you are by the patient's side, and dyspnoea will carry away the patient if nothing is done.

The thoraco-pulmonary surgery has made extensive progress in Europe and America as regards treatment of such cases during the last thirty years, and technic of operation is being perfected with experience gained. They are all in agreement as regards the incision, which must give as large an access as possible to deal with the internal injury. A large flap containing the original wound, with resection of certain number of ribs is advised and gives the best access. The flap made is rectangular with rounded edges. The base

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of the flap is below, the margin is slightly curved at edges and is in an intercostal place. The vertical arms of the incision are at right angles to the ribs, the inner arm of the flap is an inch away from the margin of the sternum and the outer arm the same distance from the anterior axillary line. The flap would be a large H-shaped one with the original wound in the centre. Two ribs below and two above must be exposed when the flap is reflected. The injured ribs would be covered by the flap and the horizontal part of the incision shall be in an intercostal space, above the margin of a rib not to be divided. The incision goes at once to the bone; the opening into the pleura is carried out by entering into the intercostal space, the ribs are divided anteriorly and posteriorly in the line of the skin incision, tying the blood vessels as they are divided. The flap thus made is reflected upwards and protected by a compress dipped in saline. The real operation now begins. It takes time and one has to be extremely careful. Complete evacuation of the hæmo-thorax is now carried out. The Surgeon with his left hand exposes the lung on all its aspects, wiping with a sponge wherever it is necessary. He will examine all the wounds over the lung carefully and stop all the bleeding. He will see that the pleural cavity is completely dry and all bleeding points controlled. It is not always easy to control hæmorrhage from the lung. The bleeding tissue is held at the periphery and tied with coarse catgut. Once these main regions of bleeding are controlled the torn lung tissues can be brought together by suturing. Sometimes the lung tissue is so much crushed that it may have to be excised altogether after such a ligature, but such a step is hardly needed.

When the wound is near the hilum of the lung, such a procedure is not available. In transfixing the bleeding vessel one is liable to injure other vessels. Besides in ligatures near the hilum, a large lobe of the lung becomes useless and may separate as slough.

Tamponing the injured lung is the only mode available here. This tamponing is done by packing of sterile gauze in the wound of the lung and bringing it out through the external wound. Pauchet the eminent French Surgeon mentions the recovery of four out of five cases with similar injury at the Notre Dame Hospital in Paris during the last war, with similar procedure.

In wounds of the left side of the chest, the Surgeon will of course see the condition of the pericardium in case it is damaged after the lung injury has been seen. When all is over, the flap is brought down and the wound is closed. The upper and the lower divided ribs need only to be brought together by sutures to keep them in place.

If one suspects the wound is infected, when the packing has been done for bleeding near the hilum it is better to keep two drainage tubes passed through an intercostal space in the posterior region, the tubes not to protrude more than half an inch in the pleural cavity.

If the original wound is septic, it will have to be resected before completion of the operation.

Hernia of the lung.—After penetrating wounds of the chest, a hernia of the lung presents itself, sometimes in the intercostal space. Such a hernia gets strangulated and needs early operative treatment. A crepitant or a solid tumour presents itself, which is unreducible, and after a time is liable to separate itself as slough. When seen early, disinfection and resection of the wound is to be carried out. Any wound in the lung is to be sutured and the hernia reduced through the resected wound without drainage. If seen late the lung becomes solid, turgid and spleenization will follow, and hernia will separate as a sphacelus. One has to disinfect and resect the wound as above, resect also the protruding portion after placing a ligature at the base of the protruding portion. The ligature is passed and tied like the sac of a hernia. The herniated portion excised, the pedicle reduced and the wound closed with a drain in the intercostal space. Many wounds of the chest are still beyond our abilities to tackle and alleviate, still we attempt to do what we can to prolong life, as death is certain if nothing is done. The surgery of the chest is progressing very rapidly during this war as will be noticed by articles published every month in British and American journals.

I thank you, Gentlemen, for your patient attention to what I had to say on the subject.

Extracts.

SULPHAPYRIDINE ANURIA

BY R. E. WATERSTON, MAJOR, R.A.M.C. AND
C. C. B. POHERTY, CAPTAIN, R.A.M.C.

Agranulocytosis and anuria are the two most important complications which may occur in treatment with sulphapyridine, and there are numerous references to them in medical literature. While the onset of agranulocytosis can generally be anticipated by white blood cell counts, the onset of anuria is often dramatic in its suddenness and severity.

This report records five cases of hæmaturia followed by anuria which occurred in patients undergoing sulphapyridine therapy for gonorrhœa. In one of the five the anuria was relieved by the giving of intravenous saline alone, but in the remaining four, cystoscopy with ureteric catheterization was performed, and rapid recovery followed in all cases.

In view of the extensive use of sulphonamide drugs for so many infective conditions, it is considered that attention should be drawn to the possibility of the occurrence of renal complications, to the means of preventing their onset, and to a satisfactory line of treatment.

Discussion.

The urinary complications of sulphapyridine treatment are due to the insolubility in water of its excreted products, mainly acetylsulphapyridine, which forms crystals in the urinary tract. The appearance of these is characteristic—thin, sharp-pointed, and arranged in bundles like sheaves of corn. Haematuria is caused by the mechanical action of the crystals, and anuria by ureteric obstruction due to calculus formation and reactionary inflammation. This finding has been recorded in a fatal case in which death, confirmed at autopsy, was due to blockage of the ureters with crystals of acetylsulphapyridine (Carson and Smith, 1942). There is no evidence that blockage of the renal tubules is a factor in producing anuria.

On this assumption the rational line of treatment is to remove the ureteric obstruction, and this can be done by ureteric catheterization through a cystoscope. The procedure in the cases described involved the breaking up of concretions impacted at the ureteric orifices and catheterization with lavage of the ureters. Removal of the concretions presented little difficulty as they were soft, and were easily broken up by the point of a ureteric catheter, but oedema prevented catheterization of one ureter in two cases. Intravenous pyelography at a later date, however, showed normal excretion from both kidneys in these two cases. Difficulty comes from the fact that visibility in the bladder is poor owing to the cloud of debris, pus from the urethra, and blood.

In one case the administration of intravenous saline produced diuresis sufficient to remove the obstruction, and this treatment alone may be successful in a mild case without anuria. It should nevertheless be employed in all cases as a preliminary to other measures; most of the cases had vomited, and all were suffering from varying degrees of dehydration.

Rogan and Cruickshank (1912) have described a case of sulphapyridine anuria which was successfully treated by 'Inductotherm' applied to the loins; however they agree that this treatment would have no effect if obstruction were in the ureters.

It will be observed that the dosage of sulphapyridine varies considerably in the series. This is accounted for by the fact that the intensive method of treatment adopted a short time before two cases were treated was later stopped, and as a routine the usual seven-day course of one gramme sulphapyridine four hourly was substituted. Previously a series of 200 cases of gonorrhoea (fresh)



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had been treated by this course of smaller dosage and no complications had been observed. It appears that the risk of complications is greater with the intensive method of therapy, and notwithstanding the excellent results obtained by it we do not consider that this justifies the risk.

As regards prevention, all cases were being given large amounts of fluids, and we emphasize, particularly in the tropics, the extreme importance of a large fluid intake for all cases being treated with sulphapyridine. Four of the five cases were on alkaline mixtures four times daily, but it is doubtful if, by the oral administration of drugs, the urine can ever be made sufficiently alkaline to affect the solubility of acetylsulphapyridine.

