

VIRUS

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Protection from Smallpox before 1700: the “Buying of Pustules” in Early Modern Central Europe¹

Summary

Smallpox posed a significant epidemiological threat in the early modern period. The eradication of smallpox in the 20th century was preceded by numerous medical discoveries, such as vaccination. Even before that, so-called variolation, i.e. an older and riskier form of smallpox protection, had spread in Europe after being imported from the East in the 1720s. This text explains how Europeans fought smallpox even before variolation was introduced. The records in the medical literature of the second half of the 17th century show that there were at least two independent traditions within which attempts were made to reduce the effects of smallpox. The first was based on an academic medical environment and can apparently be first found in the work of Franciscus de le Boë. The other was part of a folk tradition, the so-called “buying of pustules”, which was practised in the territory of northern Italy, the British Isles and Poland. In order to be able to present the mentioned methods in a broader context, this paper deals with contemporary views of the pathology of smallpox and also gender-specific aspects of the history of the disease.

Pocken stellten in der Frühen Neuzeit eine bedeutende epidemiologische Bedrohung dar. Der Ausrottung der Pocken im 20. Jahrhundert sind zahlreiche medizinische Entdeckungen vorausgegangen, wie beispielsweise die Vakzination. Schon zuvor hatte sich die sogenannte Variolation, d.h. eine ältere und riskantere Form des Pockenschutzes in Europa verbreitet, nachdem sie in den zwanziger Jahren des 18. Jahrhunderts aus dem Osten importiert worden war. Dieser Text erklärt, wie die Europäer die Pocken noch vor der Einführung der Variolation bekämpften. Die Aufzeichnungen in der medizinischen Literatur der zweiten Hälfte des 17. Jahrhunderts zeigen, dass es wenigstens zwei unabhängige Traditionen gab, innerhalb derer versucht wurde, die Auswirkungen von Pocken zu verringern. Die erste stützte sich auf ein akademisches medizinisches Umfeld und ist offensichtlich zum ersten Mal in der Arbeit von Franciscus de le Boë zu finden. Die andere war ein Bestandteil der Volkstradition, das sogenannte “Pockenkaufen”, das auf dem Gebiet von Norditalien, auf den Britischen Inseln und im heutigen Polen

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praktiziert wurde. Um die erwähnten Methoden im weiteren Sinne vorstellen zu können, werden in diesem Beitrag die zeitgenössischen Auffassungen von der Pathologie der Pocken und auch einige geschlechtsspezifische Aspekte der Geschichte dieser Krankheit behandelt.

Keywords

Smallpox, Variolation, Buying of Pustules, Mary Wortley Montagu, 17th Century, Epidemic, Gender

Introduction

The history of the fight against smallpox revolves around several crucial points. The most recent of which is the global campaign leading to its eradication, which was officially declared by the World Health Assembly in 1980. Before that, the discovery of a vaccine in the late 18th century and its gradual worldwide acceptance is rightfully extolled as an important step in the history of medicine.² Vaccination had a riskier and less effective precursor called variolation, which was introduced to Europe for the first time in the 1720s. It is important to note that this chronology is fundamentally Eurocentric as various forms of variolation were employed in India, the Ottoman Empire, and China decades and perhaps centuries before they were brought to the West.³ This paper will describe the early European methods of smallpox control, predating even the onset of variolation as they were recorded by 17th and early 18th century medical writers. I will examine the context in which these protective measures appeared, with particular emphasis on the role of gender. The gender perspective has already been discussed at length in relation to the British history of variolation (namely the role of Lady Mary Wortley Montagu), and I would like to demonstrate that this anglophone chapter of smallpox's history bears a striking resemblance to the 17th century pre-variolation narrative. To achieve this goal, I will first briefly tackle the terminology of smallpox prevention, and sum up what is generally known about the early chronology of the anti-smallpox campaign, while also highlighting related topics in the current historical literature. After that, the core part of my paper will explain how 17th century medicine understood the pathology of smallpox and what the early attempts to regulate smallpox epidemics were, as suggested by early modern academically educated men in the pre-variolation period. Finally, I will turn my attention to the folk ritual called the “buying of pustules” and explain the early modern discourse about its relevance.

