Editorial...

CECIL GRAY THE MAN WHO REVOLUTIONIZED ANESTHESIA PRACTICE

ANIS BARAKA

Fig. 1
Professor T Cecil Gray during his term as Dean of the Faculty of Anaesthetists of the Royal College of Surgery England.

It was indeed a great honor for me to work (1962-1963) as a Research Fellow under the leadership of Professor T. Cecil Gray of Liverpool who is one of the pioneers of anesthesia in Great Britain.

Professor Gray introduced d-tubocurarine in clinical anesthesia in the UK, and considered its introduction as “A Milestone in Anaesthesia”\(^1\). Also, he introduced the concept of “Balanced Anaesthesia”\(^2\), and the “Liverpool Technique” which revolutionized anesthesia practice by providing unconsciousness, analgesia and relaxation, the components of the “triad of anaesthesia”.

Professor Cecil Gray was not only a great scientist who guided me into clinical research, but he also guided Dr. Hassan Ali into the famous “train-of-four” principle\(^3,4\).

I salute with love and respect Professor Cecil Gray, Emeritus Professor of Anaesthesia, University of Liverpool. Professor Gray was

* MD, FRCA (Hon), Professor & Chairman, Department of Anesthesiology American University of Beirut, Beirut - Lebanon.
the Chairman of Anaesthesia, University of Liverpool, one of the Founding members and Dean of the Faculty of Anaesthetists of the Royal College of Surgery England, and a previous Editor of the British Journal of Anaesthesia (1958-1963) who supported the transformation of the Journal into the form we know today, and Editor of many anesthesia text books. This great man was decorated by Her Majesty Queen Elizabeth II of Great Britain.

It was back in 1960 when Professor Cecil Gray visited Cairo University, where I was a Clinical Fellow of Anesthesiology. He reviewed my MD thesis about “Factors affecting neuromuscular transmission and neuromuscular blockade”. During one of the receptions welcoming Professor Gray, he announced that he selected me for a Research Fellowship in the Department of Anaesthesia, University of Liverpool in order to continue human research about muscle relaxants.

My MD thesis in Cairo was carried out on the isolated phrenic nerve diaphragm preparation of the rat (Fig. 2), as compared to the newly born kittens.

![Fig. 2](image)

*Fig. 2*

*The isolated phrenic nerve diaphragm preparation of the rat*

The results showed marked species variations. The rat diaphragm was very sensitive to d-tubocurarine as compared to the cat, while the cat was very sensitive to succinylcholine as compared to the rat(Fig. 3).
These results showed that the neuromuscular transmission of the different species is based on function. It appears that the safety margin of neuromuscular transmission in the fast running cat is significantly higher than that of the “hiding” rat. The thesis also showed for the first time that we cannot reverse an overdose of non-depolarizing relaxants by neostigmine (Fig. 4, 5).

Fig. 4
Tubocurarine (2 blocking doses) resulting in complete neuromuscular block despite the presence of neostigmine in the bath.
I traveled to the UK by boat with my wife Aziza and my two children Hesham (4 yrs) and Hoda (2 yrs). I reached UK at the New Year’s Eve of 1962 and it was the coldest year in the history of UK.

It was in Liverpool under the guidance of Professor Gray and the clinical support of Dr. Gordon Bush, that I started to investigate the “Effect of CO$_2$ on neuromuscular blockade of different relaxants in man”. The investigation showed that hypercarbia potentiated the neuromuscular block of d-tubocurarine(Fig. 5), by possible change of its structure from a monquaternary into a bisquaternary molecule (Fig. 6). In contrast, hypercarbia decreased the neuromuscular block of gallamine (Fig. 7).
In Liverpool, I also showed in man that neostigmine cannot antagonize an overdose of the non-depolarizing relaxant d-tubocurarine, and that the rate of reversal depends on the degree of neuromuscular block and on the plasma level of the drug (Fig. 8).
The results of my investigations on humans in Liverpool were published as a series of articles in the British Journal of Anaesthesia, under the continuous guidance and encouragement of Professor Cecil Gray whom I always considered as a model Chairman and as a father.