(*Indian Medical Gazette*)

VIRUS PNEUMONIA

In an article on virus pneumonia *Riven et al* state that this disease has attracted considerable attention during the past few years. The usual incubation period is probably between 2 and 3 weeks. The onset of the disease is usually gradual, with weakness, malaise, headache, and generalized aching. A hacking cough is usually evident from 24 to 48 hours after the onset, although this may be absent. Fever is variable, ranging from 102° to 105° F. The degree of prostration is variable. Physical findings are frequently remarkable because of their sparsity. Signs in the chest are usually limited to inconspicuous change in percussion note and breath sounds with variable numbers of medium and fine rales. The examination of the chest may be entirely negative, and in most cases the evidence of pulmonary pathology obtained by roentgen ray is greatly out of proportion to the evidence obtained by physical examination. The patients frequently do not appear very ill.

X ray examination of the chest usually shows patchy, spotty shadows of varying density, generally extending from the hilus out toward the periphery of the lung fields. These may appear to be of a migratory character. The estimation of the white blood count has varied somewhat in different series of cases. On admission, this has ranged from a moderate leucopenia to a slight leukocytosis. The sputum is usually scant, sometimes blood streaked, but rarely rusty. The routine sputum cultures frequently show non-pathogenic mouth organisms. A few show pneumococci of higher types but not in large numbers. These are not thought to be etiologically related to the disease. Blood cultures, specific agglutinations and other laboratory studies have yielded negative results.

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Some of the cases that have been reported resemble mild gripe with the temperature normal within 36 hours after the onset of the illness. Other cases have been severely ill, the disease being marked by long-continued fever, marked toxicity and prostration, rapid pulse, dyspnoea, cyanosis, asthenia, and a tendency to relapse. Some cases suggest typhoid fever. The usual duration of the disease is from 1 to 3 weeks. A striking feature of the disease is the rarity of complications by secondary bacterial invaders. Empyema, lung abscess, otitis media, and other complications are unusual.

The treatment of the disease is supported and symptomatic. It is generally agreed that drugs of the salia group that have been effective in bacterial pneumonias are ineffective. The prognosis of the disease is good. The seasonal incidence of this disease does not correspond to that of upper respiratory infections or to that of lobar pneumonia. The series that have been reported show either an even distribution throughout the year or a tendency for a peak to occur in the fall months. The disease appears to be definitely contagious but not highly so.

(Digest of Treatment 1943.)

Medical Notes and News.

ACUTE DOCTOR-SHORTAGE ANTICIPATED.

Surgeon-General Advocates More Medical Colleges.

Grave shortage of doctors was anticipated within the next three or four years, said Major-General H. Stott, I.M.S., Surgeon General with the Government of Madras, who presided over a meeting of the Malabar District Medical Association held at Calicut on 10th May 1944.

The only way to tackle the problem, said the Surgeon-General was to produce more doctors by establishing more medical colleges in the different areas of the province like the West Coast, the South and the Andhra. So he made an appeal to all those who aspired to become professors and teachers in these colleges to take up post-graduate degrees in their own speciality so that they could be considered for any teaching appointment.

Welcoming the Surgeon General the Honorary Secretary of the District Medical Association said that the recent G.O. limiting admissions from West Coast in the Madras Medical College to 11 per cent was too inadequate. He appealed to the Surgeon General to increase the number of seats allotted to the West Coast.

Major-General Stott, in the course of his address, said that he quite sympathised with the legitimate grievances of the people of Malabar regarding admissions in the Medical College and assured that early steps would be taken to have this grievance redressed.

Proceeding, the Surgeon-General said that the present so-called shortage of doctors in the Civil and Defence services would be nothing when compared with the acute doctor shortage that might arise consequent on the re-occupation of Burma, Malaya, Indo-China, Siam, etc. This shortage was due to the Rangoon and Singapore Universities not being in a position to turn out a single doctor for about 5 or 6 years. Further, these Governments themselves might require a large number of doctors to fill in their civil cadres and also for any possible reconstruction work that might be found necessary on account of the devastations of war. Doctors would be required also in connection with several expeditions that would be undertaken to put down any possible local insurrections and civil disorders by bandits, etc. A large number of general practitioners would be required to settle down in private practice in peace time.

Further, the Health Survey and Development Committee had envisaged vast extension of the Medical department which meant more doctors to staff new departments. In this way, the Surgeon-General said, the doctor-shortage problem would arise. The only way to tackle this problem, he added, was to produce more doctors.

Reorganisation of Medical Department.

Referring to the several changes to be undertaken in the Medical Department the Surgeon-General said that one of the most new innovations to be made in the Medical Department was the proposed establishment of a School of Nursing where nurses would undergo a



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MALARIA

A PRELIMINARY REPORT ON THE STUDIES ON THE
ACTION OF 'ABN-61' (A PREPARATION OF DITA-
BARK & QUININE) ON CASES OF
HUMAN MALARIA

B. C. ROY, B.A., M.D. (CAL.), F.R.C.S. (ENG.), M.R.C.P. (LOND.),
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AND

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Medical College Hospitals, Belgachia, Calcutta.*

GENERAL CONSIDERATION

Malarial fevers are caused by a protozoal parasite belonging to the class Sporozoa, suborder Hemosporidia, genus plasmodium. There are three main species of malarial parasites which infect man. They include the following:—*Plasmodium vivax* (Grassi & Feletti, 1890) causing benign tertian malaria, *plasmodium falciparum* (Welch, 1897) causing malignant malaria, *plasmodium malarie* (Laveran, 1881) causing quartan malaria. These species are widely distributed in the tropics. *Plasmodium ovale* (Stephens, 1922) is a rare species and was mainly reported from Africa. It should be noted that besides man, birds and monkeys are also parasitised by various species of plasmodia some of which include the following:—*plasmodium relictum* (præcox) in sparrows, *plasmodium gallinaceum* in fowls, *plasmodium knowlesi* in Simian monkeys.

Inoculation of *plasmodium knowlesi* in man can give rise to fever of mild type with a tendency to spontaneous cure. This species of parasite has recently been introduced for malaria therapy in dementia paralytica (general paralysis of insane). Further, the parasites of bird malaria and monkey (Simian) malaria are being extensively used in the experimental work on malaria.

So far as the human plasmodia are concerned, they pass their life cycle in two different hosts. The one called asexual cycle (Schizogonous) is passed in man (intermediate host) and the other called the sexual cycle (gametocytic) is passed in certain types of female anopheline mosquitoes.

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known long before the etiology of the disease was discovered. The story of a specific remedy for malaria with quinine starts from the year 1630 when the Countess del Chinchon, wife of a Spanish Viceroy of Peru was cured of 'ague' (malaria) by a native bark. Linnacus in about the year 1740 named the tree as cinchona in honour of the Countess. The Peruvian bark was subsequently introduced in Europe by the Jesuits in the first half of the 17th century. Later in the first quarter of the 19th century, Pelletier and Cavantou (1820) isolated the principal alkaloid 'quinine' from the cinchona bark. The name 'quinine' is said to be derived from 'quina' the spanish way of spelling the Peruvian word 'kina', that is, bark. For a long time quinine and other allied alkaloids held the field of specific antimalarial therapy.

Researches proceeded on to find out a stronger and better substitute for quinine and it was the last war of 1914-1918 which gave an impetus to German chemists like Professor Schuleman and his colleagues to synthesise a product from methylene blue to supplement the natural alkaloid quinine. It was in September 1926 that they announced a product called 'Plasmochin' and its efficiency was tested by Rohel against bird malaria. 'Plasmochin' was an expensive drug and the hope that it would replace cinchona alkaloids as an antimalarial remedy was not met with great success, because of its feeble action on the schizogony cycle of *falciparum*. The only striking effect of this drug which superseded all other antimalarial remedies so far discovered, was its destructive action on the gametocytes of *pl. falciparum* and in this respect it is even superior to quinine. Six years after the discovery of 'Plasmochin' another new compound, also a derivative of methylene blue, 'Atebrin' was obtained by Mauss and Mietzsch. This synthetic product, first named 'Erion' was found effective against bird malaria by Kikuth in 1932. This drug acts powerfully on all species of malarial parasites and compares favourably with quinine, but like the latter drug it is ineffective against gametocytes of *pl. falciparum*. Recently other synthetic antimalarials like Certuna by Kikuth and Cilional by Schuleman have been prepared.