2 For a recent contribution to the topic of vaccination in Central Europe see Ivo CERMAN, Die Erziehungskunst nach Karl Heinrich Seibt. Zur Pädagogik der Aufklärung in Prag, in: *Journal für Kultur und Geschichte der Deutschen im östlichen Europa* 1 (2020), 135–156.

3 Frank FENNER et al., *Smallpox and its Eradication* (Geneva 1988), 245–253.

Brief Overview and Terminology of Smallpox Immunization

An individual who survives the smallpox infection develops long term immunity so, in a certain sense, the disease protects the victims against itself. This fact did not escape the attention of our ancestors, who often viewed the condition as an unavoidable yet singular event in everyone's life.⁴ Additionally, smallpox is unique due to the fact that it is closely related to viruses such as cowpox, an animal disease with substantially milder symptoms, which offers a cross-immunity. This means that patients who contracted smallpox were later in life protected against cowpox, and those infected with cowpox did not suffer from smallpox. While the former case had little significance, the latter, first observed in the 18th century, had a huge impact.

The discovery that cowpox provides long term protection against its dangerous relative is traditionally attributed to the British physician Edward Jenner (1749–1823).⁵ It is likely that others had, at least partially, found out about this principle before him, but Jenner's publication triggered a broad interest in this medical procedure and therefore his significance cannot be ignored.⁶ The Latin term for cow is *vacca*, hence the term "vaccination" for the Jennerian invention. Later, this term lost its original connection with the animal host, which is why we use words like vaccine, vaccinate or vaccination for artificially induced immunity against a broad range of infectious diseases.

The discovery of a vaccine did not come out of the blue, it was an extension of an older, riskier protective technique using the live smallpox virus, which was based on two observations. Apart from the lifelong immunity after a singular bout of the disease, our ancestors also realized that not all cases of smallpox were the same. Some patients developed the severe, life threatening form (often called "confluent") but others presented with milder symptoms. Naturally, an artificial induction of a milder form of human smallpox would be desirable because it provided individuals with immunity while avoiding the complications associated with severe cases.

Historians call this predecessor to vaccination, which employed the live smallpox virus, "variolation" (from the Latin word for smallpox, *variola*), but other terms like engrafting, inoculation, or the Latin word *insitio* had also been used. The idea of variolation as it was applied in 18th century Western Europe was an import from Eastern folk medicine. During the early modern period it had spread among certain ethnic groups within the Ottoman Empire and, as contact between the East and West intensified, the concept began to propagate among the educated upper classes in some European countries during the second and third decade of the 18th century. Lady Mary Wortley Montagu (1689–1762) is often attributed with the promotion

4 To be more precise, early modern authors accepted the possibility of repeated bouts of smallpox in a single individual, but considered this occurrence very rare.

5 The monograph on the history of smallpox by Genevieve Miller, originally published in 1957 and recently reprinted, is still the best source of information with its exceptional command of archival sources on the subject. Genevieve MILLER, *The Adoption of Inoculation for Smallpox in England and France* (Philadelphia 1957).

6 For a list of Jenner's predecessors see FENNER et al., *Smallpox*, see note 3, 258. For context on some of these individuals see Lydia THURSTON / Gareth WILLIAMS, *An Examination of John Fewster's Role in the Discovery of a Smallpox Vaccination*, in: *The Journal of the Royal College of Physicians of Edinburgh* 45 (2015), 173–179; Peter C. PLETT, *Peter Plett und die übrigen Entdecker der Kuhpockenimpfung vor Edward Jenner*, in: *Sudhoff's Archiv* 90/2 (2006), 219–232; Jean THÉODORIDÈS, *Rabault-Pommier, a Neglected Precursor of Jenner*, in: *Medical History* 23 (1979), 479–480.

of this technique among the British upper classes, although she was by no means the first to have her children immunized against smallpox in this way, nor was she the first to write about the topic in Britain or indeed in Europe.⁷

Separately from the European connection, variolation was also picked up by the American pastor Cotton Mather (1663–1728). Mather gained knowledge of the technique from a slave called Onesimus who underwent the procedure in his native Libya, before being enslaved and transported to the New World.⁸ Pastor Mather then became acquainted with early European descriptions of the method published in *Philosophical Transactions*, which inspired his strong support for variolation during the major epidemic outbreak in Boston (1721).⁹

