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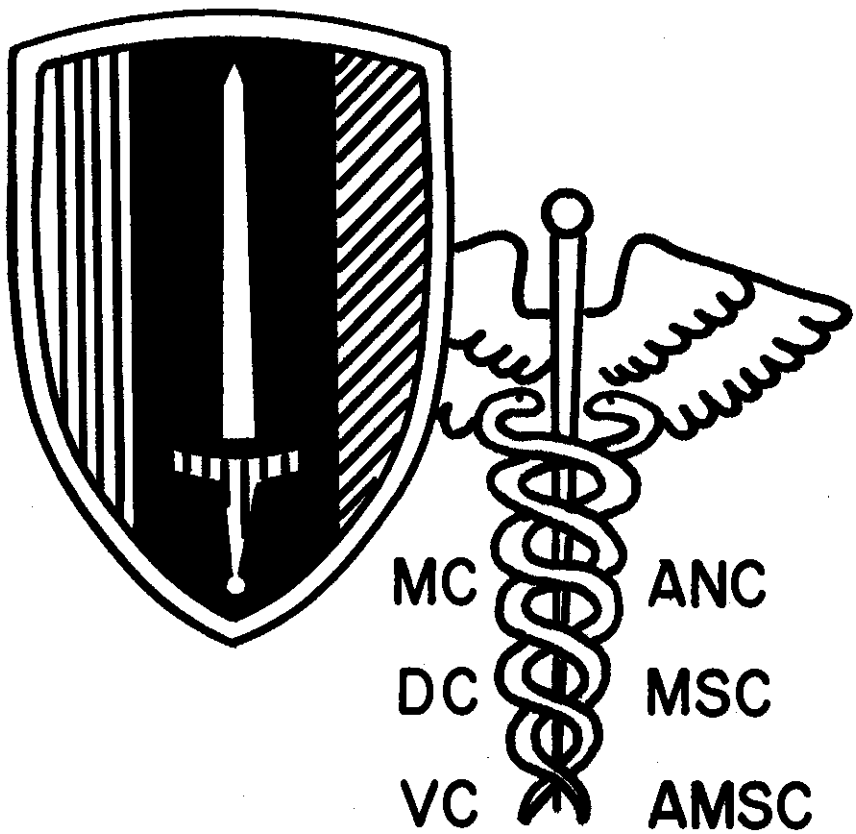

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3rd Field Hospital, Saigon, Vietnam (US Army Photo)

Brigadier General James A. Wier
Surgeon, United States Army Vietnam
(US Army Photo)

James A. Wier, Surgeon, USARV was promoted to brigadier general on 10 November 1966. He received his stars from Lieutenant General Jean E. Engler, deputy commanding general, USARV and Brigadier General Richard J. Seitz, assistant deputy commanding general, USARV during a special ceremony in General Engler's office.

A native of Indiana, he attended the University of Louisville where he received his Doctor Medicine degree in 1938. He interned at Grant

Hospital, Columbus, Ohio, and took his residency in internal medicine at Gorgas Hospital and Buffalo General Hospital, New York; and in pulmonary disease at Fitzsimmons General Hospital, Denver, Colorado. He is Board Certified in Internal Medicine and Pulmonary Disease. General Wier has written more than 50 professional papers in his specialty.

Prior to assumption of his duties as USARV Surgeon on 10 June 1966 Brigadier General Wier was the commander of the 44th Medical Brigade, the first medical brigade to be operational in a combat situation.

During 26 years of military service, Brigadier General Wier has been Surgeon of the 8th United States Army and United Nations Command, Korea, 1960-61; Medical Inspector and Assistant Deputy Surgeon, Panama Canal Department, 1940-44; Assistant Medical Consultant, The Surgeon General's Office, 1949-51; Chief, Officer and Womens Section, Department of Medicine, Walter Reed General Hospital, 1951-53; Chief Pulmonary Disease Service, Fitzsimons General Hospital, 1961-62; Executive Officer and Chief Professional Services, Fitzsimons General Hospital, 1962-64; and then Executive Officer and Chief Professional Services at Letterman General Hospital, 1964-66.

Brigadier General James A. Wier, left, Surgeon, United States Army Vietnam (USARV), is congratulated on his promotion to brigadier general by Lieutenant General Jean E. Engler, deputy commanding general, USARV. (US Army Photo)

OPEN SURGICAL DRAINAGE OF 5 AMEBIC LIVER ABSCESSES IN VIETNAM

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Formerly Chief, Medical Service, 3rd Field Hospital
and
Captain George R. Park, M.C.
Formerly Assigned 3rd Field Hospital

These 5 cases of amebic liver abscess are reported in hope of producing an increased awareness of this disease in persons visiting and returning from tropical areas; and to present 5 consecutive cases of amebic liver abscess treated by open surgical drainage.

Methods and Material

Five patients with signs, symptoms, and laboratory data consistent with amebic liver abscess were admitted to a military hospital in Vietnam between 29 December, 1965, and 4 February, 1966. No other patients with similar manifestations were admitted during this period. All 5 had liver abscesses that produced pus characteristic of being amebic in origin. The five cases were treated with combined use of amebicidal drugs, antibiotics and open surgical drainage.

Case Reports

Case 1: A 37 year old Caucasion enlisted man was admitted on 29 December, 1965, complaining of pain in his abdomen of 3 months duration. He arrived in Vietnam 19 September, 1965. An X-ray diagnosis of peptic ulcer was purportedly made in 1955. He had had no symptoms referable to his gastrointestinal tract for the past several years. For three months he noted a dull pain in his ipigastrium increased by eating, and an almost daily post prandial nausea with a resultant 20 pound weight loss. There was no previous history of emesis, diarrhea, or blood in the stools. On 27 December he had the onset of a bloody mucoid diarrhea accompanied by fever and sweats.

On examination, he was mildly acutely ill with a temperature of 102F and a pulse rate of 104. The abdomen was soft with the liver moderately tender and 3 cm. below the right costal margin in the MCL. Rectal examination was negative. From 29 December thru 13 January the white cell count varied between 15,600 and 30,150 except for an interval between 2 and 7 January when it was between 5400 to 8400. The WBC consisted of 81 to 97 per cent polymorphonuclear leukocytes during his hospital stay.

The hematocrit was 46% on admission and fell to 34% by 5 January. Subsequently a slow rise was noted. The SGOT was between 49 and 150 units on 4 determinations; the total serum bilirubin was normal, and the alkaline phosphatase was 12 Bodansky units.

Following admission the patient had increasing pain in the area of his liver and a persistent fever between 101 and 103F. He was started on Tetracycline on 30 December because of continuing bloody diarrhea with the possibility of bacillary dysentery. Proctoscopy revealed a very edematous reddened mucosa with a few small punctate ulcers. Numerous stool cultures and examinations for parasites were negative. Because of a lack of clinical improvement on exploratory laparotomy was performed on 3 January. The liver was somewhat enlarged and edematous but otherwise normal in appearance. A wedge biopsy of the liver was performed, the incision closed, and the patient started on alternating days of I.M. Chloroquine and Emetine for suspected hepatic amebiasis. Serial chest films showed the development of a right pleural effusion, therefore, a thoracentesis was carried out in the right posterior axillary line on 4 January. Straw colored pleural fluid was obtained initially. This was followed by brown and then creamy white pus when the needle inadvertently penetrated the cavity of an adjacent liver abscess, establishing this diagnosis. A total of 70 cc. of pus was removed and drainage tubes were inserted into the abscess cavity as well as the pleural space. Cultures and microscopic examination of the pus were negative. The patient's temperature gradually fell and he was afebrile after 8 January. He also had a gradual decrease of pain and an improved sense of well being. A total dose of 300 mgm of Emetine was given before being discontinued on 16 January. Chloroquine was continued through 25 January. Chest and abscess drainage tubes were removed 7 and 10 days post operatively. Improvement continued and he was evacuated from Vietnam on 27 January.

Case 2: A 36 year old Caucasion enlisted man was admitted 12 January, 1966, complaining of fever and diarrhea since 5 January. He had arrived in Vietnam 30 October, 1965. The diarrhea consisted of 4 to 5 bloody stools per day. Accompanying the diarrhea were myalgia, backache, and soreness in the right epigastrium. There was occasional emesis, and the diarrhea resolved on 9 January. He was referred to the hospital because of persistent fever and pain in the epigastrium. On examination, he was in no distress and had a temperature of 102.6F with a pulse rate of 100. The sclera were mildly icteric. The superior epigastrium was full to 6 cm. inferior to the xyphoid process and moderately tender. The liver edge was not felt beneath the right costal margin and the remainder of the examination was unremarkable.

The WBC was 15,000 on admission with 87% polymorphonuclear leukocytes. The count gradually rose to 29,000 on 24 January and then fell to normal by 2 February. The Hct. was 35 per cent on admission and fell to 31%

by 16 January before being elevated by 4 units of whole blood. On admission the SGOT was 190 units and total serum bilirubin 2.8 mgm per cent; chest and abdominal X-rays on admission were normal. Repeated stool cultures and microscopic examinations for ova and parasites were negative.

Tetracycline was started on 13 January because of continuing bloody diarrhea suggesting the possibility of shigellosis. Emetine was administered 14 through 20 January with a total dose of 360 mgm being given. Chloroquine was started on 21 January.

On 16 January 300 cc. of thick reddish-brown pus was removed from a liver abscess by open surgical drainage. This material was culturally sterile with no amebae found microscopically. Because of persisting fever between 99 and 102°F, continued upper quadrant tenderness, and increasing white blood cell count, the abdomen was again explored on 24 January. An intraperitoneal abscess that cultured out aerobacter arogenes was drained. Penicillin and Chloramphenicol were substituted for the Tetracycline. Subsequently the patient had steady improvement with decreasing fever and removal of the drainage tube prior to his evacuation 6 February.

Case 3: A 19 year old Australian was referred from another hospital on 19 January 1966 because of a right sided pleural effusion manifested by pleuritic pain with radiation to the right side of the neck on deep inspiration. He had arrived in Vietnam 6 November 1965. In mid December he developed nausea without emesis. On 28 December he had the onset of watery diarrhea without blood or mucus. On 12 January he developed fever and sweats in addition to his right chest pain. He had had a 25 pound weight loss in the preceding 2 months. On examination, he appeared moderately acutely ill with moderate muscle wasting. His temperature was 102°F and his pulse rate 100. The abdomen was slightly distended with marked tenderness over the liver which was enlarged 8 cm. below the RCM at the MCL. The examination was otherwise negative except for decreased breath sounds and dullness to percussion at the right lung base.

The WBC on admission was 25,700 with 83 per cent polymorphonuclear leukocytes. Subsequently there was a gradual decrease in the WBC to 17,000 by 2 February. The hematocrit decreased from 38% on 12 January to 28% on 27 January at which time 2 units of whole blood were given. The maximal value for total serum bilirubin was 2.8 mgm %, SGOT 92 units, and alkaline phosphatose 6.0 Bodansky units, microscopic and cultural examination of the stool were unremarkable. Chest X-rays on 13, 19, and 31 January showed a right pleural effusion.

Because of suspected amebic liver abscess he was treated from 19-29 January with emetine, total 600 mg., and Tetracycline. With this therapy there was a moderate decrease in the pain and tenderness over the liver. Due to persistence of the fever open surgical drainage of

an abscess of the liver was undertaken 24 January. This produced 300 cc. of pus from which hemolytic staphylococcus sureus was cultured. The appearance of the pus was not recorded. Subsequently the patient continued to improve, drainage tubes were removed, and he was afebrile after 30 January. Oral Chloroquine was started on 29 January prior to the patient's evacuation 5 February.

Case 4: A 36 year old Caucasian enlisted man was admitted 22 January, 66, following the onset of severe pain in the xyphoid area with associated vomiting 19 January. The man had known situs inversus and arrived in Vietnam 23 November, 1965. Prior to the onset of his illness he had been in excellent health without weight loss or diarrhea. Coinciding with the onset of his illness he developed bloody diarrhea, fever, and myalgia. He was treated empirically with Chloramphenicol from 19 - 21 January.

On examination, the patient was moderately acutely ill with a temperature of 103.6F and a pulse rate of 104. Remarkable findings during the examination, aside from complete situs inversus, included moderate general tenderness over the abdomen which was mildly distended. The liver was very tender to percussion, especially in the hypogastrium. The inferior margin of the liver was 4 cm. below the costal margin in the left MCL.

The WBC on admission was 18,800 with 83% polymorphonuclear leukocytes. The hematocrit, 37% on admission, stabilized between 30-32% after 25 January. Total serum bilirubin, SGOT, and alkaline phosphatase were normal on several determination. Proctoscopy on 23 January showed a red edematous mucosa with small bloody areas of erosion. Because of suspected hepatic amebiasis he was started on Emetine and Tetracycline on 23 January. Serial chest films noted the appearance of a small left pleural effusion by 24 January with the clinical accompanyment of left shoulder pain. There was a gradual decrease of liver tenderness, but the fever persisted to 103°F. Open surgical drainage of 2 hepatic abscesses was performed 28 January with the removal of 250 cc. of dark red pus. Microscopic and cultural examination of this pus and numerous stool specimens were unremarkable.

Following the operation the hepatic pain continued to decrease and the temperature fell to normal by 1 February. The Emetine was discontinued on 30 January after 540 mgm. had been given. Chloroquine was started on 31 January and Tetracycline discontinued 2 February. The patient continued to improve, drainage tubes were removed, and the patient was evacuated from Vietnam 10 February.

