

Inoculating Against Smallpox: Towards a More Accurate, Comprehensive Assessment of Medical Achievements

Covid-19 has aroused interest in the history of fighting deadly infectious diseases as epidemic and pandemic with smallpox being an excellent example. Professor Tom Solomon (Neurology, University of Liverpool) has written a timely piece in *The Conversation* (20/07/2021), lamenting the amnesia regarding the contribution of Lady Mary Wortley Montague in the history of immunisation against smallpox, as scientists and public are more prone to recount only Edward Jenner's discovery of vaccination against it.

As the wife of the British ambassador to the Ottoman court, the good Lady went to Istanbul in 1716 and stayed a couple of years. She made detailed observations especially of the lives of women, their clothes, lifestyle and traditions which she found exotically intriguing. Significantly, she observed a practice which she called "ingrafting" carried out mainly by older women to render children safe from succumbing to smallpox by inoculating them with a small dose of the pathogen; this then induced mild symptoms which they survived with ease. She had not heard of deaths reported from such an intervention. She herself had smallpox but survived with some scars on her face. She was therefore keen to protect her own children from the disease especially her young son. She approached the embassy doctor, Charles Maitland, to do it. He wisely asked a leading member of these women who happened to be ethnically Greek to perform it. (One wonders why Lady Montague did not directly ask the female practitioner and why Maitland did not do it himself but actually got the leading "professional" of the day to undertake it, with him "supervising" the procedure?) Her son, too, survived the operation with insouciance. Her experience resolved her to "bring this useful invention into fashion in England". In 1721, during a smallpox epidemic in England she asked the same embassy doctor to inoculate her young daughter. This time, the operation was in England, not Istanbul. So, the poor doctor was worried about performing such an exotic and low-class procedure upon a member of the nobility as the young Mary Alice indeed was. He got three medics to witness the operation. Some people were impressed, others remained sceptical.

To stifle the doubting Thomases, Lady Montague with daughter visited smallpox households to bear witness to their lack of fear about infection. Scepticism persisted until royal permission was granted, due to the strenuous efforts of Sir Hans Sloane, to conduct the Newgate Prison experiment in which six condemned prisoners (gender evenly divided) with no earlier records of smallpox infection were inoculated. If they survived, their death penalty would be commuted for transportation. They survived.

The story told above is true, but at best partial. What needs to be added to make the story historically more comprehensive is the role played by the ancient Chinese in their efforts to control smallpox via variolation/inoculation for which there is textual evidence. It includes:

1. The principle of using toxin to fight toxin emerged during the late Han dynasty in *Lun Heng*/《论衡》 *Critical Essays* c 85 CE by Wang Chong/王充.
2. Ge Hong/葛洪 (Jin dynasty, 282-343/364 CE) in a manual (《肘后备急方》/ *Prescriptions for Emergency Use*, attributed to him) described in detail a method of treating rabies similar to that which Pasteur later successfully used.
3. In the Tang dynasty, Sun Simiao/孙思邈 in one of his tomes (《千金药方》/ *Prescriptions Worth a Thousand Gold*) described a method of inoculation against smallpox which bore remarkable resemblance to what the Turkish women did in 18th century Turkey.
4. In the Song dynasty, a chancellor called Wang Dan 王旦 got in touch with a "miracle physician" from Mount Emei, Sichuan province, to inoculate his son, recounted in 《痘疹定论》/ *Discourse Definitive on Smallpox* by 朱纯嘏/Zhu Chunjia.
5. Inoculation and inoculators were recorded to be thriving, for instance, during the reign of the Ming Longqing/隆庆 emperor (1567-1572) as mentioned in the Qing dynasty physician Yu Maokun/俞茂鲲's book on variolation.
6. In 1682, the Qing Kangxi emperor, given his own personal experience of the disease, issued an edict that variolation should be carried out in every region, especially amongst the various Manchu Banners/tribes.
7. Under the emperor Qianlong, in 1742, the Royal Academy of Medicine/太医院 published a tome which covered the topic of variolation – 《医宗金鉴》/ *The Golden Mirror of the Orthodox Lineage of Medicine*.
8. Publications in early Qing dynasty include 《幼科种痘心法要旨》/ *Paediatrics: Crucial Instructions About Inoculation Against Smallpox*/ in 1742 by Wu Qian/吴谦 (who was Head Supervisor of compilation at 7).

9. Four methods of variolation were recognised and long used in China: set out by the late Ming-early Qing dynasty physician-cum-scholar Zhang Lu/张璐 (1617-1699) in one of his numerous books entitled 《张氏医通》/Zhang: *Clarifying Medicine*.
 - (a) Get healthy children to wear the inner garments of infected children: 痘衣法. Simplest but acknowledged not to be very effective.
 - (b) Puncture the blister, collect some pus with some cotton wool and stick it up the nostril of a healthy child: 痘浆法. Or transfer pus to a scratch on the arm of healthy child.
 - (c) Collect some scabs (20-30) from victim, grind into fine powder, introduce into a tube, blow the pathogenic powder into the nose of the healthy child at the other end: 旱苗法 (which Kangxi had favoured).
 - (d) Collect some scabs from victim, grind into fine powder, add three to five drops of clean water or breast milk to turn it into a mixture, spread thinly on a piece of cotton wool, screw it up into the size of a Chinese date and stick it up the nose of the healthy child, remove after 12 hours: 水苗法.

The method used by the Turkish women reported by Lady Montague approximated to method (b). These Chinese methods reached Russia in 1688 which sent doctors to China to learn about them, then Japan (1744), Korea (1763); from Russia they also went to Turkey where Lady Montague observed one such method in 1716.

General Reflections

All of us authors are limited in our knowledge of the subject we are writing about. We hope that our respective contributions would go towards building a more comprehensive corpus of knowledge than each of our individual efforts is capable of. It is in this spirit that I examine Professor Solomon's contribution.

Every author necessarily writes from a certain vantage point. I write as a philosopher of medicine and as someone with some knowledge of Chinese Medicine who would like to add my morsel to make the cake of knowledge somewhat larger.

Gaps in knowledge are, perhaps, not the most worrying. What I find problematic are the presuppositions which form an "ideological" underpinning, usually implicit, for the perspective adopted. Writers trained primarily in modern (Western) medicine/Biomedicine, tend to adopt the vantage point that the only paradigm of medical reasoning/scientificity is the one embedded within the framework of their medicine. My aim here is simply to urge scholars to become more aware of what happened elsewhere in other traditions and cultures outside the modern European/Western tradition of doing medicine. I contribute my ha'penny worth about the Chinese tradition of variolation to dispel the misapprehension that nothing existed elsewhere or that even if it exists, it does not count. (For instance, WHO (28/06/2016), US CDC (20/02/2021) do not mention the Chinese contribution but <https://www.history.com/news/the-rise-and-fall-of-smallpox> does skimpily.)

Another wider aim is to show the commonalities between these traditions, between what Lady Montague had found in Turkey with the Chinese tradition and in that sense with what Lady Montague herself had experimented in England with the Chinese tradition itself. In the 18th century, both Chinese and Western courts were very engaged with the project of preventing smallpox from ravaging their families, their lands and their people.

In a nutshell, it is to urge scholars writing within the (modern) Western tradition not to assume Essentialism of Method, that only their tradition of doing medicine counts as "medicine" or "proper medicine" or "scientific medicine". The record of medical achievements is a temporally and spatially extended project in the history of Mankind's efforts to protect itself from disease and suffering.

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