Professor Gray is the man who introduced me to the concept of the “Fatherly Chairman”, which helped me to Chair the Department of Anesthesiology at the American University of Beirut for more than 35 years. Because of my fellowship with Professor Gray and my work at the American University of Beirut during the tragic events in Lebanon, I was decorated the Honorary Fellowship of the Royal College of Anaesthetists (London) 1990 (Fig. 9).

*Fig. 9*
*Dr. Anis Baraka during his decoration as an Honorary Fellow of the Royal College of Anaesthetists (London).*

Figure 10 is a picture for the Department of Anaesthesia, University of Liverpool 1963 under the leadership of Professor Gray, while Figure 11 shows the picture of our Department of Anesthesiology at the American University of Beirut 2007.
Fig. 10
Department of Anaesthesia, University of Liverpool 1963
Seated: Professor Cecil Gray and Dr. Jackson Rees surrounded by secretaries of the Department.
Standing: Dr. Anis Baraka, Dr. Douglas Joseph, Dr. Gordon Bush and Dr. Ronald Jones

Fig. 11
Department of Anesthesiology at the American University of Beirut Medical Center 2007
Fig. 12

15 Minutes with the Man Who Revolutionized Anaesthesia Practice

Professor Cecil Gray

(by permission from BMJ Careers; 24 February 2007)

Was medicine always the obvious career choice for you? No, I originally intended to become a man of the cloth. I joined the order of monks at the Benedictine college of Ampleforth in Yorkshire, but after two months I became clear that this wasn’t the vocation for me. I rethought my career and returned to my Liverpool home to pursue medicine.

Why anaesthetics? I remember watching an intravenous injection of anaesthesia with ether as an undergraduate and was enormously impressed by its effects. Previously the anaesthesia I had experienced was with opium or nitrous oxide so I noticed a radical improvement. There was no NHS when I graduated in 1937 and since I was determined not to become a hospital doctor, my first job was as an assistant to a GP in a busy Liverpool practice. I was paid only £25 a week, but I had a marvellous time and learnt so much. I became seriously interested in anaesthetics in 1938 while running my own general practice. It was common practice for GPs at that time to administer general anaesthesia to their own patients so that was my introduction to the specialty. I went on to complete the diploma in anaesthesia under the instruction of Dr Robert Milnor, the only anaesthetist in Liverpool with any real academic interest in that subject during a time when anaesthesia was regarded as a Cinderella specialty. I sold my general practice in 1941 to become a full-time anaesthetist.

Was hospital care better 50 years ago? Yes and no. Prior to the NHS Act of 1948, healthcare was a luxury that many people in the UK could not afford. In 1946 “voluntary hospitals” (i.e., fees paid to the medical staff except for those generated by private patients) or those run by local authorities were nationalised and organised by geographic zones, the main goal being that specialist hospital services should be available to all. However, to keep pace with increasingly sophisticated and expensive medical care was necessary to shut down many small hospitals, concentrating the expertise in the large district hospitals, which made it difficult for patients without private transportation to access services.

Poorer shortages were very much evident in hospitals, but on the positive side, nurses were introduced to wards, imposing a strict discipline to ensure that the highest standards were maintained. Superbugs were never heard of and certainly would not have been tolerated anywhere near mater’s ward. However, this discipline extended to visiting patients, which was restricted to one day a week. I believe the more relaxed approach to visits today is more beneficial to patient and family.

How was your career affected by the outbreak of war? At the start of the second world war, I was training to become a full-time hospital anaesthetist. I was accepted into the Royal Army Medical Corps in 1942 and sent over to North Africa, where I was an anaesthetist with a mobile neurosurgical unit. There were some desperate times where we worked through the night to meet the casualties of the battlefield, but there were also some times of great fun and camaraderie. Progress in the 20th century was unparalleled. The two world wars stimulated advancement in areas such as rehabilitation after injury, blood transfusion, anaesthesia, and chemotherapy.

You have met both the Queen and Pope Pius XII? When I married the Queen in 1976 she was extremely gracious and kind. I was appointed on audience with His Holiness Pope Pius XII in the early 1950s. I presented him with bound copies of all my publications to date. He said “for me you have written all this? I will read them with great interest.”

USEFUL LINKS
• Royal College of Anaesthetists: www/rcana.co.uk
• The Association of Anaesthetists of Great Britain and Ireland: www.agaibi.org
• Group of Anaesthetists in Training, aka the Association of Anaesthetists: www.frca.co.uk
References