Case 5: A 23 year old Caucasian enlisted man was admitted 4 February, 1966, complaining of diarrhea, fever and pain over the liver since 17 January. He arrived in Vietnam 22 September, 1964. The diarrhea consisted of 7 - 9 loose stools per day without blood. The fever rose to 101°F almost daily. He had no emesis and had lost 15 pounds since the onset of his illness.

On examination, the patient was in mild distress from pain in the area of his liver and had a temperature of 99.4F and a pulse rate of 80. The liver was moderately tender over the left lobe and enlarged 5 cm. below the right costal margin in the MCL. The liver edge was 8 cm. below the inferior sternal margin in the MSL.

The WBC varied between 11,300 and 18,900 with 70 to 92% polynorphonuclear leukocytes throughout his hospital stay. The hematocrit was 30% on admission. The alkaline phosphatase was 14 Bodansky units on admission. Serial chest films were normal.

Because of a suspected amebic abscess of the liver the patient was started on Emetine and Tetracycline on 5 February. On 7 February open surgical drainage of a large hepatic abscess was performed and 500 cc. of chocolate colored pus obtained. Because of flattening of the T waves on the serial electrocardiograms the Emetine was discontinued on 10 February after a total dose of 300 mgm. and Chloroquine begun. The temperature gradually decreased and was normal after 12 February. Tetracycline was continued through 17 February. The patient improved steadily, the drainage tube was removed, and he was evacuated on 19 February. Subsequently the patient continued to do well and returned to active duty in mid-April.

Clinical Features

Most authorities agree that probably 10 per cent of the human race harbors Entamoeba Histolytica. This figure is true of tropical as well as temperate areas. The parasite, however, usually lives commensally in the bowel without tissue invasion. Why E. Histolytica sometimes invades the bowel wall and other tissues is poorly understood. The extra-intestinal organ most frequently infected by amoebae reach the liver in portal blood. Wilmot mentions factors such as the nature of bacterial associates in the gut, a hot moist climate, diet, and the number of organisms as possibly affecting this invasiveness. Probably all of these factors play a part in producing the known fact that amebic liver abscesses are much more common in tropical than temperate areas despite a similar percentage of persons with amebae. It is further postulated that parasites reaching the liver usually die, otherwise one would expect the frequent occurence of multiple hepatic abscesses, which is not the case. The amebae that survive in the liver multiply and cause hepatic necrosis producing an abscess. The abscess extends concentrically with the great majority of amebae being found peripherally and the central area consisting of necrotic debris. The usual size of the abscess is that of a large orange.

In the past it has been widely hypothesized that at times large numbers of amebae reach the liver and produce a diffuse hepatitis without abscesses formation. In recent years there has been increasing evidence reflecting the pathologic justification for this proposed entity termed "amebic hepatitis". Lamont and Pooler conclude that "amebic hepatitis" probably represents one or more deep-seated abscesses of small dimensions and that the frequently seen large tender liver of amebic liver disease

is produced by congestive vascular factors and the expansive effect of one or more abscesses.

There is general agreement that the proportion of amebic liver abscesses in males to females is about seven to one. The maximum incidence is between the ages of 20 to 40 with occurences in youth and old age being uncommon. Various reports indicate no good evidence for a racial or alcoholic effect. The minimum period following ingestion of amebic cysts and the development of a liver abscess is not commonly mentioned, but is suggested to be no more than 2 months from the experience with Cases 2, 3, and 4 in this study. At the other extreme, Sherlock reports that hepatic amebiasis may occur as long as 30 years after the primary bowel infection.

A diagnosis of amebic liver abscess can be made only by the identification and study of characteristic pus. The pus from an amebic abscess has been classically described as "anchovy sauce, an appearance so characteristic that it may be considered pathognomonic". Considerable variation, however, may be present in both consistency and color. The consistency may be very thin or thick; the color creamy white, yellow, greenish, or chocolate. Actually the semiliquid material is not pus but rather consists of shreds of necrotic liver tissue, blood, and cytolized tissue. The actual identification of the parasites depends upon whether amebacidal drugs have been used prior to obtaining the pus and the diligence of the search. Maddison found endomeba histolytica in 63 of 75 cases of amebic liver abscess. Characteristically amebic pus is bacteriologically sterile. Secondary infection is only rarely present prior to aspiration or operation, but may be a factor in producing the wide spectum of colors seen in the pus.

The onset of hepatic amebiasis may be acute or chronic. The duration of symptoms may vary greatly and is of little clinical significance. The most common signs and symptoms are pain, fever, an enlarged tender liver and signs at the base of the right lung. Pain is usually the most impressive symptom and is seen in more than 90 per cent of cases. It is most commonly seen in the right hypochondrium and over the right lower chest anteriorly. The site of pain may vary, however, depending upon the location of the abscess within the liver and which, if any, adjacent structures are involved. The pain is continuous and may be severe. Fever is present in from 75 to 90 per cent of cases. Usually it is sustained between 100F and 103F; occasionally it may be low grade. The most important physical sign is an enlarged tender liver that is present about three-fourths of the time. The liver is diffusely tender, but usually there is a localized area of increased tenderness. This localized area is frequently found intercostally. The inferior margin of the liver may extend below the iliac crest. Various physical changes are found in about 50 per cent of cases at the base of the right lung which are quite apart from extension of the amebic process through the diaphragm. These changes are chiefly due to elevation of the right diaphragm and lack of respiratory excursion in this area. These consist of dimished movement, impaired percussion note, rales, and less commonly a pleural rub.

Other less common signs and symptoms are nonproductive cough (46%), coexistent diarrhea (41%), and nausea and vomiting (15%). Weight loss and weakness are common when the disease is of gradual onset. Chills are uncommon while sweating frequently occurs. Ascites with peripheral edema is rare. When clinical jaundice is seen, which is seldom, it is usually obstructive.

The leukocyte count is commonly between 15,000 and 25,000 cells per cu. mm. with a frequent shift to the left in the differential. In about 25 per cent of patients, however, the WBC is less than 10,000. Anemia appears in about one-half of presenting cases and increases in frequency of occurence and in degree of severity with the duration of symptoms and the size of the abscess. Mayet describes this anemia to be due to chronic infection by the demonstration of reduced levels of serum iron, decreased percentage of iron saturation, and normal or increased amounts of iron in the marrow stores. The anemia is initially normochromic normocytic and progresses to hypochromic (although not true iron deficiency) with increased duration of the illness.

The value of liver function tests is of little help in the differential diagnosis of a hepatic abscess. The serum floculation test and transaminase (SGOT and SGPT) levels are occasionally slightly abnormal and bear no relation to the size of the abscess. The alkaline phosphatase and BSP are slightly increased about 75 per cent of the time. The serum bilirubin is usually normal unless there is obstruction to the common bile duct or multiple abscesses present.

Radiographically, by using postero-anterior and lateral chest films plus screening for diaphragmatic movement, changes can be found in about 75 per cent of cases of amebic liver abscess. These consist of elevation, deformity, or decreased movement of the diaphragm and linear atelectasis or patchy infiltrate at the lung base, usually on the right side. Viranuvatti reports 15 normal intravenous cholangiograms performed in 15 non icteric patients with hepatic amebiasis. Hepatic scanning with radioactive I Rose Bengal and Au has proved very useful in detecting concealed and multiple amebic abscesses of the liver. Repeated scanning indicates complete healing of the initial filling defect in the liver within 2 to 6 months in most cases.

Discussion

Successful treatment of hepatic amebic abscess depends upon the appropriate use of amebicidal drugs, aspiration, and open surgical drainage. Antibiotics are not effective in treatment of amebic abscesses and most are not directly amebacidal. The Tetracyclines and erythromycin have emerged as the most beneficial in intestinal amebiasis. Various antibiotics are, of course, useful in treating

secondary infections that may occur with the amebic abscess. Most of these secondary infections occur following operative treatment of the abscess.

Amebicidal drugs must be employed in all cases of amebiasis whenever the signs and symptoms point toward amebic involvement of the liver. Wilmot regards emetine and chloroquine as the only two recognized efficient hepatic amebicides now employed. His suggested routine course of drug therapy for amebic liver abscess is:

> Emetine hydrochloride 65 mgm. intramuscularly daily for ten days. Chloroquine (diphosphate or sulfate) 600 mgm. of the base immediately, then 300 mgm. six hours later, then 150 mgm. twice daily for twenty-seven days. The chloroquine can be started at the same time as the emetine or immediately after it.

An initial sustained temperature fall occurs within 2 - 5 days after starting treatment with emetine. The temperature usually reaches normal in 6 - 10 days. When significant heart disease is present emetine should not be used because it may precipitate impending cardiac failure. Other instances when it is probably not wise to use emetine are in pregnancy and recent polyneuritis. Electrocardiographic changes are common with both chloroquine and emetine. Aside from extremely rare conduction defects or ectopic rhythms most of these changes consist of low to negative T waves in the precordial leads. Sanghvi considered most of these T waves changes as functional in nature by reversing them with the administration of potassium.

The surgical treatments of hepatic amebic abscess are aspiration and open surgical drainage. Most authorities agree whenever either procedure is considered that appropriate amebicidal drugs should be given for several days before it is performed. Ideally, the procedure should be done in an operating room. Aspiration is indicated: 1) When there is persistence of clinical manifestations following a full course of amebicidal drugs, or 2) When there is clinical or roentgenographic evidence of a hepatic abscess. Paul feels that reaspiration should be done only with recurrence of signs and symptoms of toxemia.

Open surgical exploration and drainage is indicated: 1) If the clinical diagnosis of liver abscess is likely, response to amebicides is not complete, and aspiration has not yielded pus; 2) When the patient remains toxic after adequate drug therapy and repeated aspiration: 3) If aspiration of an abscess in the left lobe of the liver has not been adequate; and 4) Whenever secondary infection occurs.

In the past, open surgical drainage of amebic hapatic abscesses was regarded as carrying with it a significantly increased mortality when compared with those that were treated by more conservative measures. Jordon feels that these mortality figures are deceiving

because those patients who had laparotomies were those with complications and were a sicker group. With the advent of antibiotics and the more appropriate use of amebacidal drugs it is now believed that open surgical drainage is no longer associated with a higher mortality than conservative treatment. Large studies of an unselected nature comparing the results of treatment by conservative measures with those of open surgical drainage are not found in the English literature. This, however, is to be expected with the good results and low mortality found with early appropriate use of drug therapy and aspiration in cases of amebic abscess. Application of these measures leads to only an occasional need for open surgical drainage. Cirrhosis has not been found to be a result of amebic abscess of the liver; and complete recovery is the rule with proper treatment.

Summary

Five consecutive cases of amebic abscess of the liver treated successfully by open surgical drainage are reviewed.

The clinical features of the condition are discussed and methods of treatment utilizing amebacidal drugs, aspiration, and open surgical drainage described.

MELIOIDOSIS

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Preventive Medicine Officer
25th Infantry Division

1. Clinical cases. The following brief summaries describe the six cases of melioidosis confirmed thus far among personnel of the 25th Infantry Division (-).

Case 1. J.F. was a 35 year old E-6 personnel management specialist with a two week history of anorexia, malaise, diarrhea and myalgias of the lower extremities. On admission, the patient would not admit to any complaints although he appeared toxic, weak and debilitated. He had a temperature of 102°F, a heart rate of 180/min and tenderness and weakness of the leg muscles. The lungs were clear to auscultation and percussion. The liver was palpable and tender. The admission chest X-ray revealed multiple fluffy infiltrates. The lumbar puncture had an opening pressure of 130 mm and the clear spinal fluid had a sugar of 59.6 mg %. The patient's condition deteriorated rapidly and he expired approximately 30 hours after admission although he had been started on polycillin, tetracycline and streptomycin.

Case 2. C.C. was a 23 year old E-4 infantry company wireman admitted with a swollen, tender, ecchymotic fifth toe of his left foot after having stepped in a hole two days previously. There was associated lymphangitic streaking to the left groin region and left inguinal adenopathy. The patient also had a small area of cellulitis and lymphangitis of his right anterior chest wall secondary to a puncture wound. The patient was started on intravenous antibiotics including staphcillin, penicillin and chloramphenicol. The patient continued to have temperature spikes to 102-103°F until the seventh hospital day at which time the patient appeared improved. However, he complained of pain in the left parotid area. On the eleventh hospital day, the patient had an exacerbation and developed a temperature spike to 104°F. He continued to complain of pain and swelling of the left parotid area and developed a ptosis of the right eyelid. At this time, antibiotics included tetracycline and staphcillin, His condition continued to deteriorate and he developed oral moniliasis and a pyarthrosis of the right knee on the fourteenth hospital day. The patient was transfused with two units of whole blood when he was found to have a hematocrit of 33. Colistin and streptomycin were added to the antibiotics but the patient continued downhill and expired on the sixteenth hospital day. His lungs were clinically and roentgenographically clear until the terminal event.

Case 3. B.S. was a 21 year old E-3 artillery battery cannoneer with a two day history of chills and fever, nausea and vomiting, malaise, and myalgias. Three days prior to admission a necrotic lesion appeared on his left inner thigh which developed lymphangitis and inguinal adenopathy one day prior to admission. On admission, the patient had bilateral rhonchi and axillary adenopathy. The chest X-ray revealed bilateral diffuse bronchopneumonia with minimal consolidation on the right. The patient was started on intravenous fluids, penicillin and tetracycline. The patient failed to respond. On the third hospital day he was lethargic and confused. He developed bilateral papilledema and a stiff neck. Two pustular lesions appeared on his left forearm. The spinal fluid was cloudy and had an opening pressure of 300 mm. Keflin and chloramphenicol were added to the treatment regimen. A tracheostomy did not alter the course of the disease. The patient's condition continued to deteriorate and he expired on the twelfth hospital day.