As the American case demonstrates, Britain was not an exclusive mediator of Eastern knowledge about smallpox prevention. Although the first printed report was indeed published in the Royal Society's *Philosophical Transactions* as early as 1714, its author Emanuel Timonius also sold another version to Sweden.¹⁰ From there it was relayed by the royal physician Samuel Skraggenstierna (ca. 1660–1718) to Wrocławian physician Gottfried Klauinig (+ 1731) and published in the scientific journal of German Academia Leopoldina in 1717. The influence of Leopoldina, founded in 1652, and its scientific journal on the discussion about smallpox is difficult to estimate. It is related to questions about society's knowledge production and sharing in the linguistically and culturally diverse milieu of central Europe. As Simon Rebohm noted recently, this topic so far received only limited attention.¹¹ Czech membership suggests that at the turn of the 18th century Leopoldina impacted on intellectual networks in broader central Europe.¹²

It is likely that most Central European physicians found out about the procedure from this local source rather than from the *Philosophical Transactions* issued by the Royal Society.¹³

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- 7 Lady Montagu's role is discussed by Genevieve MILLER, *Putting Lady Mary in her Place. A Discussion of Historical Causation*, in: *Bulletin of the History of Medicine* 55/1 (1981), 2–16; Isobel GRUNDY, *Montagu's Variolation*, in: *Endeavour* 24/1 (2000), 4–7; Diana BARNES, *The Public Life of a Woman of Wit and Quality. Lady Mary Wortley Montagu and the Vogue for Smallpox Inoculation*, in: *Feminist Studies* 38/2 (2012), 330–362.
- 8 Mather mentions in his diary that Onesimus was given to him by "Some Gentlemen of our Church" as a gift in December 1706; see Worthington Chauncey FORD, ed., *Diary of Cotton Mather, Volume I. 1681–1708* (n.p., n.d.), 579. Genevieve Miller who was otherwise very careful with her sources spelled the name Onisemus, which is incorrect. MILLER, *The Adoption*, see note 5, 53.
- 9 FENNER et al., *Smallpox*, see note 3, 247, 256; MILLER, *Putting Lady*, see note 7, 6–7.
- 10 Emanuel TIMONIUS / John WOODWARD, *An Account, or History, of the Procuring the Smallpox by Incision, or Inoculation; as it has for some Time been Practised at Constantinople*, in: *Philosophical Transactions* 29/339 (1714), 72–82. Note that in this period the journal had a rather idiosyncratic numbering of issues. Years 1714 to 1716 are collected into one volume (29) which is further divided into issues starting with number 338, each covering roughly a trimester. The pagination for all three years of volume 29 is, however, continuous.
- 11 Simon REBOHM, *Knowledge, Community and Authority at the Academia Naturae Curiosorum*, in: Pietro Daniel Omodeo / Volkhard Wels, eds., *Natural Knowledge and Aristotelianism at Early Modern Protestant Universities* (= *Episteme* 14, Wiesbaden 2019), 299–314.
- 12 Eva ROZSIVALOVÁ, *Doktoři a profesoři pražské lékařské fakulty a jejich vztahy k Leopoldinsko-Karolinské akademii do konce 18. století*, in: *Acta Universitatis Carolinae – Historia Universitatis Carolinae Pragensis* 21/1 (1981), 53–65.
- 13 Gotofredus KLAUNIG, *Observatio II. Historia variolarum, quae per insitionem excitantur*, in: *Academiae Caesareo-Leopoldinae Carolinae naturae curiosorum Ephemerides sive observationum medico-physicarum a celeberrimis viris tum medicis, tum aliis eruditissimis in Germania et extra eam communicatarum centuria V. et VI. cum appendice* (Nürnberg 1717), 3–20. This text compiles Emanuel Timonius' report with Jacob Pylarini's book on smallpox inoculation which was first published separately in Venice and later also in the *Philosophical Transactions*.

