In My Own Time

Surgery—before and after penicillin

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When I was appointed to the staff of the London Hospital in 1937 it was customary for the junior assistant surgeon to take charge of the septic block, which consisted of two wards with some 50 beds. At that time, considerable interest in the treatment of surgical infections had already been aroused in Britain—firstly, with the introduction of Prontosil, and, later on, the sulphonamides. Further advances were confidently expected.

Nevertheless, despite great achievements in treating streptococcal infections, no comparable advance was made in those infections that were due to *Staphylococcus aureus*—although many new drugs, notably sulphathiazole, were partially successful.

I was interested in the problem as soon as I went to the London because the patients attending the hospital were unique, in that most of them, at that time, came from the East End of London, an area where malnutrition and disease were much in evidence. The average annual admission of cases of acute osteomyelitis was 40 and we rarely lacked patients suffering from abdominal or cervicofacial actinomycosis. Dirty manual jobs meant that severe hand infections, too, were common and for many years a daily hand clinic was held in the outpatient department.

I shall now discuss the results of these various infections and compare them briefly with later patients who were treated with penicillin.

Acute osteomyelitis

In 1940 I gave a lecture at the college of surgeons on the results of treatment of 500 cases of acute osteomyelitis admitted to the London Hospital between 1919 and 1937. The overall mortality was 25%—due, in almost every case, to staphylococcal bacteraemia. The death rate did not vary with the surgical treatment, but was highest in children under 1 year of age (80%). Half the survivors suffered from repeated relapses; the remainder appeared permanently cured.

In 1937, surgical treatment consisted in early relief of tension by drilling the affected bone and then prolonged immobilisation in a Thomas's splint reinforced with plaster: the latter was changed only infrequently and often became offensive. I particularly recall one youth who used to pass the time by killing the maggots when they emerged from his plaster by squirting them from an ethyl chloride spray, a method of treatment instituted by Winnett Orr during the 1914-18 war.

Convalescence was prolonged, but the formation of sequestra was considerably less than after the old guttering procedure.

Towards the end of the war penicillin became available in Britain and I had the opportunity of treating 21 patients—none died. At that time, drilling the infected bone was done in the presence of increasing tension supported by systemic and local penicillin, then secondary suture carried out in 7-10 days. What a transformation from killing maggots, and all this achieved in under 10 years: it seemed miraculous to me and others of my generation.

Actinomycosis

During the time I was in charge of the septic wards we treated at the London Hospital 17 cases of cervicofacial infection: most were referred from the dental department, and all followed infected teeth or fractured jaws. None of these patients died, but many developed osteomyelitis of the lower jaw and, under the treatment then at our disposal—potassium iodides with radiotherapy—the patients took from six months to two years to recover, in the mean time suffering considerable pain and discomfort.

Four patients developed spreading neck infection; two of these died from chest lesions. Six patients with abdominal infection died out of a total of 16. All these infections followed operations for acute appendicitis and the cause of death in most was spread to the liver. During the same period, 11 cases of chest infection were treated in the thoracic unit: eight of them died, spread having occurred throughout the lung or into the chest wall or thoracic vertebrae.

This gloomy picture was transformed by penicillin, reinforced in time by streptomycin. The infection is now rare, since any actinomyces present in the inflamed appendix or infected teeth are eliminated by antibiotics: a further consideration is, of course, the greatly improved dental hygiene in the general population.

Infected hands and other infections

Infections of the hands were common in the East End of London in the 'thirties: many injuries occurred at work and were often neglected so that the hand clinic was always crowded.

I kept records of 140 patients sufficiently ill to be admitted to hospital: 20 of these affected the tendon sheaths and are worth discussing. Eight of them were due to the haemolytic streptococcus; two died from bacteraemia: three recovered with movable fingers; and the remaining three had no movement in their fingers. In contrast, 12 were due to *Staphylococcal* infection: none died, but in every case the finger was stiff because the tendon had died and infection had spread into the bones and joints of the infected phalanx.

After penicillin became available, local drainage and in-

stallation of penicillin into the sheath combined with systemic treatment produced a high proportion of movable fingers so long as treatment was started before death of the tendon.

Today one rarely sees severe infection of the fingers or hands, and this is due in large measure to the first-aid now given in factories and elsewhere, together with prompt antibiotic treatment.