Case 4. W.R. is a 36 year old O-3 chemical officer who presented with a two week history of malaise. One day prior to admission the patient developed a persistent non-productive cough and chills and fever. A chest X-ray revealed a cavitary lesion of the right apical lung field. Sputum studies were negative for acid fast bacilli. The patient was ambulatory throughout his illness but was evacuated to CONUS with a diagnosis of pneumonia with superimposed fungus infection. Subsequent sputum studies confirmed the diagnosis of melioidosis. He was treated successfully with tetracycline, 3 grams daily, for one month and is awaiting discharge to duty.

Case 5. L.C. is a 20 year old assistant machinegunner who presented at his medical facility with a two day history of malaise, anorexia, and minimal nausea. He was admitted with a temperature of 102°F. Chest X-rays were compatible with pulmonary tuberculosis but sputum studies confirmed the diagnosis of melioidosis. He was treated with large doses of chloramphenicol, kanamycin, and novobiocin and was responding to therapy when he was evacuated to CONUS.

Case 6. J.W. is a 34 year old field artillery senior sergeant who when ordered to seek medical attention gave a history of malaise for about one month prior to admission. He admitted to a non-productive cough of two weeks duration and a recent low grade fever. On admission his temperature was 102°F. An initial chest X-ray revealed an infiltrate in the right upper lobe. He was started on penicillin therapy and appeared to respond clinically. However, repeat chest films did not confirm this impression. Coccidioidin and PPD skin tests were negative but histoplasmin was positive. Sputum studies confirmed the diagnosis of melioidosis. Combined treatment with chloramphenicol, kanamycin and novobiocin was initiated and the patient was responding when he was evacuated to CONUS.

2. Definition.

Melioidosis is an infectious disease caused by a gram negative motile bacillus, pseudomonas pseudomallei, found in damp soil in Vietnam and other areas. Its most common manifestation is as an acute pneumonia but the clinical picture is variable with a spectrum ranging from asymptomatic infection manifested only by positive serology, to asymptomatic pulmonary infiltration, to acute toxic pneumonitis, to overwhelming fatal septicemia. Localized extrapulmonary forms occur in subcutaneous tissue, bones, joints, kidneys, and other organs.

3. Etiology.

Pseudomonas pseudomallei (also known as Whitmore's bacillus, Malleomyces pseudomallei or pfeifferella whitmori) is a bipolar staining, gram negative, motile, aerobic bacillus. It grows well in 2 to 3 days in ordinary culture media such as trypticase soy agar or blood agar. When there is a mixed infection, antibiotics such as penicillin and streptomycin or penicillin, neomycin and polymixin added to the culture media may be helpful in the primary isolation.

Colonies are circular, raised, opaque and creamy to yellow brown in color. They tend to become wrinkled especially after the culture is aged for several days. An earthy (ammoniacal) odor is given off. There is moderate liquefaction of gelatin. In litmus milk there is a slow acid reaction and peptonisation is variable. Glucose, maltose, lactose, sucrose, and mannitol are fermented with acid but no gas formation.

Serological identification can be made by agglutination with antiserum or flurescent antibody techniques.

Intraperitoneal injection of infective material into male guinea pigs produces a fatal infection associated with marked testicular swelling (Strauss reaction).

4. Epidemiology.

a. Mode of spread.

The organism has been isolated from soil, market fruits and vegetables, well water and a variety of surface waters which included rivers, streams, ponds, mining pools, drainage ditches and rice fields in the endemic areas of the Malay peninsula. Positive serological results in surveys of humans as well as domestic and wild animals suggest that the disease is wide-spread. Attempts to identify a human and/or animal reservoir by culturing urine and feces of humans, rats, shrews, goats, cattle, and chickens were uniformly unsuccessful indicating that the organism leads a saprophytic existence in nature.

Man to man transmission has not been observed. The disease occurred as epizootics in animals but has only been sporadic in man. French authors have favored the theory that infection occurs through contamination of breaks in skin with infectious soil. If the disease is really widespread but only occasionally causes clinical symptoms, then inhalation or ingestion of contaminated water or food becomes tenable as a mode of spread. Experimental infection of the Aedes egypti mosquito has been accomplished so an arthropod vector is possible.

b. Geographical distribution.

The main area of endemicity of melioidosis is in Southeast Asia. The focal point is the Malay peninsula (Vietnam, Cambodia, Laos, Burma, Thailand) with extensions to the east to the Philippines and Guam and to the south and west to Indonesia and Ceylon. An epizootic involving sheep, goats and pigs broke out in northern Australia in 1949 and the disease has since been endemic in North Queensland. It is also endemic in the Western Hemisphere in the Caribbean islands and Panama.

Isolated reports of its occurrence have appeared from the United States, Turkey, Ecuador and Madagascar.

Because the disease may remain dormant for months or years, it has been diagnosed in individuals who become symptomatic after returning from Southeast Asia to their homes in various parts of the world.

c. Age, sex, racial distribution.

The disease has been observed in a 1½ year old child but usually occurs in the military age group. In contrast to animals, the overwhelming majority of human cases have occurred in males. Although the disease has afflicted civilian patients with lowered resistance such as diabetes, renal disease or pregnancy, most of the military cases have occurred in patients without underlying illness. The disease has been observed in Orientals, Malays, Negroes, Caucasians and American Indians.

5. Clinical features.

a. Forms.

(1) Inapparent infection. Seven percent of a population sample in the endemic area were found to have positive complement fixation tests with no evidence of clinical disease (a much higher percent have positive agglutinins, a less specific test). Since it is probable that the CF test becomes negative after the acute illness subsides, it is likely that the disease commonly

affects humans in the endemic area but is unrecognized or causes no symptoms.

(2) Localized forms. The disease may present as a localized suppurative infection in a joint, bone, subcutaneous tissue or internal organ. In this form it is often responsive to treatment as an ordinary suppurative abscess with surgical drainage and/or antibiotics.

(3) Generalized forms. The disease most often presents as a pneumonitis which may vary from an asymptomatic illness diagnosable only with a fortuitous chest roentgenogram through mild to severely toxic pneumonitis. Invasion of the blood stream and implantation of metastatic abscesses may result in a fatal outcome even if the disease is diagnosed and appropriate therapy begun.

b. Incubation period.

In experimental animal infections, the incubation period is ten days. The infection has been seen to remain inapparent in man until as long as five years after leaving the endemic area.

c. Pneumonitis.

In a military population the disease most commonly is recognized as a severe pneumonitis. A history of weight loss preceding the illness is common, but this occurs often among soldiers in a tropical environment who do not become ill. Without premonitory symptoms or preceding upper respiratory infection, the afflicted individual becomes ill. Fever of 102°F or higher, marked fatigue, shaking chills productive cough and chest pain come on suddenly. Mild hemoptysis is not uncommon. Physical examination confirms the presence of pneumonitis, usually involving one of the upper lobes. The liver spleen and lymph nodes are not enlarged at this stage. The white blood count is usually elevated to between 12,000-20,000 with a shift to the left. Sedimentation rate is elevated. If the disease is not treated with appropriate antibiotics, a normochromic normocytic anemia may occur in the second week. Chest roentgenogram reveals consolidation of one of the upper lobes. If treatment is delayed for a few days, cavitation of the infiltrate is characteristic.

Without specific therapy or with inadequate therapy the patient may become afebrile within a few days but the X-ray changes persist. The radiographic features of upper lobe disease associated with cavitation can so strongly suggest tuberculosis that the patient may be evacuated with that diagnosis.

In other cases there is progressive pulmonary spread, blood stream invasion, secondary abscesses in spleen, liver, kidneys and other organs and a progressive downhill course.

Rarely the disease will cause a slowly progressive pulmonary infection lasting for months to years simulating tuberculosis.

d. Diagnosis.

(1) General. Melioidosis should be considered in the differential diagnosis of any febrile illness of an individual who is or has been in an endemic area. The presence of upper lobe infiltration in a lobar or segmental distribution associated with a cavity following a febrile illness is especially significant.

(2) Laboratory findings. The white blood count is usually 12,000-20,000 with a shift to the left. Erythrocyte sedimentation is elevated. Anemia, normochromic normocytic, occurs after the second week. Urinalysis is usually normal. SGOT and BUN are also normal. The diagnosis can only be established with certainty by isolation of the organism. It can be grown from the sputum in the simple pneumonic form. In other cases, blood, pus, urine, stool, surgically removed tissue and cerebrospinal fluid have yielded positive cultures. Since many bacteriologists are unfamiliar with this organism it is confused with other gram negative bacilli and may be reported as Klebsiella, Aerobacter, E. coli or Pseudomonas aeroginosa. When the diagnosis is suspected, it is imperative that the culture be kept several days so that the characteristic wrinkling of the colonies may be observed. The complement fixation test is said to be specific with titers above 1:10 during the acute illness. A negative CF test does not exclude the disease, however, as cases have been observed with clinical symptoms, positive cultures and negative CF tests. Tube agglutination and hemagglutination tests are available. These tests may cross react with typhoid or pseudomonas. Titers above 1:160 are common during the acute illness. However, they may signify a previous rather than a present encounter with this disease. A skin test has been found positive in animals and humans, but no purified specific skin testing material is available for general use.

6. Therapy.

The organism is usually insensitive to all antibiotics except chloramphenicol, tetracycline, declomycin, sulfadiazine, kanamycin and novobiocin. Tetracycline or chloramphenicol are the drugs of choice. They should be used in doses of 3 or more grams per day. In the usual case, the response is dramatic, toxicity lessening and the patient becoming afebrile in 24-72 hours. It is essential that therapy be prolonged for at least one month or until the chest roentgenogram is normal, whichever comes later. When therapy is discontinued too early, relapse is common. Although patients will generally respond to a second course of antibiotics, there is a tendence to the development of resistance and every effort should be made to eradicate the infection with the initial treatment.

7. Prognosis.

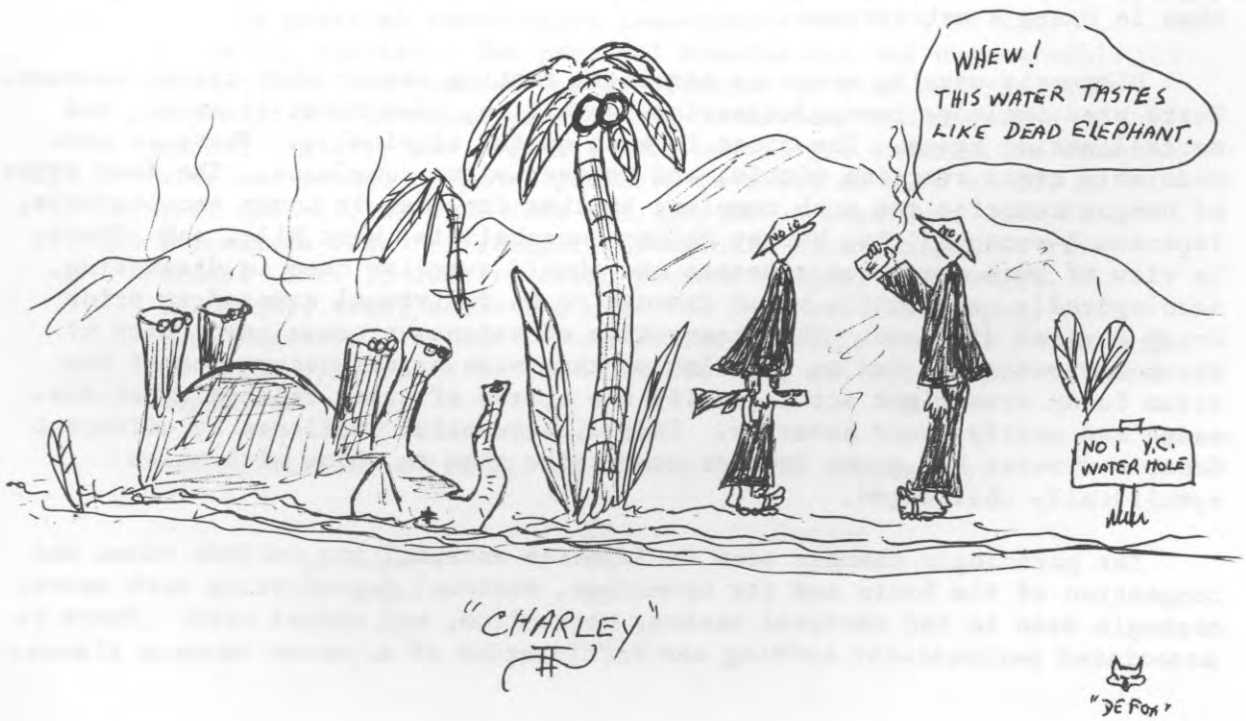
Before antibiotics, mortality with this disease was said to be 95%. French experience in Vietnam indicates that with chloramphenicol therapy the mortality is 20%. It is likely that only the more severe cases had been correctly diagnosed and that with better early diagnosis and appropriate prolonged treatment, the mortality will be shown to be very low. Very few patients have had long term follow-up so that the incidence of late relapse cannot be appraised.

8. Prevention.

No effective immunization is available. Since the mode of transmission is unknown, rational prevention is speculative. Because the organism is so widespread avoidance of local fruit, vegetables and untreated water and care to prevent contamination of scratches and cuts with soil would be prudent.