QUININE IN MALARIA

For over 300 years the alkaloids of cinchona bark were without any competition as specific in malaria and even to-day, quinine stands as the foremost remedy against malaria. The quinine problem of the province, as well as of India has assumed a great dimension during the present war. The Official Report of 1939 showed that the annual consumption of quinine in India was 210,000 pound, of which 70,000 pounds were produced locally and for the balance India had to depend on foreign import. But the annual requirements are really greater. It has been mentioned on a conservative estimate that about 100 million persons in India suffer from malaria in each year and therefore, the annual requirement of quinine for

the purpose of effective mass treatment will amount to 1,200,000 pounds (calculating on the basis of 90 grains to each patient); that is, about six times the present yearly consumption. But even then one has to consider the question of relapses. Besides this, whenever there is a possibility of a widespread outbreak of malaria throughout the country (as happened recently during and following famine conditions in Bengal), the amount of quinine requirement will be increased still further.

With limitations of foreign import, the country has to depend mainly on her own production. Although the present production is somewhat over 90,000 pounds and even if the State desires to increase the production of cinchona plantation, it will take a number of years (8 to 10 years) to raise the quinine output so as to make the country self-sufficient. Under the present circumstances the continued demand on quinine as a specific antimalarial remedy when no other specifics like atebrin (mepacrine) and plasmochin (pamaquine) are available, will greatly reduce the quinine stock of India. Some firms have undertaken the manufacture of synthetic antimalarials in India and have achieved a certain amount of success but then again one should remember that there are limitations in this field also, as India has to depend on others for quite a large number of basic chemicals which are imported from foreign countries. Attempts have, therefore, been made to search for a satisfactory substitute when there are possibilities of the quinine supplies being inadequate to meet the demands of the physician. Experiments were, therefore, conducted in order to get over the difficulty of procuring the requisite quantity of quinine for each case.

SEARCH FOR AN INDIGENOUS REMEDY

The possibility of obtaining some indigenous herb which could either replace quinine or even supplement it to a certain extent as an antimalarial remedy was always thought of. Our attention was first directed to *Alstonia scholaris*, popularly known as *chhatim* which enjoyed the reputation of having some antimalarial properties. People of Bengal and of many other parts of India had a great belief in *chhatim* as a febrifuge or antiperiodic and it is a common practice in the Ayurvedic treatment of medicine to prescribe this drug in the form of decoction (*pachan*) for malaria and other febrile conditions. After an extensive investigation with 'dita-bark' it was found that *chhatim* with quinine was as powerful an antimalarial drug as pure quinine itself and it was further observed that whereas a pound of quinine alone could serve only 70 persons (calculating on the basis of disbursement of 100 grains to each person) quinine when mixed with *chhatim* could treat about 200 patients. In this way the quinine requirement may be brought down to one-third of the total requirement of quinine. This preparation was named "ABN-61" and its efficacy as a specific antimalarial remedy was tried in cases of

human malaria with great success. Control cases with quinine alone were also observed side by side to find out the amount of quinine required to bring about an effective cure. Although the minimum effective dose of quinine alone is 5 grains three times a day for 6 days, making a total of 90 grains, a greater amount is necessary in a large number of cases and still greater amount should be given to prevent relapses.

If the treatment of malaria is carried out with "ABN-61" the quinine requirement will be greatly reduced and individual cases will only require 12 to 18 grains to control the temperature and 36 to 42 grains of quinine to produce an effective cure. In quinine, the medical practitioners have found a genuine and specific remedy for the disease and have naturally pinned their faith so much as not to fall back upon any other drug when quinine can be procured. But we very well know that the present quinine stock will not be able to supply India's full requirements. From the report of cases (to be published in a later communication) it will be observed that the drug ABN-61 will go a very long way towards the solution of this problem.

HISTORICAL NOTE

The plant *Astonia scholaris* belongs to the natural order apocynaceæ. Its vernacular names, are Chhatim (Ben.), Saptaparna (Sans.), meaning seven leaf; Chhatim, Dityuni (Hindi).

Rheede (1678) noticed the medicinal use of the bark by the natives along with salt and pepper in febrile dyspepsia. Rumphius (1741) found that the bark was useful in catarrhal dyspepsia and in the febrile states consequent upon that affection and also for enlarged spleen. (Pharmacographia Indica, Vol. 2, 1891). Nimmo (1839) suggested the use of the bark as an antiperiodic. Gibson (1853) described it as antiperiodic.

In a report on the centennial exhibitions, presented to the American Pharmaceutical Association (Transactions, 1877), it was stated that equal doses of ditain (obtained from dita-bark) and sulphate of quinine had the same medicinal effects while ditaine is free from any disagreeable secondary symptoms which were usual concomitants of large doses of quinine. The results arrived at with the alkaloid of dita-bark in Manila hospitals and also in private practice were simply marvellous. It was being employed with most satisfactory results in the Islands of Mindanao where malignant fevers were prevalent (quoted from Watt's 'A dictionary of economical products of India, Vol. 1, 1898). Cathcart (1879) in the *American Journal of Pharmacology* stated that 'the bitter bark of *Alstonia constricta* (the Australian species), sometimes called the native quinine, is in common use by the shepherds in the interior of Southern Australia as a domestic remedy for malarial fevers.'

Stille and Maisch (1896) reported that the dita-bark and its alkaloid was used successfully in intermittent fever in the East Indies.

The first report of Proceedings of Central Indigenous Drugs Committee of India (published Calcutta 1901) showed that *A. scholaris* had some febrifuge effect which was not lasting. Stewart used it in one drachm doses and reported that in mild cases of fever it was as effective as quinine. Nailer (1904) used the drug in 14 cases of "ague" in Tanjore (Madras) and found that in all cases it caused the temperature to fall steadily in a short time; no perspiration was induced but the urine was observed to be increased and high coloured (quoted from Kirtikar and Basu's Indian Medicinal Plants, 1911).

Goodson, Henry and Macfi (1930) studied the activities of *A. scholaris* and *A. constructa* on bird malaria and found that echitamine (alkaloid of *A. scholaris*) had only a feeble action in doses of 5 mgm.

Buttle (as reported by Sharp, 1934) showed the inactivity of alstonian sulphate in bird malaria.

Mukherji, Ghosh and Siddons (1912) used a 1 to 2 per cent solution of the sulphate of total alkaloids of *Alstonia scholaris* as an intramuscular injection in doses of 20 mgm. per kilo body weight in cases of induced malaria (*Plasmodium knowlesi*) in monkeys. They observed that the drug failed either to retard or to control the progress of infection. Later, they prepared a tincture (1 to 10) from the powdered bark containing 13 grs. of total alkaloid per ounce. This was administered in doses of one ounce thrice daily in a number of cases of human malaria of which one was of *pl. vivax* infection and three of *pl. falciparum* infections. They found that the drug had no demonstrable antimalarial action as it did not produce any remarkable febrifugal effect or alter in any significant way the course of infection.

From the above it will be found that the drug was found to be highly satisfactory by earlier workers while subsequent observations mostly applied on bird malaria and monkey malaria tend to prove the inefficacy of the drug in malaria infections. Such were the conflicting reports on the antimalarial property of *Alstonia scholaris*.

