

# Leonard Colebrook and the treatment of puerperal sepsis

This year marks the 75th anniversary of the publication in *The Lancet* of a paper by Colebrook and Kenny (1936) which was of major importance in obstetric practice. Its title was ‘Treatment of human puerperal infections and of experimental infections in mice with Prontosil’.

Since the earliest times, puerperal sepsis or childbed fever was a dreaded and frequently lethal disease. It was no respecter of race or social standard – if anything, it was more common in affluent society. This is explained, we now know, by the wealthy woman being more likely to have a medical attendant who arrived straight from dealing with a septic case than the peasant in her cottage attended by a helpful neighbour.

Over the centuries, shrewd clinical observers, without the benefit of a knowledge of bacteriology, associated dirty hands of the obstetrician and soiled bed clothes and dressings with this disease. Charles White of Manchester in 1773 emphasized the importance of cleanliness of the delivery room and clothing (but not of the obstetrician’s hands!) in childbirth. Alexander Gordon, in Aberdeen, in his treatise published in 1795, stressed the importance of cleansing the obstetrician if he had been in contact with putrid material or a case of erysipelas, that dreaded and often fatal superficial spreading infection now known to be caused by the streptococcus.

In 1843, Oliver Wendell Holmes, Professor of Anatomy at Harvard, recorded many instances of the transfer of puerperal fever from one patient to another by the attending midwife or doctor. He advised an ‘incubation period’ during which the attendant should stay away from pregnant women after dealing with an infected case. Then, of course, in 1846, Ignaz Semmelweis reduced the dreadful annual death rate of parturient women in the General Hospital in Vienna from 10–30% to about 1% by insisting that

staff and students wash their hands before attending their patient. He died, insane, the very year, 1865, that Joseph Lister performed his first operation under carbolic acid antiseptics at the Royal Infirmary in Glasgow.

However, despite the discovery of the bacterial nature of puerperal fever (the beta-haemolytic streptococcus being an especially dangerous organism in this disease), and the introduction of aseptic techniques, post-delivery infection remained a dangerous obstetric complication with a high death rate. It became a notifiable infectious disease in this country, with an incidence of one to two cases per 1000 deliveries.

In 1935, Leonard Colebrook, bacteriologist and director of the research laboratory at Queen Charlotte’s Maternity Hospital, London, read the report by Gerhard Domagk, of Elberfeld, Germany, of the remarkable efficacy of the red dye, Prontosil rubra, in the treatment of virulent streptococcal infections. (Colebrook had already done sterling work in introducing Dettol as an efficient hand sterilizing agent and being a strong advocate of surgical masks for the attending staff.) Ideally, Colebrook knew that in a trial of Prontosil he should compare results of treated and alternate non-treated patients (these were the days before double blind randomized trials). However, the first results were so striking that he resolved to treat all the cases. Among the first 38 patients there were three deaths; in the subsequent 25 patients, there were none at all, truly remarkable results! This year is the 75th anniversary of his 1936 report.

By now, workers at the Pasteur Institute in Paris had shown that it was the sulphonamide moiety of the Prontosil rubra molecule that was the effective agent (with the advantage that this did not stain the patient a – fortunately temporary – bright red colour!) and the sulphonamides, the beginning of the antibiotic era, were introduced into widespread clinical practice.

Leonard Colebrook was born in 1883. In 1900 he commenced his premedical

studies at the London Hospital Medical College, obtained an entrance scholarship to St. Mary’s and qualified there in 1906. At first, he intended to become a medical missionary but, inspired by Sir Almroth Wright’s lectures in pathology and bacteriology, he entered Wright’s department a year after qualifying, initially working on vaccine therapy.

In 1911, Colebrook published a paper with Alexander Fleming on the newly discovered organic arsenical drug Salvarsan, introduced by Paul Ehrlich, in the treatment of syphilis, so that St. Mary’s became one of the first centres in the UK to use this and its later, less toxic, derivative Neosalvarsan.

After the outbreak of World War I in 1914, Colebrook joined the Royal Army Medical Corps and worked in Almroth Wright’s military laboratory set up in Boulogne, to work, again with Fleming, on wound infection. After the war, Colebrook returned to St. Mary’s to work on puerperal infection, finding that high hopes of using treatment with vaccine therapy were not realized. He then moved to Queen Charlotte’s, where his important work has been outlined above.

During World War II, as a Royal Army Medical Corps colonel, Colebrook worked on the control of infection in burns, first with sulphonamides and then with the newly discovered penicillin. After the war, he was appointed Director of the MRC Burns Unit, first located in Glasgow and then moved to the Accident Hospital in Birmingham, continuing to carry out important work on this subject. He retired in 1948 and died in 1967.

Colebrook received many honours; an honorary DSc from Birmingham, an honorary FRCS and FRCOG, and was appointed FRS in 1945. He was a modest man; he always insisted that his work represented that of his team as a whole. **BJHM**

*Conflict of interest: none.*

Colebrook L, Kenny M (1936) Treatment of human puerperal infections and of experimental infections in mice with Prontosil. *The Lancet* i: 1279

**Professor Harold Ellis** is Emeritus Professor of Surgery, Guy’s, King’s and St Thomas’ School of Biomedical Sciences, London SE1 1UL