Credits:

1. Registrar, 93d Evac Hosp, who made the in-patients records available.
2. LTC Murray Spotnitz, MC, Chief, Pulmonary Disease Service, Valley Forge General Hospital, who provided the review of this disease.



JAPANESE B-ENCEPHALITIS - A SYNOPSIS AND REPORT OF 2 CASES IN VIETNAM

Captain J. Reichenberger, MC
3d Field Hospital, Vietnam

PRIOR STUDY

The history of Japanese B-encephalitis dates back to 1871. A severe epidemic occurred in 1924, during which time the Japanese were able to demonstrate the virus to be different from Von Economo's encephalitis, caused by Group A arbovirus. At that time Japanese investigators were able to infect rabbits with filtrates of persons dying from the disease. Since that time epidemics have occurred in Japan with variable severity. Incidence has ranged from a few scattered cases to 8,000 in one year. It also occurs in eastern Siberia, China, Korea, Taiwan, Malaya, Singapore, India and Vietnam.

The virus of Japanese B-encephalitis belongs to the Group B Arboviruses along with 32 other known viruses. Most all of the Group B arboviruses have the Culex mosquito as their vector, except for a few, which have ticks as vectors. Within Group B arboviruses there a several immunologically closely related virus complexes which have common biologic properties. Here-in lies a problem, in that there is much more antibody cross reaction in Group B than in Group A arboviruses.

Diagnosis usually rests on serologic testing rather than tissue culture. Tests used include; hemagglutination-inhibition, compliment-fixation, and neutralization tests. The first is most useful clinically. There is considerable cross reaction within, and between virus complexes. The four types of Dengue comprise one such complex; another includes St Louis encephalitis, Japanese B-encephalitis, Murray Valley encephalitis, West Nile, and Ilheus. In view of such cross reactiveness one should exercise care in diagnosing, serologically, a specific viral disease in an individual exposed to prior Group B viral diseases. The observation of extensive cross reactivity of Group B viruses has led to speculation that wide spread occurrence of one virus in an area might act to modify the spread of other related viral diseases and modify their severity. Indeed, sequential challenge by different Group B viruses has given broader protection than to those with which specifically challenged.

The pathologic changes seen in Japanese encephalitis include edema and congestion of the brain and its coverings, neuronal degeneration with neuronophagia seen in the cerebral cortex, cerebellum, and spinal cord. There is associated perivascular cuffing and infiltration of adjacent nervous tissue.

The destruction of Purkinje cells in the cerebellum is striking. Severe involvement of the cord, similar to poliomyelitis, also occurs.

CLINICAL FEATURES

There is a wide range of variable clinical presentations of Japanese encephalitis. This includes a spectrum from subclinical infections to decerebrate rigidity. Most of the infections are inapparent, or mild and missed. This has been demonstrated repeatedly in serum assays of endemic areas. Southam (1956), estimated, that in Japanese children, 10% become infected each year; and that 500 to 1,000 inapparent infections occurred for each case of clinically apparent disease. According to Halstead, Brosz (1962) the ratio of subclinical infections to overt encephalitis was 25:1 in the American military population in Korea in the 1958 epidemic there.

The two following case extremes were seen at 3d Field Hospital between June and July 1966 and exemplify the variability one may expect with Japanese encephalitis. (Two other cases were also seen in the same time period.)

Case 1, PR (7465)

A 24 year old Caucasian male stationed at Di An, Vietnam was admitted after a three day history of headache, inappropriate behavior, and somnolence. The patient had become slovenly in his dress, whereas he had before been a neat individual; he was also noted to urinate in his clothes at will.

On physical examination temperature was 102, BP 112/72, Pulse 90, regular. The physical examination was unremarkable except that the patient was disoriented in time and place, he repeatedly fell asleep during the interview, and moderate nuchal rigidity was present. The neurologic examination otherwise was normal. Spinal puncture revealed an O.P. of 260 mm CSF. CBC: 17,900 WBC, N66, L28, M4, E2 UA-negative. PPD Intermediate Skin test, negative, Malaria smears negative five times. CSF: 15 June revealed protein 56mgm%, CHO 74mgm%, CL 122 Meq/l, total cells 180 with 40% PMN, and 60% lymphs, culture negative. Repeat CSF on 22 June protein 63mgm%, CHO 68mgm%, CL 122 Meq/l, cells 80 WBC with 20% PMN, and 80% lymph, culture negative.

Hemagglutination-inhibition titers (SEATO laboratory)

	JE	Dengue
16 June	20	0
20 June	80	0
25 June	160	0

The patients course was febrile with temperatures sustained in the 102-103 range until the 4th day, after which he became afebrile and had gradual but rapid clearing of his confusion. He remained somnolent through the 12th hospital day, and was discharged to duty after 21 days hospitalization.

Case 2, JC

A 21 year old Puerto Rican male was admitted with a three day history of fever. The patient first noted left arm weakness, progressive, and left leg weakness to where he could not walk. When first seen at this hospital his vital signs were: BP 130/74, Pulse 104, Temperature 105. He had complete left hemiparesis, nuchal rigidity, and was unable to talk. He was initially seen by neurosurgery and thought to possibly be a neurosurgical case. Accordingly carotid angiograms were done. These were normal, and he was thereafter managed on the medical service. He rapidly, in the first 36 hours hospitalization, progressed to decerebrate rigidity and became comatose. It was felt, in view of his rapid deterioration, that steriods might be of some benefit, and he was given, in divided doses, 8 mgm dexamethasone, and 300 mgm hydrocortisone acetate. His condition improved gradually over the next 36 hours, and he became afebrile. By day six he was able to walk with assistance, though the left arm was still paretic and mental function was certainly impaired. The patient then did fairly well until day twelve at which time he became lethargic, more dull mentally, and again ran sustained temperature in the 100-101 range. He was then air evacuated to CONUS. Spinal puncture O.P. was 240 mm, N78, L20, M2, CBC Hct 44%, WBC 14,300, CSF protein 64mgm%, sugar 74mgm%, cells 150/cu mm, with 80% lymphs, 20% PMN, culture negative.

HI titers (SEATO laboratory)

	JE	Dengue
28 June	80	20
1 July	2,560	640

Overt encephalitis may develop following a mild systemic illness. More commonly the onset is abrupt with high fever and vomiting. Characteristically, there is a rapid rise in temperature to 104-105°, and a very stormy course with cerebral and meningeal signs, and ocular phenomena. A helpful quadral in diagnosing the disease is nuchal rigidity, headache, fever, and sensorial changes. Also not infrequently encountered are lethargic affect, slow or garbled speech, confusion, disorientation, delirium, and somnolence progressing to coma.

Generalized and facial motor weakness is common. Paralyses of the upper motor neuron type and extrapyramidal tract disease are frequent. The

fever usually is sustained and reaches its peak in two to four days, then gradually subsides. Fatal cases usually progress to coma rapidly and die within ten days. Return to the afebrile state is accompanied often by marked clinical improvement. Convalescence is prolonged with persistent weakness, lethargy, incoordination, and tremors and nervousness. The most commonly seen sequelae are mental impairment, emotional instability of severe degree, and personality changes. Next most common sequelae are motor impairment of the upper or lower motor neurone type, resulting in some degree of paralysis. Less common sequelae are aphasia, cerebellar syndromes, organic psychoses, and decerebrate rigidity. Japanese encephalitis closely resembles St Louis encephalitis in many respects, but in general the former is a more serious disease with a more protracted course, slower convalescence, a higher incidence of sequelae, and a higher mortality.

In the disease the blood count usually shows a moderate leukocytosis which appears early with a moderate neutrophilia and left shift. Occasionally, WBC counts above 30,000 are seen. The blood count usually is normal by the end of seven days. The CSF is clear with pleocytosis consisting of mononuclear cells, ranging up to 400 cells/cu mm in most cases. Higher counts are also seen. The protein is moderately elevated, chlorides and sugar usually normal.

Diagnosis is suspected on clinical grounds heretofore described, and confirmed by serologic testing. Both hemagglutination-inhibition, (HI) and compliment-fixation (CF) tests are used. The HI test is the most valuable if the acute serum is obtained in the first week of illness and provides rapid diagnosis. The CF is more useful in later phases of the disease, since the compliment-fixing antibodies rise later than those involved in hemagglutination-inhibition. Concurrent testing for Dengue virus should also be done in view of some cross reactivity between the two virus antibody complexes.

Treatment is supportive, and no specific therapy is available. Control of hyperpyrexia is most important by whatever means is available. Some authors have stated that antipyretics are ineffectual. Hiraki (1958) has claimed a worthwhile therapeutic effect with ACTH for severely ill patients. If convulsions occur usual anticonvulsive drugs are given.

Control of Japanese encephalitis by mosquito vector control is impractical economically, in view of the insects habits and extensive breeding areas. Since 1954, a vaccine, utilizing a formalin killed virus from mouse brain, has resulted in a significant apparent decrease in incidence of the disease in Japan. However, no controlled studies have been done. Certainly any method of preventing mosquito from infecting man with the virus are in order. These include bed nets, head nets, insect repellents, and insecticide spraying of enclosed areas with adequate screening.

Reference: Horsfall, Tamn; Viral and Rickettsial Infections of Man, J.B. Lippencott Co.k Philadelphia, 1965.

REHABILITATION NURSING IN A COMBAT ZONE

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Presently Assigned to Nurse Recruiting, 1st Army

The conflict in Vietnam again focuses attention on the rehabilitation aspects of nursing care for combat sustained injuries, and the peculiarities present in combat zone nursing. The nurse's role as a physical therapist has diminished in the past few years as the number of trained physical therapists has increased. Within all the hospitals in Vietnam, however, there is only one physical therapist. With the absence of this important member of the medical team, the burden falls upon the doctors, nurses and non-professional personnel who must fill the need for physical therapy. The importance of rehabilitation cannot be over emphasized.

The 8th Field Hospital is located in the sea coast town of Nha Trang, South Vietnam, in support of United States military and civilian personnel and free nation forces. Facilities at this installation include three permanent air conditioned buildings and numerous twelve (12) bed screened wards comprising the majority of the hospital's 400 bed capacity. The dining hall, laboratory, latrines, theater, and X-ray facilities are located in widely separated areas of the hospital compound, thus the necessity of getting patients mobile enough to care for themselves is of prime importance, especially when nursing service personnel are busy with large influxes of new battle casualties. Nha Trang itself is surrounded by hostile country and can be subject to mortar and terrorist attack at any time, as are most areas of South Vietnam. This was demonstrated very vividly one June night in 1965 when the hospital and adjacent airfield came under mortar attack. The ability to lift a heavy cast and to move oneself under a bed or to a bunker may be essential to living during such attacks which usually occur without warning. Therefore, mobility is a life saving necessity in the combat zone.

Since there is no physical therapy department or physical therapy equipment authorized to a field hospital, any therapy practiced depends on the ingenuity and diligence of the individual, doctor, nurse or corpsman. In one eleven month period, 1500 orthopedic and surgical admissions, which required physical therapy were treated at the 8th Field Hospital. The majority of these injuries were combat sustained, generally caused by low and high velocity missiles or punji sticks.

The high velocity missile is of great importance in rehabilitation requirements due to extensive damage done to muscles, surrounding nerves and vessels. These type wounds require a great

deal of debridement with nerve loss and impaired circulation. The punji stick is, on the other hand, a primitive but very effective weapon in terms of manpower losses in Vietnam. It is normally constructed of a sharpened bamboo stick or metal rod which may be smeared with human feces placed in the ground in such a position as to pierce the foot or lower leg. The resulting infection requires extensive debridement and treatment before closure of the wound can be accomplished. In either of the above type wounds a long period of physical therapy is required concurrently with surgical and medical treatment to obtain maximum function of the injured part.

The thirty (30) day evacuation policy to which all hospitals in Vietnam are limited creates another problem. If a patient cannot be healed, rehabilitated and returned to full combat duty in a thirty (30) day period he is evacuated out of the country, therefore there is only a short period of time in country for the rehabilitation program to be started. How this time is utilized depends upon the patient, medical team and their ingenuity in utilizing the time and equipment at hand to the best advantage of the patient.

The psychological rehabilitation of combat casualties is one that also requires consideration. The time lapse between the battlefield and a definitive medical treatment facility has been shortened considerably, when compared with past combat experience, due to the use of the helicopter for medical evacuation. Most patients are within thirty (30) minutes of a hospital. During this short period of time the immediate problems of survival and pain are the realities which he must face, and the full extent of his wounds and the long term consequences are not uppermost in his mind.

Once the patient has reached the security of a definitive treatment facility, the psychological and physical rehabilitation begins. The initial examination is conducted by the triage officer, who determines the priorities for surgery. It is at this time that the soldier realizes he can move his toe, finger, or leg with the encouragement of the medical officer who uses this information to evaluate the extent of injury. This then is the first step toward a positive outlook and rehabilitation. When an amputation is contemplated, the problem is discussed simply with the patient, with much emphasis placed on remaining functions. Although there is usually little time or need to begin a systematic series of exercises at this point, the rehabilitation of the patient that was started in triage is carried on while the patient is awaiting X-rays and pre-operative preparations on the ward through the encouragement of nursing personnel to wiggle the toes or raise the arm.

The post operative phase of rehabilitation starts as soon as the patient recovering from anesthesia can understand and carry out simple commands. It is not uncommon at this point for a soldier to ask if his leg or arm is still there or for one who has had an amputation to ask

if his leg or arm is broken. This situation is never pleasant but it calls for emphasis of the positive factors remaining and discussion of the extent of rehabilitation and normal functions possible with diligent physical therapy. Giving the patient responsibility for doing his own exercises also gives him a larger part in his rehabilitation and increases his feeling of accomplishment. This he may proudly demonstrate by finally lifting his leg off the bed after a period of days when all that was evident was tightening of the quadriceps.