PRESENT OBSERVATIONS WITH ALSTONIA SCHOLARIS

A series of preparations were made from dita-bark alone which were used in cases of human malaria. In the earlier works a very satisfactory result was not obtained as hoped for. In some cases, however, a beneficial effect by the administration of pure *chhatim* (dita-bark) was observed in that it either delayed the onset of the next paroxysm or reduced the duration of the next paroxysm. Daily examination of the blood showed that in earlier phases of infection the drug lowered the parasite count but could not retard the progress of infection. Later, a preparation was made in the form of tablet

with *chhatim* (dita-bark) and quinine which was named "ABN-61". This latter drug was then experimented on a series of cases of human malaria and found to be very effective. Case No. 1 shows that 14 tablets of AB-7 (preparation of dita-bark only) could not control the temperature while 10 tablets of ABN-61 (preparation of dita-bark and quinine) had a definite effect on the temperature and parasite count.

"ABN-61" as an Antimalarial Remedy—The therapeutic action of any antimalarial drug is usually first tested on either bird malaria or monkey malaria and then finally applied on human malaria. It is quite reasonable that before a drug is applied on human cases, a preliminary biological test on animals is necessary to select only those drugs which give indications for further study. The present observation was, however, directed mainly against human malaria and the investigation was conducted on patients admitted in the Carmichael Medical College Hospitals, Belgachia (Calcutta).

Dosage and Method of Administration—The general method followed was to administer 2 tablets of "ABN-61" three times a day to adult persons for a period of at least six days. The tablets were given orally and were swallowed with the aid of drinking water or the crushed tablets were dissolved in water before being taken. No other accessory treatment was introduced except the administration of alkali mixture and intravenous glucose in certain cases. The final dosage of "ABN-61" and the course of treatment was altered in some cases which were, however, guided by the nature of the effect observed on temperature and parasite count. In children the dose of "ABN-61" was modified accordingly. Each tablet "ABN-61" contained only 1 grain of quinine and the total requirement to cure an attack was about 36 to 42 grains given in the course of 6 to 7 days.

Experimental Method—The methods of observation followed in the present series were to confirm all cases of clinically diagnosed malaria, i.e., cases of sudden onset of fever with chill and rigor associated with or without enlargement of the spleen, by finding the malarial parasite from a microscopical examination of thin blood film. The drug was administered only in those cases which revealed the presence of malarial parasite. Further in every case where the parasite was detected in the peripheral blood, the patient was allowed to have the malarial paroxysm while in the hospital and then the treatment was commenced. During the period while the drug was withheld a simple alkaline mixture was only given. All the cases in which the drug "ABN-61" was tried had no history of taking quinine prior to admission in the hospital. After the drug was administered particular attention was paid regarding its effect in controlling the temperature, its destructive effect on asexual and sexual forms of the parasite, the time taken to make the peripheral blood from parasites, its effect on enlarged spleen and any untoward

effect resulting from its administration. The parasitocidal action was observed by making a parasite count before the drug was commenced and then daily during the course of treatment. After the drug was discontinued, the blood was examined occasionally to check whether there was any reappearance of the parasite in the peripheral blood. Before the patient was discharged from the hospital the blood was again thoroughly examined for parasites both by thin and thick film methods. Those cases who showed crescents (gametocytes of *Pl. falciparum*) were not discharged from the hospital till the crescents disappeared. These forms of parasite are resistant even to quinine but can be destroyed by plasmoquine. But in the present observation no further treatment was given and the crescents showed a spontaneous degeneration and gradual decrease in number till they finally disappeared. As the gametocytes are formed from the asexual forms, it is evident that the destruction of the latter will eventually lead to the disappearance of the former from the peripheral blood. To steady the effect of the drug on the incidence of relapse, the patient was kept under observation in the hospital for a period of one fortnight to three weeks from the time of cessation of temperature. The cases were then followed up by instructing the patient to intimate any rise of temperature and further to submit a weekly report of the temperature.

Summary of the Results of Observation. The criterion of cure in malaria with any specific antimalaria is judged from its effect in controlling the temperature, causing the disappearance of the parasite from the peripheral blood and preventing the occurrence of relapses or lowering the incidence of relapse rate. Results obtained by treating cases of human malaria with the drug "ABN-61" so far fulfils all the above criteria. The present investigation on human malaria showed that 12 to 18 tablets of "ABN-61" administered in the course of 2 to 3 days were required to control the temperature and another 6 to 12 tablets were necessary to make the peripheral blood free from parasites. Excepting the gametocytes of *Plasmodium falciparum*, the drug was found to have a powerful destructive effect on all species of malarial parasites which infect man. The drug had a definite inhibitory effect on the schizogony cycle. Daily examination of the blood during treatment showed a striking reduction in the number of parasites. In some cases a clear evidence of degeneration of parasites was obtained. The drug, therefore, exerted some physical effects of varying degrees and altered the morphological appearance of the parasite.

CONCLUSION

The present study justifies the recommendation of "ABN-61" as a safe antimalarial remedy as it was found to have marked parasitocidal action on all species of malarial parasites with the exception of the gametocytes of *Plasmodium falciparum*. Further, while

under the treatment of "ABN-61" the patient did not complain of any disagreeable symptoms (tinnitus and deafness) as are associated with cases treated with effective therapeutic doses of quinine (varying from 45 to 90 grains or more). This is, therefore, a distinct advantage over quinine. In the present series of cases no idiosyncrasy to the drug has yet been observed.

ACKNOWLEDGMENT

Our thanks are due to Messrs. Glueonate, Ltd., who have helped us considerably in carrying out this investigation. The tablets ABN-61 and other tablets of *chloroquin* only and also of *chloroquin* and quinine as required for the present investigation were prepared by the same firm and were supplied to us free of cost.

(I, M. A. Journal, April 1941.)

THE MODERN TREATMENT AND PREVENTION OF VENEREAL DISEASES.

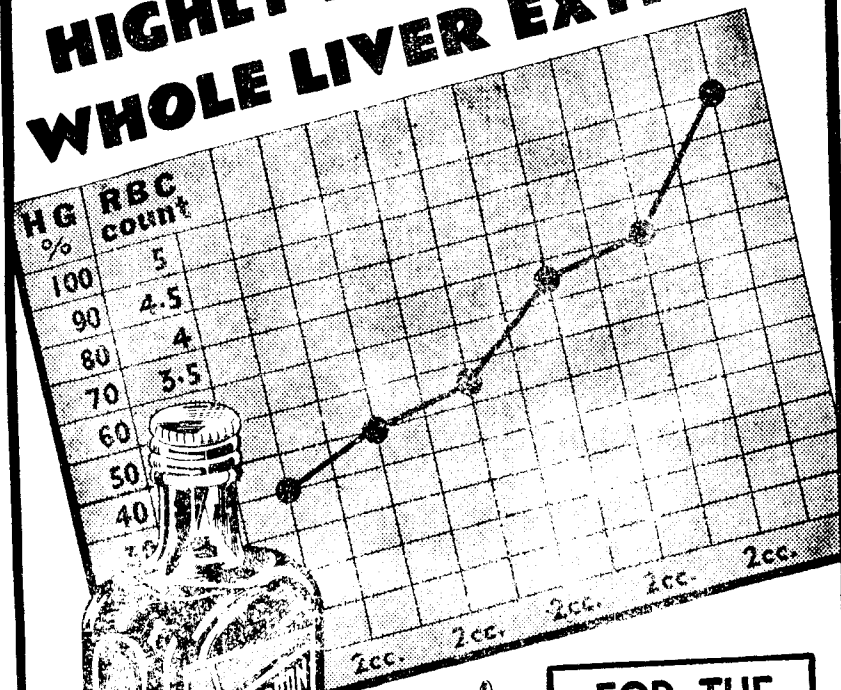
V. GOVINDAN NAIR, M.R.C.P., F.R.F.P.S.,

Venerologist and Dermatologist, King George Hospital, Vizagapatam.

Venereal diseases number six. They are syphilis, gonorrhœa, chancroid, aphthous ulceration of the genitalia, granuloma venereum and lymphogranuloma inguinale. Leaving aside the fourth, aphthous ulceration of the genitalia, which need not be taken as a venereal disease there are five well recognised venereal diseases. To discuss the treatment of all these in one paper is difficult. The object of this paper is not to discuss all aspects of treatment in every detail but to give in brief a general idea of the principles of treatment which may be useful to the general practitioner.