Other severe infections admitted from time to time included cavernous sinus thrombosis, large sloughing carbuncles, and anaerobic hand infections from human bites. Such patients often died or suffered amputation, but if they nowadays occur they can usually be quickly and successfully cured—for example, in 1943 a colleague, Dr Valentine, and I reported 32 cases of acute staphylococcal infection of various types: 29 had a positive blood culture, and 19 of them died (over half). When we treated 13 similar cases after penicillin became available, only two patients died, both of whom had a fulminating septicaemia with colony counts of 7000 and 250 staphylococci per cc of blood.

Shortly after the war, Professor Fleming, Professor Christie, and I were invited by the British Council to give lectures in Denmark on the uses of penicillin: it was an unforgettable experience. Fleming was greeted in a manner which I thought was usually reserved for victorious generals and, although not an inspiring speaker, received a tumultuous reception. At that time, Florey's role in adapting penicillin to clinical use was not fully appreciated. In my view, however, their combined work on conquering staphylococcal infection was outstanding. Before their work severe infections were common in Britain—many due to the staphylococcus—and these caused many deaths from bacteraemia against which drugs or surgery had little to offer.

After the discovery of penicillin and other antibiotics the picture altered dramatically (as we have seen). Finally, another important factor is that much postwar surgery would have been impractical—joint replacements, for example, where prevention of infection is vital and its advent so disastrous.

Reading for Pleasure

A favourite score

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Books are my best investment and I never grudge money spent on them. Bacon said that "reading maketh a full man," but, outside that concerned with work, I read purely for pleasure. I am more self-indulgent now than I used to be, and no longer persevere with a book I am not enjoying. I classify myself a middlebrow—although possibly lowbrow in comparison with many of the contributors to this series. Nevertheless, my taste may appeal to some *BMJ* readers. All the books discussed here I rate as "good reads." My brief was books I had enjoyed during the last six months, but I am going to cheat and go back about a year.

Military history

Cecil Woodham Smith's *The Reason Why* came into my hands years ago as a book society choice. I still think it a perfect history book for the general reader, and it started for me a long-lasting and probably permanent interest in military history. Like many others of my generation, I am fascinated by the first world war. My two favourite books on this are Alistair Horne's *The Price of Glory* and Barbara Tuchman's *August 1914* and I reread both this year. *The Price of Glory* is about Verdun, and for me sums up perfectly the nature of the war with its contradictions and the extraordinary endurance and heroism of the soldiers living under appalling conditions. People like myself (who remember him only from the second) may be surprised by Pétain's role as the hero of Verdun in the first world war. Alone among the French generals, he had the total

trust of his men, and saved the day again when the bulk of the French Army mutinied in 1917: strangely, the Germans and British remained unaware of what was happening. Verdun was, literally, a turning point in the war with its famous catch phrase—"ils ne passeront pas"—usually, and wrongly, attributed to Pétain, but in fact said by Nivelle.

Tuchman's book, on the other hand, is about the events which led up to the war and about the first few weeks of the fighting. As most readers will know, the war opened with the fatally altered Schlieffen Plan. Schlieffen had planned a Cannae-like envelopment with his main force on the right, sweeping round to the west of Paris. Schlieffen's last words on his death-bed were "Only make the right wing strong." Unfortunately for the Germans, in 1914 Von Moltke ignored this advice, and August closed with Gallieni falling on the exposed German flank. I have read numerous books about the first world war, but for me, these were the best and the ones I bought for rereading.

Two books about the second world war stand out and both radically altered my view of the war. The first, *Barbarossa* by Alan Clark, is the story of Hitler's war in Russia. This was a titanic conflict, and the descriptions of the huge tank battles and the street fighting (at which the Russian soldiers excelled) are permanently implanted in my memory. The second book is *Bomber* by Len Deighton, and is about Bomber Command—told from both the British and German points of view. Although it is fiction, it has an authentic feel to it despite the fact that Deighton was too young to have fought in the war himself. In the acknowledgments there is a revealing and true story of a briefing in which the assembled air crew cheer the news that they will be flying out accompanied by Stirlings—the point being that the slower and more vulnerable Stirlings would take most of the flak. Bomber crews had a short life expectancy, and knew it.

Over the years, I have read a lot about wars—among those that particularly interest me are the American Civil War, the Indian Mutiny, the Zulu Wars, and Wellington's Peninsular

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