As the patient progresses, especially those who will return to duty within a thirty (30) day limit, the complexity of the exercises must increase from isometric exercise, straight leg raising, and finger bending to those requiring mechanical assistance. With the basic equipment of plastic, rubber bands, ropes, pulleys, sand bags, and ingenuity, almost any desired range of motion or muscle building device can be improvised. Constant reminders and evaluation of progress by the nursing team is essential if the patient is to be combat ready in the alloted time.

Another problem seen frequently in the hospital which is combat associated but not always combat incurred and still requires physical therapy is the backache. Emphasis is placed on the patient learning to care for his own back in his present environment. Back mobilization exercises start immediately on admission and are worked up to tolerance. Analgesics are available but no other medications are ordered, nor are bedboards used which would be difficult to supply in combat zones. Supervision and continuous prompting are needed to see that simple exercises are learned and understood so that each patient will be motivated to continue them upon discharge.

Those soldiers returned to duty naturally are the most gratifying to the nursing team since the fruits of their labors can be seen. Sixty percent of the orthopedic and surgical patients, however, are evacuated 1-7 days following surgery. The ground work of rehabilitation laid in these few days may prevent muscle atrophy, saving weeks of physical therapy when the patient arrives at a definite rehabilitation center. Because few tangible results can be seen and because of the patient's obvious discomfort in doing the exercises, it is important to keep before the patient and the nursing personnel the ultimate goal toward which these simple and sometimes annoying exercises are leading. Once the patient leaves on an air evacuation plane for a hospital in the Pacific command or in the continental United States, one can not know how much a few minutes taken to encourage a young man to that little movement of an arm or leg has meant to his future.

MEDICAL CIVIC ACTION PROGRAMS (MEDCAP)

Colonel David G. Eisner, M.C.
Suregon, Military Assistance Command, Vietnam

The Medical Civic Action Programs are a part of the overall military civic action effort throughout Vietnam. Medical civic action is defined as the use of military medical personnel and resources to treat the native population through Republic of Vietnam Armed Forces (MEDCAP I) or directly by U. S. personnel (MEDCAP II).

MEDCAP I is implemented by medical service personnel assigned as advisors, or to special forces teams, or to other small units.

MEDCAP II may be conducted by major U. S. and Free-World Military Assistance Forces of battalion size or larger, if circumstances permit.

It is to be emphasized that the general purpose of both programs is to establish and maintain a continuing spirit of mutual respect and cooperation and to enhance the prestige of the Government of Vietnam (GVN). The distinguishing difference in the specific objectives of MEDCAP I and MEDCAP II must be understood: MEDCAP I - to enhance the prestige of the GVN in the eyes of the people; MEDCAP II - to win the confidence, and gain the cooperation of the local population in areas where relatively large U. S. military forces are employed. In all MEDCAP I activities U. S. personnel will remain in the background as much as practicable in support of the efforts of their Vietnamese counterparts. Every effort is to be made to indoctrinate and train RVNAF in the philosophy behind MEDCAP, since they one day will assume complete responsibility for the program.

But it is MEDCAP II which concerns us most in this discussion. Here it is usually not possible to work thru a Vietnamese third person as in the MEDCAP I; however, it is imperative that all projects have the approval of and continuing coordination with the RVN Provincial Government, the USAID Provincial Representative and the MACV Sector Advisor. Formal written approval from HQ MACV must be obtained prior to implementation of a MEDCAP II program.

Medical civic action plans should not be conducted in large centers of population where adequate civilian medical resources exist. Competition with civilian activities and USAID facilities must be avoided. However, specific projects such as orphanages, refugee centers and church supported hospitals in congested areas may be sponsored, if not specifically covered by civilian or USAID programs.

Supplies for MEDCAP are funded separately; U.S. Army Medical supplies may not be used for MEDCAP. MEDCAP supplies are funded by USAID, and are drawn from the RVNAF Medical Depot system. The requesting unit must furnish transportation from the RVNAF depot issuing the supplies. A bilingual requisition form (MACV Form 509) must be accomplished. It should be realized that only 76 drugs and biologicals, 11 dressings and bandage items, 21 other general items are stocked. Although these include standard antibiotics and commonly used drugs, the physician must limit himself to their use. Non-standard preparations and exotic sophisticated medications are not provided. Neither may items of equipment be requisitioned for use; the basic equipment of the medical team performing MEDCAP must suffice. The total budget for MEDCAP is limited; the shipment of these supplies has a low priority; and requisitions average a 50% fill at present. Requisitions are currently on a fill-or-kill basis. It is hoped that within the next few months the delivery and distribution of MEDCAP supplies will improve.

The question arises as to further treatment for patients screened. Hospitalization requests must be coordinated with the Province Medicine Chief prior to admission into province hospitals. If treatment is beyond the scope of provincial hospitals the Province Chief may, thru USAID representative, request treatment at a US/FWF medical facility. It is understood that in emergencies, to save life or limb, or when local Vietnamese are injured by an instrumentality of the U.S. Armed Forces, transportation and hospitalization in a U.S. facility is permitted.

MEDCAP, to be effective, must be on a regularly scheduled basis. A single visit to a hamlet produces no lasting impression, but regularly scheduled sick call is a potent factor in demonstrating to the people that their government and their allies have a continuing interest in their welfare.

To prevent much sought-after drugs from falling into the hands of Viet Cong, only the absolute minimum necessary to treat the disease should be given to any individual, and certainly never more than enough to cover the period of time until the next scheduled visit.

With this statement of the basic purpose of MEDCAP, the necessity of cooperation with and integration with the GVN and other agencies of U.S., and the realization of the limitations of items of supply as well as budgetry restrictions, commanders and their medical personnel will be able to continue their noteworthy contributions to building good-will within the restrictions imposed.

Reference: HQ USMACV Directive 40-9, 28 December 1965
Subject: Medical Civic Action Programs (MEDCAP)

Dental Civic Action

Using the seat of his jeep as a dental chair and with the instrument tray on the hood, a dentist with the 173d Airborne Brigade gives a Vietnamese villager an injection of anesthetic before pulling a decayed tooth.

Figures obtained from the office of the Dental Surgeon, USARV, show that in one recent 6 month period US Army Dentists throughout Vietnam, in addition to their regular duties with US Army personnel, took part in MEDCAP activities to the extent of examining 8,106 Vietnamese patients and performing 10,896 extractions.

Cerebral Malaria
At the 93d Evacuation Hospital

Captain Robert B. Daroff, M.C.

Formerly Neurology Consultant, USARV, and Neurologist,
935th Med Detachment (KO)

Since the Neurology Service at the 93d Evacuation Hospital, Long Binh, South Viet Nam, became operative in early January 1966, seventeen cases of cerebral falciparum malaria have been diagnosed and all have survived with little or no residua.

We make the diagnosis on patients with positive malaria smears who display signs of cerebral dysfunction which cannot be readily explained by factors such as high fever, severe anemia, electrolyte imbalance, or serum chemistry derangement. Often the diagnosis is only tentatively rendered until defervescence, to determine if the cerebral signs remain. Consequently there is no other reasonable diagnosis to invoke except falciparum malaria encephalopathy. Cerebrospinal fluid examinations are unremarkable except for moderately elevated pressures.

The clinical manifestations vary, but can be broadly divided into five groupings:

1. Acute Organic Brain Syndrome (3 Cases)

These patients demonstrated obvious signs of confusion, disorientation, and intellectual deterioration (ie., acute dementia) on mental status interviewing. The disturbance ranged from mild to severe but completely cleared in less than two weeks.

2. Disturbance of Consciousness (8 Cases)

This ranged from extreme lethargy and stupor to frank coma. Some had extensor plantar responses but no other focal signs were present. Upon awakening they demonstrated obvious signs of organic mental disturbance which resolved as in the above group.

3. Movement Disorders (3 Cases)

Two patients had generalized extremity myoclonus and one had a severe chorea. All three had, in addition, gross intention tremors. In no instance did there seem to be a dramatic response to the addition of Artane, Dilantin, or a phenothiazine to the treatment program. The chorieform movements were refractory to heavy sedation and the patient remained sleepless for 72 hours. Finally, general aneasthesia was resorted to. Thereafter he responded appropriately to sedation and gradually improved as did the two patients with myoclonus. As in the previous two groups, these patients all displayed evidence of organic mental disturbance while acutely ill.

4. Personality Change (2 Cases)

Both patients developed acute paranoid psychoses after becoming afebrile. In each case organic mental impairment was evident on psychometric testing. They improved in several days when Thorazine was added to the antimalarial regimen. These cases will be reported in detail elsewhere by Capt. W. W. Blocker of our psychiatry staff.

5. Focal Signs with Increased CSF Pressure (1 Case)

This patient complained of severe bitemporal headaches made worse by lying down. (A symptom suggestive of increased intracranial pressure.) On examination he had left sided hyperreflexia and hypalgesia. The mental status examination seemed normal. Psychometrics were not obtained. Cerebrospinal fluid opening pressure (with lower extremities extended) was 250mm. of water. There were no cells and chemistries were normal. Neurological examination ten days later was normal.

Except for the last case, all others manifested an acute organic mental syndrome. This is a fairly reliable common denominator in cerebral malaria. This dementia is usually apparent on simple interview and can be verified by psychometric testing. Many of our patients were tested in the acute phase, and again after recovery, by Capt. Albert Kastl, our clinical psychologist, who will report his findings in detail elsewhere.

Grand Mal seizures occurred in three of the seventeen cases and were readily controlled by Dilantin and more intensive antimalarial therapy.

The onset of the cerebral symptoms varied considerably. They usually became manifest around the seventh to tenth febrile day, but could be earlier or even after defervescence. In the case with chorea there seemed to be complete recovery from uncomplicated malaria, when two weeks later a temperature spike and a seizure heralded a relapse, shortly thereafter characterized by the movement disorder.

Mild forms of the disease improved with simple maintainance of routine antimalarial therapy. However in those patients who were severely obtunded, demented or had movement disorders, a standard treatment program consisting of I.V. quinine, I.M. chloroquin, Daraprim, sulfadiazine, dextran, Dilantin, and of particular importance we feel, adrenal steriods were utilized. We have not used heparin, as suggested by some, but would if a patient continued to deteriorate on the above regemen.

As mentioned earlier, we have not had a death or significant residual impairment in our seventeen consecutive cases from January through October 1966. This does not reflect benignity of the disease but rather the vigorous treatment that the sicker patients received. This notion is supported by the fact that in the month of December 1965, three patients died of cerebral malaria at the 93d Evacuation Hospital. The hospital opened on 1 December 1965, and adequate routines for recognizing and handling

this condition had not yet been learned and established. The clinical records of these cases are presently unavailable, however steroids were not used, and the only antimalarials used were quinine and chloroquine. Prompt, intensive treatment with an adequate array of therapeutic agents may be lifesaving in this condition.

Further Notes on Malaria

LTC Raymond W. Blohm
Medical Consultant, USARV

Malaria continues to be a major disease problem within the command. Vivax malaria continues to be seen and, since it responds readily to chloroquine treatment, the cases we see are presumed due to failure to take the weekly C-P tablet as directed. Similarly, the consultant has found instances of Falciparum malaria occurring in soldiers who have missed several or more days of DDS prophylaxis in the one to two weeks prior to illness. Some reasons given were: non-availability of drugs or knowledge of where to get them; failure to take drugs while on leave, R&R, etc; and embarrassingly, failure in some hospitals and medical units to continue the weekly C-P and the daily DDS tablets for patients able to tolerate oral feedings while hospitalized for other reasons.

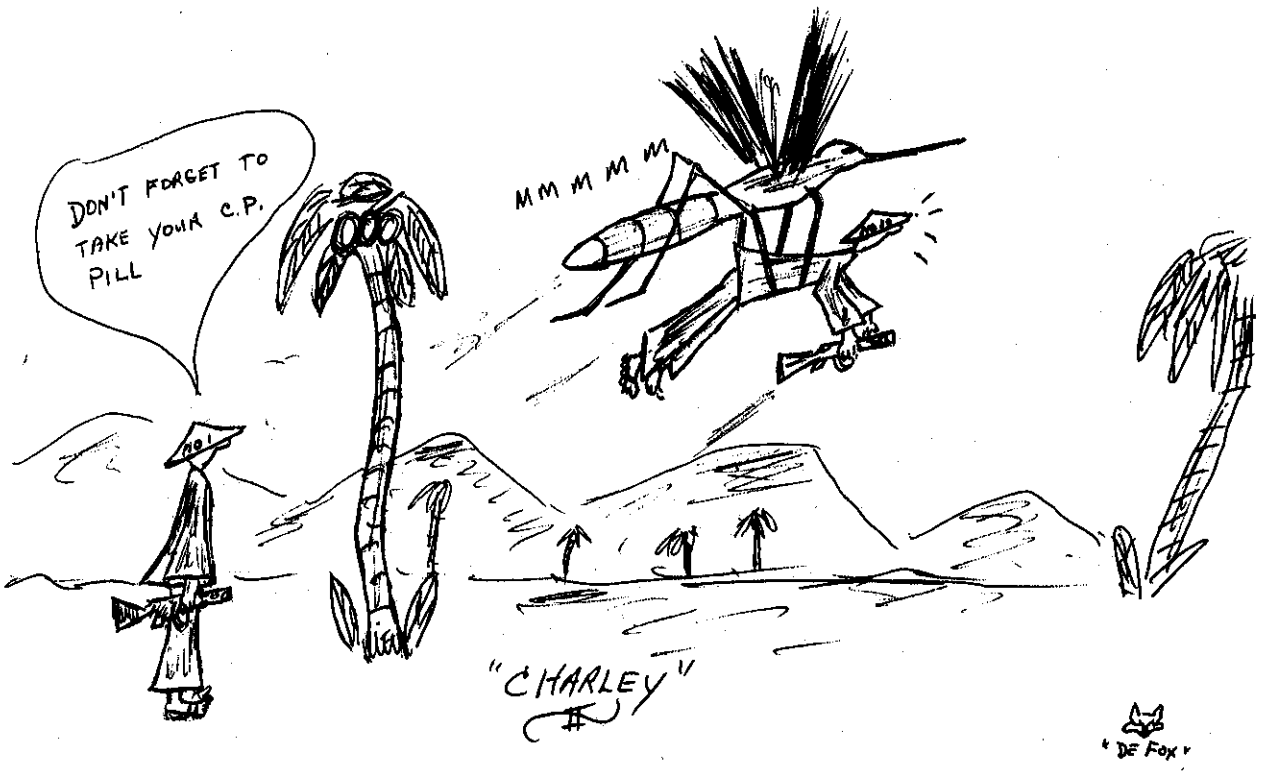
A study done by LTC E. Murray, MSC, of 100 consecutive malaria patients transferred to the 6th Convalescent Center illustrated for example some of the inadequacies in insuring the daily DDS ingestion. We hope to have his article published in a later issue.

