Nobel Prize for Anesthesia Pioneer

To the Editor:

The article in Anesthesiology[1] about the lack of Nobel Prizes for anesthesia pioneers was an insightful look into the history of discoveries made in the field by anesthesiologists in the early 20th century. We would like to offer an addendum that a Nobel Prize was awarded to a researcher in the anesthesia field, Daniel Bovet (1907 to 1992), however, not until the mid-20th century. Daniel Bovet was a Swiss-born pharmacologist working in Italy and France who received a Nobel Prize in Physiology or Medicine in 1957 for his discovery of the neuromuscular blocking properties of succinylcholine[2] (fig. 1). Interest in succinylcholine followed closely on the heels of curare. Curare began to be used clinically in the 1930s for tetanus and spastic disorders and in the 1940s for electroconvulsive therapy.[3] The introduction of curare to anesthetic practice also began in the early 1940s when the Canadian anesthesiologist H. R. Griffith used it for muscle relaxation during anesthesia.[4] However, the widespread use of curare was limited by an unreliable supply, impure preparations, and varying neuromuscular blocking strengths of the available plant extracts. Chemists after World War II thus began to synthesize compounds with curariform activity based on the structure of curare. Bovet and his research group described the muscular relaxation properties of succinylcholine in 1949, although the compound had actually been synthetized 40 years earlier. Failure to recognize the neuromuscular blocking activity of succinylcholine, both when it was synthesized and for the following decades, can be attributed to experimental conditions whereby animals were curarized in order to test the effects of succinylcholine and similar compounds on circulation and blood pressure.[3] Also, succinylcholine, comprised of two acetylcholine molecules attached tail to tail, was synthesized before acetylcholine was discovered to be the neurotransmitter at the neuromuscular junction. Bovet[5] furthermore discovered gallamine (Flaxedil), the first synthetic muscle relaxant used in clinical practice. In addition to his work with neuromuscular blockers, he synthesized the first antihistamine, thymoxidiethylamine.

Competing Interests

The authors declare no competing interests.

Tyson J. Olds, M.D., George R. Kracke, Ph.D. University of Missouri School of Medicine, Columbia, Missouri (G.R.K.). krackeg@missouri.edu

References

1. Hansson N, Fangerau H, Tuffs A, Polianski IJ: No silver medal for nobel prize contenders: Why anesthesia pioneers were nominated for but denied the award. Anesthesiology 2016; 125:34–8
2. Available at: http://timbres.france.monde.free.fr/affiche%20image.php?a=Monaco/2006/Timbre%20MC040.06%20Monaco%201er%20Decembre%202006%20Croix%20Rouge%20monegasque%20-%20Daniel%20Bovet%20Prix%20Nobel%20de%20medecine%201957.jpg Accessed November 9, 2016
3. Dorkins HW: Suxamethonium-the development of a modern drug from 1906 to the Present Day. Med Hist 1982; 26:145–168
4. Griffith HR, Johnson GE: The use of curare in general anaesthesia. Anesthesiology 1942; 3:418–20
5. Bovet D: Synthetic inhibitors of neuromuscular transmission, chemical structures and structure activity relationships, International Encyclopedia of Pharmacol. and Therap. Neuromuscular Blocking and Stimulating Agents, Vol 1. Oxford, Pergamon Press, 1972, pp 243–94

(Accepted for publication October 13, 2016.)

Fig. 1. Stamp commemorating the 1957 Nobel Prize in Physiology or Medicine given to Daniel Bovet, discoverer of the neuromuscular blocking effects of succinylcholine. Also shown on the stamp[2] are Alfred Nobel and the structure of histamine; Bovet also discovered the first antihistamine.