The treatment of venereal diseases may be prophylactic or curative. These diseases are preventable, particularly the big three, syphilis, gonorrhœa and chancroid. This has been convincingly proved during the last Great War. Prophylaxis is effective only if the measures are applied within the first three or four hours after the first exposure to infection. As regards syphilis, it is of value to a certain extent even up to the limit of eight hours after exposure. Moore's experience among the defence forces during the last World War was that prophylaxis failed to protect in only about 0.3 per cent of cases in which it was used. It was also his experience that prophylaxis was employed even by a controlled and disciplined group as the defence forces only if penalty was imposed. In civil life, generally speaking, no one ever thinks of prophylaxis, though provided for in some countries, out of ignorance, indifference and carelessness. So it would seem doubtful whether prophylaxis will ever become popular among the civilians, human nature being what it is.

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5. Categorise all genital ulcers either as syphilitic or non-syphilitic. This simple division is advantageous as a nonsyphilitic ulcer is relatively unimportant, its effects being usually local, but a syphilitic ulcer is only the primary manifestation of a generalised infection which requires immediate treatment for eradication. If treatment is begun before blood tests prove positive, the cures are 33 per cent higher (Stokes, 1936) than those at any subsequent time. In the early stage a day less means extra treatment for weeks later and so much longer the patient remains a potential source of infection. Extragenital chancres may occur in any part of the cutaneous surface or the mucous membrane of the mouth. The common sites are the fingers, the lips and the breasts.

6. No antiseptics, even of the mildest type, should be applied to the sore till a definite diagnosis is made. Even the mildest antiseptic, soap and water or drying destroys the spirochetes.

7. Infection with *T. pallidum* can take place through any intact mucous membrane. Brown and Pearce have shown that even on the highly resistant vaginal mucosa of the rabbit no trauma is a prerequisite for the entry of the spirochetes. The break in the skin for the organisms to pass through need be only microscopic.

8. Though it is common to have a primary chancre developed at the site of inoculation, in some cases such primary reactions may be absent and the first evidence of syphilis may show itself in the adjacent lymphatic nodes instead of at the point of traumatic entry or only as the so-called secondary syphilis. This is often the case with needle prick infection—*syphilis d'emblee*. The question of a primary lesion does not arise in syphilis after blood transfusion.

9. The manifestations of syphilis are likely to be milder and less outspoken in the woman than in the man.

10. Pregnancy and lactation play an important part in the woman's defence mechanism in syphilis.

11. Syphilis may be discovered in a woman at any time during her pregnancy and if she is given early and adequate treatment the offspring will have nine chances out of ten of being free from syphilis.

12. Infectiousness in syphilis can never be determined nor non-infectiousness proved by the result of serological tests, single or repeated. Syphilis is most infectious in its early stage and becomes less and less with lapse of time. It is rarely infectious after five years. Late congenital cases also are non-infectious.

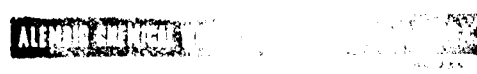
13. Physical examination laying special emphasis on the inspection of the genitalia and lips is the chief procedure for determining infectiousness. Moist lesions only are infectious, the most dangerous to handle being the chancre, the moist papule (condylo-mata) and the mucous patch.



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14. Syphilis is potentially communicable until it has been treated adequately for at least a year and for two or three years if treatment has been irregular or neglected. It is always potentially communicable during pregnancy to the progeny.

15. The treatment of late syphilis is essentially the detection of early and latent syphilis followed by prompt and thorough treatment.

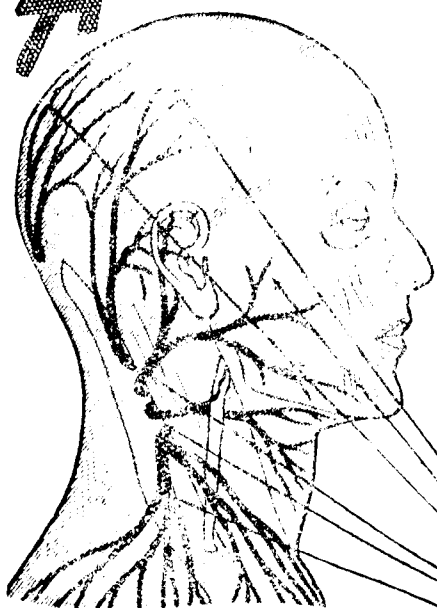
16. It is in the treatment of late syphilis that the clinician must practise medicine as an art; for it requires great skill and sound judgment to strike the nice balance between the salvarsan, heavy metal, iodides and rest periods which will give the best result. Accurate estimation of the patient's general condition, of the effect of antisyphilitic treatment and of the effect of the latter on prognosis, may make all the difference between success and quick catastrophe.

17. Remember the maxim "always suspect syphilis, but be slow to diagnose it."

The treatment of syphilis has to be considered under two aspects; the treatment of early syphilis and that of late syphilis. In early syphilis the treponemes are present abundantly in the tissues and circulation and are free and, therefore, the aim of treatment is to attack these free treponemes and destroy them as rapidly and thoroughly as possible. The treatment should be continued till the infection is completely eradicated. Early syphilis includes primary and secondary syphilis of old nomenclature. According to Osmond (1942) it denotes syphilis in the first four years after the date of infection. The term late syphilis means syphilis of more than four years duration and includes tertiary and visceral syphilis, particularly neurosyphilis and cardiovascular syphilis. In late syphilis the treponemes in the body are few in number and hiding in the so-called backwaters of the viscera and well entrenched behind the barricade of fibrous tissue. The aim of treatment in this stage is to arrest further damage caused by the disease and to abolish the symptoms.

Before starting treatment the diagnosis must be made sure beyond dispute. In early syphilis this can be accomplished by the demonstration of *T. pallidum* in the serum of the chancre by the dark ground illumination examination and or by the positive serum tests, such as complement fixation the Wassermann, or precipitation the Kahn test. A single positive test should not be accepted lightly unless supported by clinical evidence or confirmed by a second positive result either in the same laboratory or in a different one. Certain diagnosis is all-important as syphilis is a very serious disease and its treatment is long, expensive and by no means devoid of risk. No person should be allowed to live under the shadow of doubt as to eventual cure without first removing all doubts as to the existence of the infection.

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FORMATION OF RED BLOOD CORPUSCLES.

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Intra-Uterine Process.

In the foetus the mono-nuclear cell which has irregular protoplasm, is very large having the size of 2 or 3 red blood corpuscles. From the protoplasm of this cells are extruded the globules of hæmoglobin which are the annucleated red cells. An unknown number of cycles take place, and at last there remains a small portion of nucleated protoplasm. This becomes the lymphocyte afterwards in extra-uterine blood formation.

Extra-Uterine Process.

This theory is altogether different from previous ones. According to this theory blood is formed from the glands of stomach and intestines. The glands of these organs contain eosinophil cells in large numbers in both normal and pathological conditions. There are about 35 million glands in gastric mucosa possessing about 175 million eosinophil cells each gland tubule in a section of micron showing 5 eosinophil cells. The same applies to intestinal mucosa. In the deepest parts of these mucosas the lymphocytes become fixed and make up eosinophil gland the cell now known as "Paneth" cell. This eventually shrinks until it becomes the size of a fully developed eosinophil polymorph which can wander in the tissues and enter the lymphatic or capillary vessel. The eosinophil polymorphs with lobulated nuclei enter the circulation and drift towards the hæmopoietic organs or to any tissues suffering from pathological processes. In these sites they secrete the red corpuscles and the remaining protoplasm nuclei become lymphocytes. This method of the formation of blood was accidentally noticed by the writer of this article in the sarcoma of stomach. He found the same thing in the angioma and then he was convinced of the theory.