There is general failure to realize that you don't get malaria if you can keep from being frequently or repetitively bitten by infected Anopheles mosquitoes. All measures aimed at this (nets, sprays, repellents, rolling down sleeves at dusk, etc), constitute our first line of defense. The drugs, despite the publicity given them, constitute only our second line of defense. The drugs are probably as much suppressants of infection as preventives of infection. Command emphasis on malaria discipline is improving but increasingly important is the continuing education of the individual soldier and officer. Field studies have illustrated failure to know that insect repellent is good for only one to two hours under the best circumstances, or that the anopheles mosquito is a silent flyer, a painless biter, and not a "nuisance mosquito", therefore requiring frequent use of repellent, whether you are being "bothered" by mosquitoes or not.

It is realized combat troops cannot always use their nets or carry them while on patrol, setting up ambushes, etc. However, there are times in relatively secure forward areas where nets can be used if they are available and if the men are pushed to use them. The Battalion, Brigade, and Division Surgeons have a continuing responsibility of

malaria education of new troops and re-education of veterans. Continued surveillance of malaria discipline and advising the command where such discipline is failing or needs improvement are responsibilities of each and every physician in Vietnam.

We have come far medically in diagnosing and effectively treating malaria, but are we doing all we can to help prevent it? We glibly say this is a "command responsibility". Are we doing our part in education of troops, surveillance of troop malaria discipline and use of the tools available, and in advising the commander how to stop the gaps in his malaria defense?



Photos

In this issue we have included photos of persons, units, and activities from several sources. We desire to publish photos of medical interest from units at all echelons in order to illustrate AMEDS in its' broad service function in Vietnam. We invite you to send to the editor good quality, good contrast black and white glossy prints of your unit or of its' medical or evacuation activities. Photographs of patients should be accompanied by a witnessed signed release.

X-RAY FINDINGS IN CHEST WOUND COMPLICATIONS

Captain Roger A. Berg
Chief, Radiology Department, 3d Field Hospital

We see what we look for;
We look for what we know.
M. Sosman M.D.

The large number of chest wounds that have been treated at the 3d Field Hospital has shown us that the "routine follow-up" chest X-ray must be meticulously evaluated. It is here that the radiologist plays an exceedingly valuable role, for so many developments in these patients are far from dramatic clinically, and treatment must often be initiated on the basis of the X-ray findings. A sound training in diagnostic chest roentgenology, coupled with an awareness of the complications of penetrating wounds of the chest is indispensible to the proper interpretation of the films. The experience that we have acquired at the 3d Field Hospital has taught us time and time again that the chest case must be constantly evaluated both clinically and radiographically in order to pick up as soon as possible any unexpected consequences of his injury.

The problem is simplified considerably if there are technically adequate films from the start. It is not uncommon that chest cases are transferred to this hospital for specialist care by our thoracic surgery team, and the X-rays that accompany them are far from optimal with regard to exposure and processing factors. If at all possible, each new patient who has a chest wound gets a PA and lateral erect, and AP and lateral Bucky films (vertical beam) of the thorax. We take great effort to obtain films of fine diagnostic quality, for it is axiomatic in radiology that one of the best aids in the correct interpretation of chest films is a previous film for comparison. When the condition of the patient mitigates against in-department, or erect views, and only supine portable films are possible, the AP chest, with and without the stationary grid, is a minimum. Even in such instances, there should be little problem to detect with a high degree of accuracy the presence of free effusion, atelectasis, consolidation (or contusion) or pneumothorax. With good previous films for comparison, changes in the size of the mediastinum can be appreciated, although we realize that the supine projection is not the best film for this.

Some of the clinical complications that we have seen, and the usual radiographic signs will be discussed in this article. The prevention of such complications is often the most difficult of the problems that the thoracic surgeon encounters in the care of these patients. Just as the initial surgical procedure is often the best time to avoid subsequent trouble, so is the initial X-ray examination the best time to avoid problems in the interpretation of subsequent

films. The list of complications is very long, and the close cooperation of the chest surgeon and the radiologist is necessary for the early recognition of many of them. Lack of clinical data does not necessarily lead to faulty interpretation, but its inclusion can facilitate communication between the radiologist and clinician, and a differential diagnosis can be kept to a minimum.

One of the most common complications that is seen following penetrating wounds of the chest is atelectasis. This is usually present early in the course but it is often a recurrent problem where there are associated injuries that prevent adequate aeration. It is important to recognize the etiology of the atelectasis to properly assess the efficacy of treatment given and patient response. In this regard we classify atelectasis as one of four main types. They are listed below with examples of each.

1. Passive - There is paralysis of intercostal or diaphragmatic musculature due to brain damage. Also, this type might be due to voluntary splinting in a patient with extensive rib fractures.

2. Extrinsic - A large pleural effusion or mass of adhesions may interfere with proper expansion of the lung.

3. Intrinsic - Extensive parenchymal disease from the injury or from prior inflammatory changes prevents full expansion of the lung.

4. Obstructive - Retained endobronchial secretions, blood, or aspirated vomitus block the airway. An improperly placed endotracheal tube has occasionally been implicated in this type of atelectasis.

Whatever the etiology, the radiologist has a responsibility in establishing the diagnosis, and if possible, the probable cause. The classical plate-like atelectasis is not often visible on the side of the injury because of the overlying pleural effusion or contused lung. On the frontal film, only an ill defined haze may be seen. This is, of course, the en face projection of a wedge of segmental collapse. If the effusion is large, either free or loculated, one must depend on secondary signs, such as elevation of the hemidiaphragm, change in position of the lung root (hilar vessels), compensatory emphysema of adjacent lung, etc. Total atelectasis of a lobe, or parts of two lobes is not at all rare. Sudden collapse of such large areas is often partly or wholly on an obstructive basis.

Another complication that the radiologist should be alerted to is the bronchopleural fistula. Fortunately this has been found in a very small percentage of our cases. It should be suspected when the pleural effusion persists or increases in spite of adequate treatment and when air fluid level remains in the pleural space. It will usually be detected in the week following the injury, even through a tear in the lung may have been overseen at thoracotomy. This should not be confused with small

loculated air fluid collections caused by repeated thoracenteses, or after surgical intervention. Such air-fluid levels normally will disappear within a few days, and they do not coalesce or increase in size. When there is an increase in the dimension of the hydropneumothorax in either the frontal or lateral view, or when the level rises, indicating increasing fluid with constant amount of air, a bronchopleural fistula is to be suspected. We have not seen the acute, toxic symptomatology from this entity, and we have as yet to see a tension pneumothorax result from it either. Secondary infection and formation of a pyopneumothorax commonly aggravates the problem. It has not been necessary to instil Iodized Oil into the pleural space to establish the limits of the disease, nor have we injected blue dye intrapleurally to make the diagnosis by examination of the sputum. From the radiologist's standpoint, the differentiation of an air fluid process in the pleura from one in the lung is cometimes easier than it may be clinically. In two cases in the past nine months it has not been possible to distinguish a lung abscess from a pyopneumothorax, and indeed in one of these cases, the signs and symptoms pointed toward the wrong diagnosis as proven by subsequent thoracotomy. This particular patient had an extensive injury of the left lower chest with extensive contusion of the lower lobe and a marked pleural reaction. After a week when some of the acute changes began to clear, with the use of chest tubes, endotracheal suction etc, an air fluid level was discernable in the posterolateral thoracic area. This air-fluid cavity increased in size, and the level of fluid rose. On multiple views of the chest, the lesion could not be identified by position alone, for it was slightly separated from the chest wall on the tangential view. This could not absolutely distinguish between an intrapleural and intraparenchymal abnormality. What was the deciding factor was the appearance of the upper border of the diseased area on the erect chest film. This must be emphasized, for it is the basis for the differentiation of the lung abscess from pyopneumothorax. In the latter entity, the superior border of the cavity is a fine concave down curved line, or a faintly visualized concave down strip of radiodensity. This represents the slightly thickened zone of pleura at the limits of the collection. The lung abscess, however, begins as an area of consolidation and acquires an air-fluid level from breakdown of tissue in the center of the focus, and leakage of air in from an adjacent patent bronchus. Thus, the borders of an abscess are shaggy, and may appear irregularly scalloped from the fibrinous exudate that lines the cavity. An accurate appraisal of the situation will lead to the right diagnosis.

This leads naturally into another diagnostic problem, but one which is usually solved by the test of time. I refer to the complication of lung abscess from the contused lung, and its differentiation from the normally resolving zone of contusion. I will include here the problem of the persistent necrotic lung which does not undergo resolution and proper organization. It would be difficult to estimate the relative frequency of lung abscess from lung contusion because we cannot follow many patients for long periods of time. The availability of bed space, and out limited holding policy often necessitate the evacuation of a patient, and therefore we do not see these cases through to the stage of

near complete resolution. Nevertheless, we have had some experience with this, and the knowledge of the pathophysiology involved aids in the interpretation of the X-rays. One must be aware that much of the initial radiodensity called the "contused lung" is not just a mass of blood and destroyed tissue; only the central zone is so affected. This may, however, represent the bulk of the lesion, but suffice it to say that it does not by any means represent all of it. The peripheral areas and varying portions of the central density are caused by a reactive outpouring of intra-alveolar fluid. It is blood and edema fluid, on either a humeral or vasodilitory basis (similar to the "wet lung" syndrome) as well as frank bleeding from alveolar wall capillary rupture. The typical "soft" consolidation and indistinctness in these peripheral regions are the characteristic X-ray findings. In the stage of resolution we may see air-fluid levels in the previously solid central hematoma. These may be multiple if fibrous bands have formed across the cavity, or if the cavity is partly divided by residual lung tissue. Air-fluid levels become visible only when some of the fluid is evacuated through a patent bronchus in exchange for air. (Through some of the fluid is removed by local absorption and phagocytosis, this is a slow process and there is no air introduced.) Eventually, in the uncomplicated case, all of the fluid disappears and only an air cavity in the lung - a pneumatocoele - remains. The pneumatocoele usually disappears over a period of several weeks or more, but it is not the purpose here to discuss other sequellae. The surrounding zones of edema and intra-alveolar blood are more rapidly absorved than the central zone, and they do so in a spotty manner, similar to pneumonitis. If we go back a step and follow a case in which necrotic lung remains, or an abscess develops within this necrotic mass, we note a different sequence of events. The lung contusion is large as a rule, but the underlying pathology is inadequate bronchial drainage and/or inadequate surgical removal of necrotic tissue. On the chest films, the lung contusion remains unaltered in size and the associated pleural reaction may increase if tube drainage is not continuous. It is a small step between persistent necrotic lung and frank abscess formation. Actually, the presence of air in the necrotic zone may make the radiographic diagnosis easier. The cavity which forms may on occasion decrease its fluid content as a patent bronchus opens up temporarily, but this should not dissuade one against diagnosing lung abscess. The cavity will reaccumulate fluid if the infection persists and bronchial drainage is interrupted. The use of decubitus views has been of value especially in cases where there is much pleural effusion and obscuration of the cavity presents technical difficulties. Also, where necrotic lung or abscess remains, the surrounding parenchymal exudate does not resolve, and if the abscess abuts on a pleural surface, an empyema may ensue. From observations of quite a few late follow-up cases of minor fragment wounds with retained metallic fragments in the lung, the presence of this foreign material is apparently innocuous. Our surgical policy at present is to not operate for the sole purpose of removing metallic fragments which are imbedded in the substance of the lung. Other evidence has suggested that it might be advisable to remove fragments larger than 2½cm in diameter, but it is exceedingly rare for us to see such a large fragment within the lung anyhow. Similarly, we have performed but a very small number of lung resections for contusions in the anticipation that almost all of these will resolve without causing the patient added distress. The complication

of persistent necrotic lung and/or lung abscess is disheartening, to say the least, but we are still inclined to be conservative in this regard. It should prove interesting to see a large number of patients with retained metal in the lung, many years after injury to see any delayed effects, but from all indications, the probability of late abscess formation is very small. The aggressive approach with respect to the evacuation of foreign material, blood and debris from the pleural cavity is quite a different matter. This brings up the next complication - empyema.