Shortly after Timonius, another physician of Greek origin Jacob Pylarini (1659–1718) published his own take on the variolation procedure. It saw the light of day for the first time in Venice in 1715, the following year it was reprinted in *Philosophical Transactions*, and in 1717 again in the journal of German Academia Leopoldina as part of Klaunig's report.¹⁴ Both Timonius and Pylarini's contributions to smallpox prevention have been discussed in some detail by other historians of medicine, as they are part of the well-established historical narrative.¹⁵

The rapid spread of awareness about this medical novelty is demonstrated by the writings of Jan Adam Reiman (also spelled Rayman or Raimann, 1690–1770) who served as a municipal physician at the city of Prešov (now in Eastern Slovakia).¹⁶ In 1717 Reiman, who was a graduate of Leiden university, wrote a paper on smallpox therapy dedicating a whole passage to variolation.¹⁷ He was exceptionally well acquainted with the contemporary literature on the subject, as demonstrated by the fact that he quoted no less than five contemporary sources, including one in English.¹⁸ Thanks to his careful citation of sources, Reiman provided an unsurpassed perspective on the importance of early 18th century intellectual networks in the sharing of knowledge about smallpox prevention.

To sum up the previous paragraphs, the Eastern variolation model, which is often treated by historians as the first serious attempt to manage smallpox epidemics, was initially noted by various authors during the second decade of the 18th century. Within a short time, it appeared in several academic sources, spurring interest in the procedure before it started to proliferate in

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- 14 Jacob PYLARINI, *Nova et tuta variolas excitandi per transplantationem methodus* (Venice 1715); Jacob PYLARINI, *Nova et tuta variolas excitandi per transplantationem methodus, nuper inventa et in usum tracta*, in: *Philosophical Transactions* 29/347 (1716), 393–299 (this page number should be 399, the original has a print error); for the third printed version see the previous footnote.
- 15 Recently Gareth WILLIAMS, *Angel of Death. The Story of Smallpox* (Basingstoke 2010), 63–68; a better take on both physicians can be found in MILLER, *The Adoption*, see note 5, primarily 55–61 and several other places. Pylarini's biography was published by C. N. ALIVISATOS, *The First Immunologist, James Pylarino (1659–1718)*, and the *Introduction of Variolation*, in: *Proceedings of the Royal Society of Medicine* 27/8 (1934), 1099–1104 (the author's first name in this paper was not provided).
- 16 I am not aware of information on Reiman in English. Genevieve Miller mentioned Reiman in her monograph, but only briefly and she was not aware of his 1717 paper discussed in this article. MILLER, *The Adoption*, see note 5, 173). Most other papers are either in Slovak or Hungarian. See Ladislav DUBAY, *K problematike variolizácie na Slovensku a v Európe*, in: *Bratislavské lekárske listy* 52/2 (1969), 230–232; Norbert DUKA, *Pokus prešovského lekára J. A. Raymanna s očkovaním proti kiahňam*, in: *Dějiny vědy a techniky* 1 (1968), 48–50; Jozef LUKÁČ, ed., *Zborník vedeckej konferencie – I. Reimanových dní – s medzinárodnou účasťou pri príležitosti 250. výročia prvej variolizácie v kontinentálnej Európe, ktorú uskutočnil J. A. Reiman, fyzikus mesta Prešova a Šarišskej župy. Prešov 5.–7. októbra 1972 (Prešov 1973)*. Lukáč's conference proceedings contain the most complete information on Reiman partially translated to German, but it is very difficult to find in libraries nowadays. Reiman was also briefly mentioned in FENNER et al., *Smallpox*, see note 3, 253, however, this source was entirely dependent on Lukáč and they cite him incorrectly, so foreign researchers had no chance to find the text based on this source.
- 17 Jan Adam REIMAN, *Von neuen oder ungewöhnlichen Blatter-Medicamentis, Curen* (Classis V., Articulus I.), in: *Sammlung von Natur- und Medicin- wie auch hierzu gehörigen Kunst- und Literatur-Geschichten so sich Anno 1717 in den 3. Sommer-Monaten in Schlesien und andern Ländern begeben, Sommer-Quartal 1717 (Wrocław 1718)*, 185–187. The passage is anonymous but authorship is retrospectively acknowledged in Reiman's paper on smallpox published in the same journal in 1721.
- 18 These sources are in chronological order: Timonius' report in *Philosophical Transactions* (1714), Jacob Pylarini's report published in Venice (1715), Peter Kennedy's *Essay on External Remedies* published in 1715, a second version of Timonius and Pylarini's text edited in *Ephemerides Academiae Leopoldinae* through Skraggenstierna and Klaunig (1717) as well as an unidentified treatise recorded as *Historia tussis*.

practice. This cross-cultural sharing of knowledge was clearly not limited only to British academia, as demonstrated by the case of the slave Onesimus and various citations in continental European medical literature.