This hæmopoiesis is always seen in the presence of plasma cells and eosinophils. It cannot be said whether plasma cells without eosinophil granules are the nucleated protoplasmic remnant passing through an intermediate stage after forming red corpuscles or whether they have any other function. Until now blood has been studied as a static tissue and the differential count interpreted as a permanent picture of a fixed proportion of cells contained in the circulating blood. Because of this some may ask how is it possible to explain the full development of R.B.C. from the eosinophil cells when the eosinophils are normally present in the peripheral blood as only 2 per cent. of the white corpuscles? The same

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Medical Notes and News.

XXI ALL-INDIA MEDICAL CONFERENCE, CAWNPORE.

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Dear Doctor,

In Annual Conferences members of the profession gather at one common platform from all parts of India and express their hopes and fears and discuss and record various measures which vitally affect the profession.

This year the Cawnpore Branch of the Indian Medical Association has invited the XXI All India Medical Conference to be held at Cawnpore in the X'mas week and the Indian Medical Association has accepted the invitation.

Besides other items of interest a Scientific and Medical Exhibition of various pharmaceutical products, medical and surgical appliances and scientific accessories, etc., is held and a Scientific Section is organised where papers on subjects coming under the various branches of medicine are read and discussed.

I would, therefore, earnestly request you to appeal to every professional brother and sister to make it a point to join it by enlisting themselves as members of the Reception Committee and to send in delegates and visitors in large numbers, and thus give the Indian Medical Association the necessary strength to safeguard our interests. Success of the Indian Medical Association means the success of the profession.

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may be applied to the chemical components of the blood and if these were also accepted as being in a state, it would be impossible to understand where the 2000 calories come from which the body needs daily, when there is such a small quantity of proteins, fat and glucose in peripheral blood. These chemical products must be in a dynamic metabolism, if we accept the blood cells as also being dynamic, then knowing that the blood circulates all over the body in less than a minute, it is easy to understand how the circulation with 7,000 white cells per c. mm. and 2 per cent. eosinophils can carry, theoretically, during one day, about 200,000 eosinophils per c. mm. every eosinophil contains more than 60 granules and if all this developed every day, the result would be the daily production of about 12 million red corpuscles per c. mm.; the eosinophil cell could be responsible for the formation of all red blood corpuscles. According to the author the eosinophil myelocyte of the bone-marrow is not a predecessor of the eosinophil polymorph but is a successor.

MISUSE OF INTRAVENOUS N. A. E. FOR VINCENT'S INFECTION.

The use of intravenous arsenicals in the treatment of Vincent's infection is unsound both on theoretical and on clinical grounds, particularly since the condition responds readily to other less expensive and less dangerous drugs.

Severe reactions like exfoliative dermatitis, myelencephalitis occur after injection of arsephenamine in the presence of some active infection of which Vincent's angina constitutes an example.

Vincent's infection sometimes develops in patients undergoing antisyphilitic treatment with intravenous arsenicals.

The proper treatment of the disease calls primarily for the treatment of underlying local or general debilitating condition. Healing of the lesions in the mouth seems to be best accomplished by use of daily local application of 10 per cent chloric acid followed immediately by hydrogen peroxide. Along with this the use of nicotinic acid 150 mgms. by mouth daily is much better. The oxygen liberating agents is a logical means of checking the growth of anerobic organisms and the rapid relief from the discomfort is striking.

HYPERTENSION AND HEIGHT.

There is certain relation between blood pressure and height. Short men and short women have very slightly higher systolic pressures than the tall groups. Heights have been classified into three arbitrary groups: short, medium and tall. The short men were under 66", the tall men 71" and over, short women were less 63" and the tall women 65" and above. Each of these groups was further subdivided according to build into "slender", "broad" and "intermediate". The criterion of a slender build was that the chest height ratio was less than 0.5 and for a broad build it was 0.59 and over. Among the men within each of the three build groups there was only slight variation in the mean systolic and diastolic blood pressures between three height groups. But there are larger though insignificant differences among women. A considerable rise in both systolic and diastolic blood pressures was shown within each height category as body build progressed from slender to broad, this increase being greater for females than for males. Both male and female tall groups had a greater incidence of hypertension both systolic and diastolic than the group of short stature and less low pressure. This was most marked in the broad build groups. 16 per cent of the short broad men and 13 per cent of tall broad men had low systolic and diastolic pressure. Systolic hypertension occurred in 18 per cent of the short broad men and 19 per cent of the tall broad men and diastolic hypertension in 16 per cent of the short broad men compared with 25 per cent among tall broad men. The explanation of this finding which is apparently a contradiction of the result from observation is that there are many short broad persons than tall broad persons in the general population and although the tall broad persons is more susceptible to hypertension this increased susceptibility more than offsets the greater number of short broad persons. Hence all short men together will show a higher mean pressure than all tall men.

In conclusion it can be said that a tall person has a greater risk of hypertension than any other individual and that the difference in blood pressure between tall and short persons in specific build groups is due solely to height difference.

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Vol. XIII.

JULY 1944.

No. 7.

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(Established 1932.)

VOL. XIII

JULY 1944

NO. 7

CASE OF CEREBRAL TYPE OF MALIGNANT MALARIA SIMULATING TYPHOID FEVER

BY HARIDAS DEY, L.M.F.

*Late Senior House Physician, Campbell Hospital; Medical Officer,
Chatmohar Charitable Dispensary (Pabna).*

How malaria the most common disease, so to say every day disease of our country, often gives rise to typical signs and symptoms of other diseases than malaria and how the mofussil village practitioners are handicapped without having a microscope to help the correct diagnosis of such a case will be revealed by the following report of the case notes and I venture to report the case with the hope that every fellow brother of village life will find some sort of interest in it.

On 2nd December 1942, I was called in to see an adult Hindu male of about 22, suffering from high rise of temperature for last four days attended with profuse diarrhoea and loss of consciousness. Four days back he got suddenly high rise of temperature without rigor but with intense pain in the loin and head and colicky pain in the abdomen. His younger brother was suffering from paratyphoid fever for last two weeks to whom the patient had to nurse day and night. The patient had sense on the 2nd day of illness but on the 3rd day he was simply unconscious passing water, stools without knowledge and abdomen was highly tympanitic. He had no fever since last five years though the locality of his residence is well known for malaria.

On examination: Soft and slow pulse 90 per minute, respiration 21 per minute, temperature 104.6°F. Patient was unconscious and delirious. The whole of the abdomen was rigid and on percussion it was tympanitic. Spleen was not palpable. Liver was not enlarged. Eyes congested. Pupils equally dilated a little on both sides. As the patient had no sense his tongue could not be examined. He did not pass any urine since last 8 hours. Bladder distended. Stool-typical enteric stool with offensive smell coming out in gush every one or two hours without any change of tympanitis. Caecal gurgling present. (1) Slow and soft pulse; (2) enteric stool; (3) the history of nursing a typhoid patient washing his stool, urine and other secretions and (4) history of no fever for last 5 years and (5) history of sporadic cases of another two or three cases of typhoid fever in the same locality led me to diagnose it to be a case of typhoid fever and he was given the following treatment:

- (i) Ice bag was applied over the head and abdomen.
- (ii) Mud plaster over the bladder by which urine was evacuated within half an hour in my presence.
- (iii) Intravenous injection of glucose solution 25% 25 cc. plus intramuscular injections of Omnadin.

(iv) A Mixture.

R

Sodi citras	...	...	gr.	15
Sodi Bicarb	...	...	gr.	10
Glycothymolin	...	...	drm.	1
Spt. Ammon. Aromate	...	...	m.	15
Liq. Ammon. Acets	...	...	drm.	1
Oil Cinnamon	...	...	m.	1
Spt. Chloroform	...	...	m.	15

Aqua ad ounce 1

Four doses. One dose every 3 hours if the patient could swallow during the period of unconsciousness.