The appearance of empyema as a result of penetrating chest wounds is not rare, and the radiologist must be familiar with X-ray findings by which the diagnosis can be suggested. The clinical diagnosis usually preceded the typical X-ray evidence and some care must be taken to distinguish between parenchymal, pleural and extrapleural disease on the films. Unfortunately this may not be possible because they actually coexist. The tendency is, however, to ascribe such clinical signs and symptoms as fever, cough, chest pain and pleural effusion to the pulmonary process, and not to the pleural primarily. Perhaps this is not in error, for the penetrating nature of the injury that causes the empyema results in an abnormal free communication between the extrapleural, pleural, and parenchymal tissues, so infection in one is a real source of infection for the others. When an empyema forms, it is invariably loculated; it is possible for one to be confined in an interlobar fissure, although we have not seen this yet. The adhesions which developed before the infection became manifest and which are further stimulated thereby, tend to prevent the empyema from "layering out" in decubitus projections. This alone cannot differentiate an empyema from a clotted hemothorax, however the follow-up examinations will show the empyema to be an expanding lesion, while the absorption and organization of a clot will be shrinking process. Therefore instead of the hemidiaphragm being elevated in the uncomplicated case, it will be depressed. Other secondary signs such as adjacent atelectasis of lung and swollen soft tissues of the thoracic wall may be present. With respect to the latter, we have already pointed out the communication between the chest wall and pleura in such missile wounds, and extensive edema and air bubbles in a chest wall abscess has already been seen in one case with empyema. If no portion of the diaphragm is visible, as is often the case, depression or elevation of the gastric fundus air will be the sign to observe. Massive empyema may shift the mediastinum toward the opposite side, but we have not encountered this, and with the constant care the casualties receive, such a complication is not likely to happen. Also, we have not seen empyema in the mediastinum, nor a mediastinal abscess, in spite of a number of cases of significant intrathoracic infections following penetrating wounds.

Recurrent pneumothorax has been a complication we have seen in more than one instance. It need not be accompanied by infection, and appeared in our cases almost two weeks after the initial injury. The chest tubes had long since been removed because the lung was fully expanded, and replacement of the chest tubes was the only treatment necessary in one patient. In another, a bronchopleural fistula developed, and had to be

repaired. The radiologist should be constantly aware of this potential source of trouble, and it sometimes requires more than a quick perusal of the chest film to pick up some of the smaller, less obvious early pneumothoraces. The mistake should not be made in calling a pneumothorax produced by the withdrawal of the tubes from the chest the same as one from rupture of lung tissue. The former is quite common, and is not of clinical significance since it is promptly absorbed. It is usually of small magnitude, while the pneumothorax which occurs as a result of rupture of a weakened portion of lung is occasionally quite large. Pleural adhesions in these instances will alter the X-ray appearance somewhat, but the diagnosis should present no difficulty.

We have had 2 cases of pericardial effusion from chest wounds and in one of them, the disease presented almost 2 weeks after the time of injury At the initial thoractomy there was a tear in the pericardium, but there was no bleeding. Although both cases were easily diagnosed from the plain films, the extent of the pericardial thickening was well documented by Intravenous Angiocardiography. This is a simple and safe procedure, as is CO_2 Cardiography, and should be available in any X-ray department.

One patient survived several weeks with an intracardiac missile, and we found it very difficult to exactly localize the fragment with respect to depth of penetration through the myocardium. We saw at post mortem exam that the missile projected into the right ventricle cavity, and a thrombus had formed at the site. This resulted in embolization and infarctions in the lungs. The latter were seen on chest films to be bilateral patchy zones of consolidation, predominately on the right side, and were associated with pleural effusions.

Other complications of penetrating chest wounds such as persistent intrathoracic bleeding, formation of a local fibrothorax (lung "peel") and post operative pneumonias are common and of obvious clinical significance. However, they have not been particularly difficult diagnostic problems either clinically or radiologically, and will not be elaborated on further. Those that I have discussed are the ones with which we at the 3d Field Hospital have had some measure of experience. It is only through the alertness of the chest surgeon and the radiologist that such patients receive the best of medical care on their long and hazardous road to recovery.

Letters To The Editor

Letters to the editor giving opinions, criticisms, comments, and additional experiences will be welcome and appreciated. They will be published, if suitable, as space permits, subject to editing.

To The Editor:

I have just finished going through the USARV Medical Newsletter Vol. 1, No. 6, for August and September 1966.

For quite some time I have been working on the medical history volume "Medical Service in the Asiatic-Pacific Theater", which will be part of our WW II shelf. The comments and discussion presented in your Preventive Medicine Conference are all too familiar, for over and over again I have found, in the medical reports of the Asiatic-Pacific area and for more than four years, the following:

1. Malaria control, in final analysis, depends upon command backing for the individual protective measures.

2. There is absolutely no substitute for correct observation of basic field sanitation principles.

During WW II, the VD problem may have been a bit more difficult, especially since the commanders held their surgeons responsible for the man-days lost. It is my understanding that at present a somewhat more intelligent approach is observed, but of course, this may not be the case in your present situation!

I do hope that the staff of your Newsletter realizes that these copies (some of them, at least), end up in rather dusty files of the USAMEDS Historical Unit - and that in due time some researcher or historian, if he is lucky, will be able therein to find a wealth of material. The periodical letters and journals published by your predecessors in the Asiatic-Pacific regions during WW II fill many a gap posed by the more formal official reports.

Forest Glen, Md.

WARREN W. DABOLL
LTC MSC

* * *

To The Editor:

I should like to express my appreciation for the very excellent USARV Medical Newsletter - - the August-September issue of which recently came to my attention.

It must indeed be a difficult task to put this together under the circumstances. However, the material is exceedingly informative, timely, and even entertaining.

WBGH, El Paso, Texas

FREDERIC J. HUGHES, JR.
Brigadier General, MC

* * *

To The Editor:

Copies of the USARV Medical Newsletter, Vol. 1, No. 6, were received in our Association office today. Thank you for bringing your publication to our attention by placing our name on your mailing list.

We are pleased to know that publications other than MILITARY MEDICINE are contributing vital information to the medical personnel in Vietnam.

Assn of Mil Surgeons

FRANK E. WILSON
Brigadier General, USAR, Ret.

* * *

To The Editor:

I would like to extend my sincere appreciation for your mailing copies of USARV Medical Newsletter, Aug-Sep 66, to me. These letters provide much needed background information from which better medical classes may be prepared for the USAAMS courses.

These newsletters are also of particular interest to me as I have tentative orders for assignment to the Qui Nhon area for mid-summer 1967.

US Army Artillery & Missile Sch
Ft. Sill, Oklahoma

AMEL ANDERSON
LTC MSC

* * *

To The Editor:

This organization becomes operational 1 November. At present seven Medical Corps Officers are assigned.

Since arriving in country I have seen several copies of the USARV Medical Newsletter and feel that the information you disseminate would be of considerable value.

Request that this unit be placed on your distribution list; if back issues of the Newsletter are available their receipt would be appreciated.

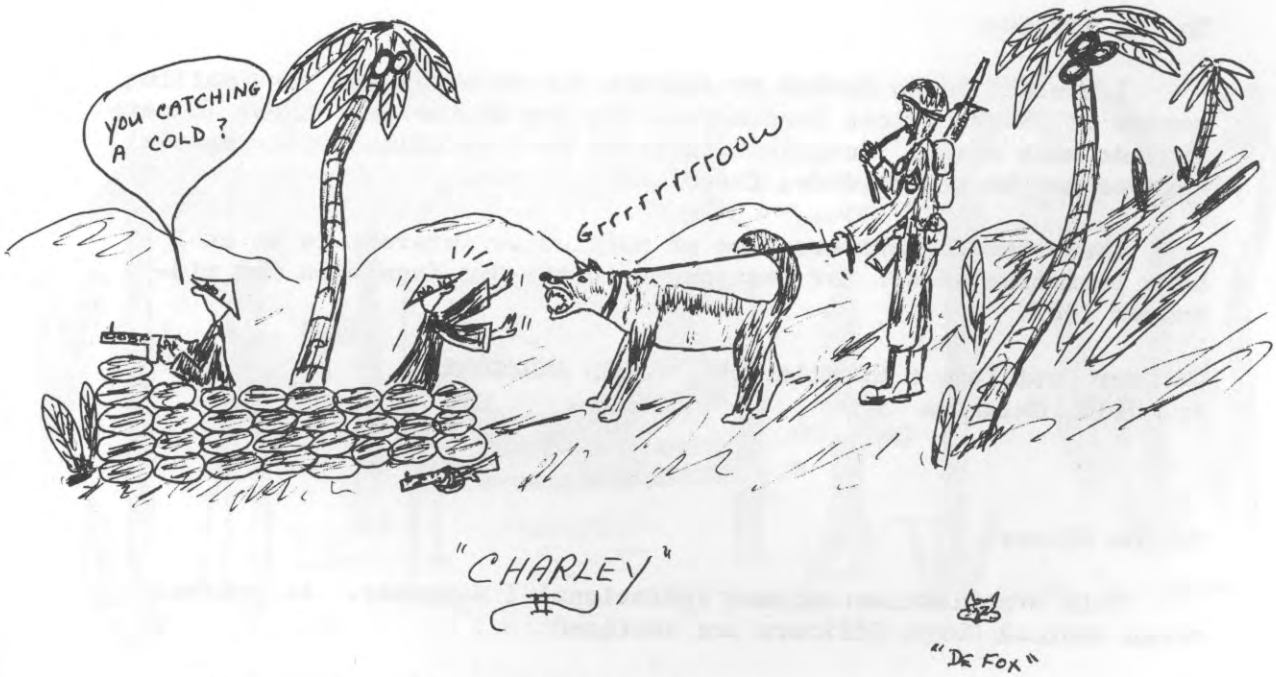
563rd Medical Company (Clearing)
APO 96316

CHARLES E. LEA
Major, MC

* * *

Editors Note: If medical units have been inadvertantly left off our distribution list please write directly to the editor. Effort is made to insure that all medical units are added to the distribution list as they arrive in country.

A limited supply of back issues is available. Reference library copies of the back issues have been bound for distribution to the major medical units in country.



EDITORS NOTES

With this issue the name of this publication has been changed to USARV Medical Bulletin. This was the title originally selected, and is the title under which Vol I, Issue No. 1 was published. Subsequently Vol I, No. 2 through 6 were published under the title USARV Medical Newsletter because of a controversy over the permissibility of using the term Bulletin in this type of publication. The point is now clarified. The preferred term Bulletin will be used indicating, we believe, a publication of broader and more professional scope than the term Newsletter.

The US Army, Vietnam, maintains an extensive medical establishment in both combat and support units consisting of numerous hospitals, dispensaries, aid stations, medical battalions and companies, clearing stations, and other medical detachments small and large in widespread locations throughout Vietnam. The many medical units and AMEDS officers involved in this effort face common problems and common experiences which to a considerable extent, are unique in US Army medical experience. Not only has the US Army had relative little medical experience in Vietnam, but individual AMEDS personnel are usually facing the numerous special problems of tropical and Vietnamese medicine, as well as combat medicine and surgery, for the first time. Each AMEDS officer is having experiences from which he gradually learns to handle himself and the medical problems he meets. Because of a relative lack of detailed communication between medical units, however, his opportunity to pass on what he learns to other AMEDS officers in Vietnam is limited. Even worse, he rotates back to ZI after one year and takes his experience with him, usually having shared it only with those in his immediate area.

The USARV Medical Bulletin is conceived as primarily a channel of professional communication for AMEDS personnel within Vietnam in an attempt to share important professional information on as current a basis as possible. It is conceived as a teaching media to enable those who have learned important lessons to put them into a professional format and share them with less experienced colleagues throughout the combat theater. The importance of this means of professional communication is pointed up by the newness and uniqueness of many of the medical problems and solutions, by the difficulty in professional communication within the theater, and by the general lack of availability of channels of professional communication established in other areas of the world.

The Bulletin will additionally be used as a means of area-wide communication, teaching, and emphasis in matters of professional policy and ethics, and in matters of importance and interest in medical administration and management. The professional and administrative interest expressed in this publication by all branches of AMEDS in

Vietnam has been widespread and enthusiastic, reflecting an acute basic professional and administrative need.

In addition to the strictly professional and administrative need for this publication there is need within Vietnam for the communication to the medical community of items of medical news interest and of personal interest to medical personnel. Communication is of vital importance to morale, and many medical units find themselves in relative professional isolation. Selected medical news and personnel information, plus appropriate photographs, plus occasional cartoons or comments pointing up in lighter vein some of the medical and administrative problems faced in Vietnam should help to fill this need.

The offshore hospitals immediately supporting the effort in Vietnam also have a professional need for detailed information about the medical problems, policies, and management within Vietnam in order to best understand and care for the patients they receive from Vietnam. A limited distribution of this publication to these offshore hospitals would help to provide some of the professional detail that is lacking in ordinary administrative channels of communication.

There is a need throughout the Army Medical Service for information on medical problems and operations within Vietnam. This need has been expressed by AMEDS officers anticipating assignment to Vietnam, by commanders of ZI Hospitals receiving patients from Vietnam, and by directors of courses teaching medical subjects to troops being trained for duty in Vietnam. A limited distribution to ZI installations will serve this need.