Before proceeding further into the past, I need to explain what 18th century authors meant by the term variolation. While there were some minor variations, the principle was always the same. First, a surgeon made small cuts or punctures in the patient's skin and then the wounds were infected with matter containing the live smallpox virus from another person. This idea of inserting an infectious agent into skin cuts explains why physicians used terms like “engrafting” or “inoculation”, both taken from farming and more specifically fruit tree cultivation. However, 17th century medical literature shows that this surgical procedure was not the first attempt to regulate smallpox epidemics in Europe.

Early Modern Pathology of Smallpox

Let me focus briefly on the pathology of smallpox as it was understood by early modern physicians. There were several texts which discussed this issue. I will draw from the writings of the famous Italian physician Girolamo Fracastoro, who mentioned smallpox in his book *On Contagion*.¹⁹ A very extensive explanation was provided by the influential 16th century Italian Girolamo Mercuriale in his treatise *On Diseases of Children*.²⁰ For the 17th century I will rely on theories published by the prominent scholar from Vienna university, professor Paul de Sorbait (1624–1691), who was clearly read outside the Viennese academic milieu during that time.²¹

Although details vary slightly, the general elements given by all three authors were the same. Due to its highly contagious nature smallpox was widespread, so nearly everyone underwent an attack of the disease, thus gaining immunity in the process. This ubiquitous nature led many physicians to the belief that smallpox might not be a disease at all but rather a necessary physiological process. The roots of the condition were presumably planted even before birth, while the fetus was nourished *in utero* either by maternal blood or by milk. This nourishment purportedly contained impurities, which slowly accumulated in the child's body creating an unstable “load” with a tendency to “boil over” through the skin when the attack of smallpox was triggered.

This is why physicians discussing the pathology of smallpox in the early modern period did not see the disease exclusively in negative terms, despite its high fatality rate and other accompanying complications, such as potential disability or scars as remaining consequences.

19 Girolamo FRACASTORO, Hieronymi Fracastorii Veron[ensis] Liber I, De sympathia et antipathia rerum. De contagione, et co[n]tagiosis morbis, et eorum curatione. Libri tres (Lyon 1550), 442.

20 Girolamo MERCURIALE, De morbis puerorum tractatus locupletissimi ... (Venice 1583), 4^v–5^v (note that this volume is foliated not paginated).

21 Paul de SORBAIT, *Universa medicina practica* (Nürnberg 1672), 545–551, particularly 546. On Sorbait's reception in writings of the Czech physician Alexander A. I. Schambský (1687–1715) see Karel ČERNÝ, *Mor 1480–1730: Epidemie v lékařských traktátech raného novověku* (Prague 2014), 66, 417, 445. It is also supported by his inclusion in the list of recommended reading for students of Prague medical faculty: Jan František LÖW of Erlsfeld, *Regulae de studio medico bene inchoando* (Nürnberg 1693), 57, 61, 65, 68, 74, 75.

By undergoing the smallpox episode, the patient's body supposedly rid itself of the inherent maternal contamination. This theory of an inborn toxic "load" which was eliminated during a single critical moment later in the life fits well within the framework of historical medical theories for several reasons.

Firstly, it allowed for the bypassing of the nonexistent idea of immunity. Early modern physicians did not have a concept of bacteria and viruses in modern sense, nor indeed of the physiological immune response. Yet empirical observations suggested that some diseases (smallpox, measles) affected a single person only once. There was some discussion around this fact as commentators occasionally accepted the possibility that unfortunate individuals may suffer from smallpox twice or even three times in their life, but this was thought to be very rare. With few exceptions, most people underwent the disease only once which was interpreted as a form of purification, the removing of most if not all of the noxious substance from the body. Early modern physicians believed that these individuals could not develop smallpox again, because they no longer had this inherited maternal contaminant.

The idea of impurities removed in a single critical episode also connects with the broader context of early modern pathology. Since ancient times, medical writers have put great emphasis on the idea of critical "days" in the course of an acute illness. Each disease was supposed to follow a pattern where from the first stage it grew stronger and stronger till a pivotal point was reached, after that if the body prevailed, the illness began to wane until it disappeared and the patient recovered. The assumption that there might be such a critical moment in everybody's life, during which the impurities inherited from maternal blood are decisively eliminated, is very similar.