(v) Advised the patient's relatives to send the blood of the patient to Calcutta for culture. Next day I was again called in and found that the patient did not improve a little, moreover he went downhill. Stool, pulse, temperature were all the same. Moreover he became more delirious and boisterous despite constant application of ice bag over his head and cold water douching over the scalp. Heart sounds weak and slow. Lungs normal on both sides. The same line of treatment continued on that day also. On the third day of my visit to the patient I became almost hopeless about the case as I could not feel his pulse in the wrist and the condition of the patient was found worse. The patient was passing watery stools at short intervals. The condition of the eyes and face also became very bad and the relations of the patient were found crying by the bed of the patient. I was simply at a loss to account for the reason of the failure of pulse in such early days of typhoid fever which is not very common in general cases of typhoid. It struck me and thinking that the patient would surely die, I convinced his relations that I could like to inject him a Quinine ampoule as Pernicious and Malignant Malaria might produce such symptoms. His relations gave permission for this trial of Quinine injection in the 1st stage. I too without losing any time injected him Acid Quinine By-Hydrochloride gr. x in 2 cc. with 10 cc. of 12½% glucose solution in the gluteal region and injected 25 cc. of 25 per cent of glucose solution with 10% 5 cc. Calcium Gluconate intravenously. I injected him Coramine one ampoule intravenously and another ampoule of Coramine intramuscularly two hours after for heart. After 6 hours I again went to see the dying patient and to my utter surprise I could feel the pulse of the patient and found that his temperature came down by 2 degrees. Taking courage in both hands I injected another one ampoule of Quinine Bi-Hydrochlor 10 gr. with 10 cc. of 12½ per cent glucose solution and 25 cc. of 25% glucose solution with 40 per cent Hexamine 5 cc. Next morning when I went to see the patient I found that the patient was fully conscious and his temperature came down to normal and though the patient was too weak he told me very slowly that he could eat rice. I gave him every consolation and injected another 10 gr. ampoule of Quinine and gave him plenty of alkaline mixture and glucose water to drink. The recovery of the patient was uneventful on the 10th day.

(Medical Bulletin.)



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AL 236

Extracts.

PROSTIGMIN IN THE TREATMENT OF
DELAYED PERIOD

BY ERNST FRIEDMANN, M.D., F.R.C.P.

Gynaecological Registrar,
Royal Free Hospital.

Many workers (Hetcher et al; Soskin et al; Winkelstein and Carapetyn) claim that prostigmin invariably precipitates the menstrual flow in all cases of recently delayed period not due to endocrine dysfunction, systemic disorders or pregnancy.

MODE OF ACTION

Hyperaemia is an important and constant factor in menstrual bleeding. This is due to vasodilatation caused by the liberated acetylcholine by the aestrogenic action on the uterus. Prostigmin potentiates the naturally occurring acetylcholine in the uterine endometrium by inhibiting acetylcholinesterase, as in the treatment of myasthenia gravis.

Treatment. The author treated 90 patients between the ages of 16-47 years and the duration of amenorrhoea beyond expected menstruation was from 3-47 days. Out of these 30 patients were pregnant. One intramuscular injection of 1 mg. of prostigmin on three successive days was given, this treatment being discontinued if after the first or second injection the menstrual flow was restored. The longest interval between the last injection and the onset of menstruation was about 72 hours.

Results. The drug failed in two cases. A fourth injection or a slightly bigger dose would have brought the desired result. It had no effect on the pregnant cases. It was successful in 94.5% of the cases this series. There were no serious effects of the drug. It is quite safe in pregnancy.

(British Medical Journal.)

OBSTETRIC ANALGESIA WITH PETHIDINE

BY WALTER SPITZER

Pethidine possesses a powerful analgesic action like that of morphine, but is stimulating rather than depressing to the central nervous system. It has spasmolytic properties. It is relatively non-toxic, and has little effect on the pulse rate or the pupil. It lowers the blood pressure and depresses the respiration only in large doses.

Prof. Christie investigated its value as an analgesic when given by the mouth to 355 patients. Of the patients with "severe pain" 55 per cent obtained complete relief and 20 per cent partial relief; those with "moderate pain" 61 per cent were completely and 12 per cent partially relieved. Toxic symptoms were uncommon and never serious.

CLINICAL TRIALS

The effect of pethidine hydrochloride on 80 normal patients in labour was studied; 56 were primipara 24 multipara. Of these patients 17.5 per cent were greatly relieved, 72.5 per cent experienced goods relief and 10 per cent were unrelieved.

(1) Oral use. The effect of oral administration appears in 20-30 minutes and, in doses of 25 mg. lasts from 1-4 hours. In the majority of cases a single dose of 25 mg. gave a good relief of severe pain in the early first stage of labour. The 25 mg. dose repeated half hourly for 2 doses gave the most satisfactory analgesic effects. A dose of 50 mg. followed by another dose of 25 mg. in 40 minutes gave complete analgesic effects.

Pethidine had in the majority of cases no objectionable side effects on mother or baby. In 3 mothers transient vomiting and bradycardia were noted. Twice a transient depression in the foetal heart sounds developed, and 5 babies showed a mild degree of asphyxia. No other harmful effects on the child were observed.

It was found that the progress of labour was not delayed. Pethidine had a remarkable shortening effect on the duration of normal labour. In elderly primiparae with rigidity of the soft parts the influence on the dilatation period was very favourable.

(British Medical Journal.)

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HIGHLY POTENT WHOLE LIVER EXTRACT

Hb %	RBC count
100	5
90	4.5
80	4
70	3.5
60	3

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colds: sore throat: sunburn:
external piles: inflamed breasts:
swollen joints: eczema: tonsil-
litis: buboes: orchitis and swol-
len glands.

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Vol. XIII. 387 AUGUST 1944 No. 8.

18 SEP 1944

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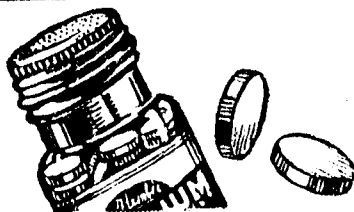
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VOL. XIII

AUGUST 1944

NO. 8

SOME COMMONER DISEASES OF THE NEW-BORN PHYSIOLOGICAL PECULIARITIES

S. GHOSH, M.D.

Infants as soon as they are born have to undergo much adverse influence of the new climate. The heat regulating mechanism has not got into working order during the first few days of life, and the infants especially if premature, suffer much from exposure to cold chill. In these circumstances young infants must be guarded against attack of diseases. Temperature of the infant is often raised by even a slight disturbance. But slight rise of temperature during the first three days of life is considered to be a normal occurrence.

Inanition fever—In case when a new-born is suffering from high temperature (103° or so) without any apparent cause, it must be regarded as an inanition fever. In such a case a suitable diet is indicated.

Atelectasis—The feebleness of respiratory movements in some of the new-born is manifested in crying in a very low tone. It generally occurs due to want of tone of the respiratory muscle. In these cases let the child cry vigorously which will gradually promote the tone of respiratory muscle.

INFECTIOUS DISEASES

The umbilicus of the New born should carefully be protected with the following dusting powder comprising zinc oxide, Acid Boric 3ii each.

Omphalitis—In absence of proper protection a local inflammation may occur. Slight redness, swelling with purulent discharge without any general symptom are noticed.

Use of abovementioned dusting powder will subside the inflammation.

Septic Thrombosis—If proper treatment is not made thrombosis of the umbilical vein may occur, as the closure of umbilical vessels of the premature infant occurs very slowly and often imperfectly. From this affection a general septicaemia may occur. It is a result of invasion by pyogenic organisms.