The above statement of the need for and purposes of this publication is made in order to clarify in the minds of all AMEDS personnel in Vietnam that this publication is for you. Distribution is planned on the basis of one copy per AMEDS officer in Vietnam, and additional copies may be provided if a special need exists.

Success of the Bulletin in terms of providing the professional and administrative forum that is needed can only come as individual writers put their thoughts and experiences on paper and submit them for publication. The information you have gathered is fresh and useful to your fellow AMEDS officers at this point; getting it printed now will serve both an immediate teaching and clinical purpose and the purpose of a permanent recording in the literature.

Directions for submitting items and articles for publication are printed under the masthead inside the front cover. This exception should be noted: If you are in a situation where typing service is simply not available we will still receive and consider your hand-written contributions subject to an additional risk of editorial misinterpretation, depending on the clarity of your handwriting.

Deadline for material for the next edition will be 5 January 1967, and subsequent deadlines are expected to be the 5th of each odd-numbered month.

The cover design of the Bulletin has undergone considerable evolution since the publication of Vol I, No. 1 almost a year ago. An attempt is being made to arrive at a standard, easily recognizable cover design that will have relevance to the work of the Army Medical Service in Vietnam. Any suggestions regarding the cover design or any other aspects of the format of the Bulletin are welcome.

COMBAT MEDICAL BADGE

There have been numerous inquires from the field requesting clarification of para 97A (1) (A) 2, AR 672-5-1.

Headquarters USARV submitted a message to Department of the Army on 26 August 1966 requesting their clarification of the regulation.

In answer to a follow-up message USARV received the following information in reply from LTC Lawrence R. Tassie, Welfare Branch, Personnel Services Division, Deputy Chief of Staff, Personnel, Washington DC:

"The Medical Badge will undoubtedly receive the same consideration we gave the Combat Infantry Badge and will come up with the same answer I am sure. The badge is for the man in the field, with the Infantry, living that life unique to that type mission. It is not a badge for being shot at, it is a badge in recognition of a type of training with an assigned daily mission to be with the infantrymen in whatever environment they might be. If we dilute the Combat Infantry Badge we destroy many years of high honor and prestige. I hope we can hold the line and keep these two badges on a very high position of respect."

New Deputy Surgeon

Colonel Edmund R. Kielman, MC, recently arrived in Vietnam to fill the position of Deputy Surgeon, USARV, with additional duty as Chief, Professional Services. Col Kielman, whose medical specialty is pathology, came from an assignment as Commander of the 6th Army Medical Laboratory, Fort Baker, California. He went to the 6th Army Medical Laboratory as Chief, Pathology Division, in August 1962 and assumed command 1 January 1963.

Prior to his assignment at Ft Baker Col Kielman had a tour in Korea from July 1961 to August 1962, where he was initially Chief of the Laboratory Service and later Commanding Officer of the 121st Evacuation Hospital. He also served during part of that tour as Commanding Officer of the 168th Medical Battalion and as Corps Surgeon.

Major Gary P. Wratten

With regret we note the death of Major Gary P. Wratten, formerly Commanding Officer of the 45th Surgical Hospital (MUST). Major Wratten died as a result of hostile action on the morning of 4 November 1966 when Viet Cong mortar rounds fell in the hospital area at Tay Ninh, Vietnam.

New Dental Surgeon

Colonel Justine S. Zack, D. C., arrived in Vietnam 11 November 1966 to become the Dental Surgeon, USARV. Colonel Zack came from an assignment as Dental Surgeon, Fort Monmouth, New Jersey, where he served for the past two years.

Colonel Zack takes the place of Colonel Ralph B. Snead, D.C., who served as Dental Surgeon from November 1965 until his return to ZI in November 1966. Colonel Snead, who has been assigned to replace Colonel Zack as Dental Surgeon, Fort Monmouth, New Jersey, was awarded the Legion of Merit for his work as Dental Surgeon, USARV.

67th Evacuation Hospital

After several months of construction the 67th Evacuation Hospital at Qui Nhon, Vietnam, officially opened its doors with a dedication ceremony on 7 October 1966. The staff and assembled guests were addressed by Brigadier General C.R. Meyer, Commanding General, US Army Support Command, Qui Nhon, and Major General Charles W. Eifler, Commanding General, 1st Logistical Command. A ribbon cutting by Major General Eifler was followed by a tour of the hospital led by Lieutenant Colonel Robert H. Holzworth, MC, Hospital Commander.

With 100 beds operational at the time of opening, the 67th Evacuation Hospital when completed will have 400 beds in 2 story permanent type buildings adjacent to the Qui Nhon Air Base.

Change of Neurosurgical Consultant

Lieutenant Colonel Harold A. Rosegay, Neurosurgical Consultant to USARV from 9 November 1965 to 18 October 1966 was awarded the Legion of Merit for outstanding contributions to the Army Medical Service and particularly to the practice of neurosurgery in Vietnam. The award was presented 17 October 1966 by Brigadier General R. J. Seitz.

Lieutenant Colonel Rosegay has been replaced as neurosurgical consultant by Lieutenant Colonel Richard Hamilton.

Dustoff Crew Decorated

Major William R. Broit, MSC, aircraft commander, and Captain Morrison J. Hosley, Jr., MSC, pilot, were recently awarded silver stars with V device for their work in evacuating the wounded of operation Attleboro. Their crew members, Sp-4 Robert J. Arn, crew chief, and Sp-5 Bryan A. Riley, medical technician, were each awarded the bronze star with V device. The presentations were made by Maj Gen W. E. De Puy, Commanding General, 1st Infantry Division.

Major Briot is Commanding Officer of the 283rd Medical Detachment (Helicopter Ambulance).

Doodler

Sergeant First Class Bobby R. Dowdy refers to his cartoons as "doodles." No matter what the label, "Charley", with the two characters No. 1 and No. 10, is a versatile medium for illustrating some of the problems and pitfalls of the war in Vietnam. Sergeant Dowdy is able to look over the material being included in an issue of the USARV Medical Bulletin and come up with "Charley" cartoons pointedly apropo of the subject matter.

SFC Dowdy is first sergeant of the 36th Medical Detachment (Dental) in Saigon. His career as a soldier and as a cartoonist was featured in The Vietnam Guardian, a Saigon Daily Newspaper, on 8 November 1966.

Major General Fred C. Weyand, 25th Infantry Division commander, addresses officers and men of the Division during dedication ceremonies for the Captain Arthur E. Lewis Dispensary at the 25th Infantry Division's Cu Chi base camp.

Present for the ceremony in addition to members of the Division staff were many distinguished guests including Brigadier General James A. Wier, Surgeon, USARV.

ARTHUR E. LEWIS DISPENSARY
MEMORIALIZATION CEREMONY
1100 Hours, 5 September 1966
Cu Chi, Republic of Viet Nam

Music - 25th Infantry Division Band

National Anthem

Invocation - Chap (CPT) Armand N. Jalbert

Eulogy - CPT David Voska

Dedicatory Remarks - MG Fred C. Weyand

Unveiling of Monument - MG Fred C. Weyand

Military Honors

Gun Salute - Rifle Squad, C Co, 4th Bn, 23d Inf

Taps

Music - 25th Infantry Division Band

Captain Arthur E. Lewis was born 17 June 1937 at Wichita, Kansas. He received his medical degree from the University of Oregon in June 1963, and interned at Baylor University, Texas in 1964. He entered the Army on 14 September 1964. In September 1964, Captain Lewis was assigned as Battalion Surgeon, 4th Battalion, 23d Infantry. On 17 May 1966, he was with his unit during operations near Cu Chi, Republic of Vietnam. Moving through a densely wooded area, Captain Lewis heard explosions to his front. He rushed forward to render first aid to the wounded. While under intense Viet Cong sniper fire and in the midst of exploding mines he proceeded to treat the wounded soldiers until fatally injured by a command detonated mine.

The 25th Medical Battalion Base Dispensary, Cu Chi, Vietnam, is hereby designated as Arthur E. Lewis Dispensary. Captain Lewis was the first medical corps officer in the 25th Infantry Division to be killed while on combat operation in the Republic of Vietnam. Captain Lewis has been awarded the Silver Star for Valor, and the Purple Heart (Posthumous).

The above is a reproduction of the program used on the occasion of the dedication of the Arthur E. Lewis Memorial.

44th Medical Brigade

Depicted above is the new insignia of the 44th Medical Brigade. Activated and formed at Fort Sam Houston, Texas in January 1966, this unit became the first operational Medical Brigade ever employed in a combat zone.

The 44th Medical Brigade is the command and control headquarters for all non-divisional medical units in Vietnam. This constitutes the largest TOE medical command in the Army, over 110 units with more than 7000 personnel.

The 44th Medical Brigade is the medical arm of the 1st Logistical Command, providing an integrated medical service to the United States Army Vietnam and other authorized personnel on an area basis. This includes reinforcement of the medical service organic to combat divisions, Brigades, and separate Battalions; patient evacuation by air and ground ambulances; dispensary service; all hospitalization; medical supply and maintenance; dental, veterinary, preventive medicine and laboratory support services. In addition, 44th Medical Brigade personnel conduct active medical civic action programs and provide medical supply support for other Allied Forces operating in the Republic of Vietnam.

The insignia is a white shield with maroon flanks inside a 1/8 inch white border. In the center is a large four pointed gold star with longer vertical points, superimposed on a four pointed maroon star, points saltirewise and of equal length.

Maroon and white are the colors used for the Army Medical Service. The gold star superimposed over the maroon star is symbolic of the unit's mission of command and control over medical units. The four points of each taken together allude to the organization's numerical designation.

The 44th Medical Brigade is commanded by Colonel Ray L. Miller, MC, whose family resides in Tacoma, Washington.

3rd Surgical Hospital, Bien Hoa, Vietnam

93rd Evacuation Hospital, Long Binh, Vietnam

New Arrivals In Country

Name	Grade	Branch	Arrived	Assigned
Dubois, James T.	LTC	MC	1 Oct 66	74th Med Bn
Sober, Clarence W.	LTC	DC	1 Oct 66	257th Dental Det
Hanson, Carol L.	Maj	ANC	3 Oct 66	55th Med Det
Varner, Margaret	Maj	ANC	3 Oct 66	93rd Evac Hosp
Cosey, Margret	Maj	ANC	4 Oct 66	93rd Evac Hosp
Blechschmidt, George	Maj	MC	5 Oct 66	935th Med Det (KO)
Mayson, Preston B, Jr.	Maj	MC	7 Oct 66	93rd Evac Hosp
Hamilton, Richard D.	LTC	MC	11 Oct 66	3rd Field Hosp
La Noue, Alcide M.	Maj	MC	12 Oct 66	55th Med Gp
La Breque, Virginia	Maj	ANC	15 Oct 66	67th Evac Hosp
Sadler, Theodore	LTC	MC	19 Oct 66	3rd Surg Hosp
Tuthill, Dallas	Maj	MC	23 Oct 66	3rd Field Hosp
Williams, James	LTC	DC	3 Nov 66	36th Med Det (KJ)
Keilman, Edmund	Col	MC	4 Nov 66	Hq, USARV
Zack, Justin S.	Col	DC	12 Nov 66	Hq, USARV
Weiss, Harold G.	LTC	DC	12 Nov 66	932d Med Det.
Welch, Philip H.	LTC	MC	15 Nov 66	71st Evac Hosp.

THE VIEW FROM THE REAR

1/LT Noel A. Miller, MSC

Some of the statistical data compiled in Surgeon's Office, USARV is abstracted from Hospital A&D Sheets, in which errors can be a frequent source of confusion, frustration, and an occasional resigned chuckle. The following admission diagnoses represent the ingenuity of medical officers, the unquestioning acceptance of A&D clerks, and the best efforts of many fimble ningered typists:

Chondromaluria
Pycloniplutis
Panatheria, rt. foot
Injury, allantois
Remote meniscus
Pityrosporum
Tense plantis
Episityis

Fortunately, many of these previously unrecognized diseases and conditions have stabilized into more generally accepted diagnostic entities by disposition time. Other diagnostically routine admissions, however, seem to develop unusual and sometimes exotic complications during the course of hospitalization. The following disposition diagnoses serve as illustrations:

Nausea and Nervousness
Abdominal Pain
Anemia due to blood loss (?)
Viral Uremia
Boils
Patella Effusion
Venicular dermatitis of hands & feet
Abdominal Hyperactivity
Neck Infection
Infection of Blood
Testicle Trouble
Abdomen Swelling
Infection, Leg
Penicillin resistance?
Dislocated spine
Rt. Pleural Diffusion
Rt. Urethra Calculus
Patatal Insufficiency
Vitreous (L) Eye
Spinal Effusion
Ulcer Diathesis
Neck Pain & Shoulder Pain
Profundus of Third Finger
Sore Throat
Acute Skin Reaction
Amebic Hepatitis, Organism Undetermined
Abdominal Cramps
Dermatological Condition
Febrile Illness, etiol. complete
Infected Kidney
Painful Enlarging Mass
Bacterial Miningitis
Furunculitis
Abdominal Pain, treated, improved
Ulcer
Swollen Left Knee
Penis Infection
Lac (R) Inferior Canaliculas
Slit Disc
Paroxysmal Arterial Tachycardia
Cerebral Migraine
Left Orchalgia
Rt Testicle Swollen
Allergic Reaction
Low Pain Syndrome
Abscess, Pilonidal Cyst of Buttock
Loss of Anterior Nerve
Anal Spasm

The preceding lists are only a representative sampling of an extensive collection regretfully maintained by USARV Surgeon's Office. Although A&D sheets offer easily accessible channels for the submission of additional items, potential contributers are strongly urged not to do so.