General Septicaemia—In this circumstance, fever is profound and Icterus, purpuric haemorrhage, diarrhoea and signs of inflammation of the internal organs or serous membrane are noticed. In a case all the symptoms may not be present. Sometimes there will be no fever and in other the inflammation on the umbilicus is very slight which misleads the diagnosis. Peritonitis and pleuro-pneumonia are commonest complications. Prognosis is bad and usually fatal within a week. Treatment should be adopted according to the circumstances of the infants.

Tetanus neonatorum—This is usually seen amongst the new-born on the fifth day and rarely seen after the second week.

The tetanus bacilli enter through the umbilicus if it is not carefully tied and properly protected with dry antiseptic dressings.

The children are unable to suck owing to stiffness of the jaw (trismus) and this soon follows rigidity of limbs and convulsions. This convulsion may be distinguished from the ordinary infantile convulsion (1) by the presence of trismus and (2) slight rigidity is noticed in between the convulsion which does not completely relax and any movement of the child is apt to bring on a fresh series of spasms (1).

Mortality rate of this disease is about 95 per cent. This rate may be reduced in a case by energetic treatment. Anti-tetanic serum 10 c. c. to be administered first subcutaneously and then may be repeated two or three days later. A solution of 10 grain chloral hydrate to be pushed per rectum and 5 grain doses with syrup to be given by mouth which may be repeated bi hourly if necessary. A case has been recorded where a drop of Formalin with 50 c. c. of salt solution per rectum and half a drop of it with 10 c. c. of salt solution have given satisfactory result.

Ophthalmia neonatorum—This is due to presence of Gonorrhoea of mother during pregnancy. At the time of delivery the Gonococcus enters and the new-born is attacked by it.

Redness of conjunctiva, swelling of eyelids and pus inside the lids are common symptoms. If it is neglected the eye may be destroyed and blindness results.

Two drops of one percent solution of argentic nitrate be dropped into each eye and use of one drop sterilized liquid paraffin in each eye twice daily can cure this disease.

Synovitis neonatorum—Is seen amongst the new-born. This happens due to entrance of *Gonococcus* through the umbilicus owing to negligence of nurse or mother.

Swelling of knee joint is commonest symptom. Use of Gonococcal vaccine may subside the symptoms. If the treatment is not carried adequately Infantile Rheumatism is often resulted.

JAUNDICE

Icterus Neonatorum—It is seen amongst one-third of the new-born on the third day and lasts for ten days. In some cases it is prolonged for some weeks. The cause of this disease is still not definitely known.

Bile is rarely found in urine. The disease is not profound on this form and no treatment is required.

Congenital Atresia of the bile duct—It is a very rare condition of Jaundice. This form of the disease is a profound condition. Enlarged and hard liver, palpable spleen, colourless stools, highly pigmented urine are common signs and symptoms. The disease is often fatal within a few weeks. This may be treated symptomatically.

Syphilitic hepatitis—It is a diffuse gummatous infiltration of the liver. In this condition the liver is enlarged and smooth and the spleen may also palpable. The manifestation of other symptoms of the congenital syphilis will confirm the diagnosis. Treatment with antisyphilitic drugs is advocated. Hydrag cum create or calomel 1/8 grain doses with pulv-create aromat and Rhei are used with beneficial result.

Septic Infection of the liver—It is a condition due to septic infection of the liver. The symptoms of general septicaemia are

observed. Prognosis is not unfavourable. Treatment to be adopted symptomatically.

HAEMORRHAGIC DISEASES

Due to severe infection of organs hæmorrhage is often found in the newborn infants. The character of this hæmorrhage is purpuric e. g. stools and vomiting are brownish in colour and not hæmorrhage in general. It is found on the second day and very rarely seen after the twelfth.

This is result of some infective agents. The true pathology of this affection is not yet known.

(In some cases congenital syphilis is associated, but not in all cases. The hæmorrhage is first seen in the alimentary canal. The bleeding is more oozing than an actual hæmorrhage and reveals itself by the vomiting of small quantities of brownish grumous—looking fluid or by the presence of similar discharges on the napkin. Bleeding may also take place from the umbilicus, and may be profuse and there may also be subcutaneous hæmorrhage like those of purpura, or bleeding into the internal organs.)

Prognosis—Prognosis of these diseases is always grave if the hæmorrhage is continued more than a day. Sometimes recovery may take place in some worst cases.

Treatment—Calcium lactate grain 3 doses and a little honey should be given every hour. Anti-diphtheretic or Anti streptococcic serum or normal horse serum may be injected 5 c. c. doses or more, subcutaneously. The serum must not be continued as there may be fear of serum sickness.

Intramuscularly at the buttock 3 c. c. human blood is used with beneficial result. This may be repeated every two hours if necessary.

Some advise that the oral administration of a drachm dose of 5 p. c. gelatine every hour is useful to control the internal hæmorrhage. In case of umbilical hæmorrhage it must be stopped by pressure. To prevent hæmorrhage from the mucus membrane or skin adrenalin is suggested.

PEMPHIGUS NEONATORUM

Pemphigus is a lesion found amongst the newborn infant. There are two varieties (1) Syphilitic and (2) Non-syphilitic form.

Syphilitic Pemphigus—This occurs due to congenital syphilis. It is distinguished by the fact that the bullae occur on the palms and soles as well as on the trunk whereas in non-syphilitic cases palms and soles escape.

Prognosis—Mortality in this variety is higher than the non-syphilitic.

Treatment—Hydrag cum create in Gr. $\frac{1}{2}$ dose thrice daily and application of mercury ointment are preferable.

Non-syphilitic pemphigus—It happens due to infection of pyogenic organisms and closely resemble as impetigo. In some instances it is manifested as simple cutaneous manifestation of general sepsis. In some cases umbilical infection is detected. This comes out all at once or in successive crops. It breaks out in epidemic which is an indication of its infective character. The general symptoms are varied, sometimes there are no complaints; at others there is high fever. Prostration and symptoms of general septicaemia are present.

Prognosis depends according to the degree of infection and is always grave.

Treatment should be adopted to maintain the strength of the infant. Dusting powder comprising zinc oxide, and Boric acid two drachms each is to be dusted. Use of germicidal lotion or oil is advised. Cannabis Indica oil (30 grains in an ounce of olive or coconut oil to be preserved for at least 12 hours and to be boiled for 5 minutes) obtains a good result.

(11). Review)

Extract.

TABLE KNIFE LYING IN PERITONEAL CAVITY FOR FIVE YEARS.

Gordon (*South African Medical Journal*, 1943) reports the history of a truck driver who complained that for the last three months he had experienced discomfort in the region of the right ischio-rectal fossa. A tender lump was found near the skin in the right ischio-rectal fossa. X-ray examination showed a table knife in the abdomen with the point near the skin at the tender spot. He had been admitted to the hospital five years previously suffering from a stab wound of the upper abdomen. At that time the symptoms suggested an injury to the lung. The chest was X-rayed and nothing abnormal was noted. The entrance scar was situated just below the left costal margin 2 inches from the line. X-ray examination now showed the handle of the knife in the upper end at McBurney's point and the point of the blade in the right ischio-rectal fossa. No evidence of damage to the stomach or the intestine was found when the abdomen was opened. The knife was lying free in the peritoneal cavity. A sausage-shaped roll of omentum completely surrounded the knife, forming a sheath extending down into the pelvis. This sheath was opened and the knife was extracted without difficulty. The patient was discharged on the seventeenth day. The blade of the knife, which was 8 inches long, was as bright as if it had just been polished. There was no evidence of any rusting, nor had the colour of the bone handle changed.

J.A.M.A. (1943) Oct. 23, p 513.

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HIGHLY POTENT WHOLE LIVER EXTRACT

HG %	RBC count
100	5
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50	2.5
40	2.0
30	1.5

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