Finally, this theory also conceptually fitted well into the main therapeutic/preventative narrative of pre-modern medicine emphasizing the constant struggle to keep the body clean. Popular medical interventions like a special diet, bloodletting, the use of purgatives, emetics, and enemas were understood as means to achieve physical cleanliness and keep patients free from the continuous build-up of impurities.

Understanding the historical pathology of smallpox is important because it allows us to show how it was related to ideas about the infectious nature of the disease. The concept of innate contamination suggested that patients do not "catch" the disease but rather that everybody carries their own smallpox with them from birth. The question is, how does this theory square with the adoption of variolation, which is based on the introduction of infectious matter from an afflicted person to a "healthy" individual? This seems to be in stark contrast to the concept of the "innate disease" as discussed above. However, in reality both concepts could comfortably coexist. The innate impurities acquired in the prenatal period were seen as a substantive cause of the disease or, to put it differently, they were the disease *in potentia*. In order to reveal itself the disease also needed a trigger; something which "tipped the scales" so that the contamination finally boiled over in a short but dramatic process. I would argue that early modern physicians saw variolation as this kind of starting mechanism. This is well explained by Paul de Sorbait, who provided a list of phenomena with the similar ability to initiate smallpox including certain weather conditions, excessive physical activity, too much wine, hot, fatty, sweet or spoiled food, and also buttermilk.²²

22 This list of smallpox triggers is taken from SORBAIT, *Universa medicina*, see note 21, 547.

The conceptual integrity is important because it suggests that the introduction of variolation into European medical practice might have been less of a novelty than we tend to presume. An early modern physician did not have to redefine smallpox and its treatment in order to incorporate variolation into his theoretical framework, because the change boiled down to a rather small addition into the already established concept of the pathology and therapy of disease.

Variolation before Inoculation

The theories described in the previous part of my paper explain why many physicians never considered prophylactic measures against smallpox. They treated the infection as something unavoidable and focused on often dubious attempts to mitigate the course of a smallpox attack in patients by providing ointments for pustules, a suitable diet, or bloodletting. This attitude also seems to prevail in smallpox historiography, which tends to perceive the introduction of Eastern variolation to Britain as the beginning of modern smallpox prevention. One recent author went as far as calling the period before Lady Mary the “Age of Passivity”, which corresponds with the idea that the disease was a physiological rather than a pathological process and therefore everyone had to suffer their singular encounter with death.²³ Such historical narratives fail to appreciate that many early modern authors were far from passive, and some developed measures which could objectively curb the negative impact on the susceptible population. Sources also record similar attempts practiced among the general public.

These pre-1720s measures also took the form of variolation, although without surgically introducing infectious matter into cuts in patient’s skin. Instead, they were based on the belief that some epidemics of smallpox were milder than others, and it was therefore expedient to get vulnerable individuals “proactively” infected when the circumstances suggested that they might develop a milder case of the disease. What makes these two approaches interesting from the perspective of medical history is the fact that while one was “academic”, which means that it was proposed and actively advocated by physicians, the other was performed by women and treated by scholarly writers with scorn.

The first known example of an academic prevention strategy against smallpox appears in the *Fourth Book on Medical Practice*, published posthumously in 1674, by Franciscus de le Boë (1614–1672) also known as Sylvius, who suggested that at the onset of an epidemic parents should watch for the severity of the disease.²⁴ If it produces cases with a grave course, small children who had not yet suffered from smallpox should be evacuated to a place with healthier air and remain sequestered in safety until the infection disappeared or turned into a milder form. On the other hand, if the epidemic caused mild cases of smallpox with few pustules and without major facial scarification, healthy children should be put together with the sick into the

23 The term “Age of Passivity” is taken from WILLIAMS, Angel, see note 15, 28.

24 FRANCISCUS SYLVIUS, *Praxeos medicae liber quartus. De morbis infantum, et aliis quibusdam memoratu dignis affectibus* (Amsterdam 1674), 137–138. It is worth mentioning that in 1913 the Swiss historian of medicine Arnold Klebs speculated that a short passage from *Flos medicinae* written in medieval Salerno school might refer to a similar practice, but I cannot evaluate this claim. For details see Arnold C. KLEBS, *The Historic Evolution of Variolation*, in: *Bulletin of the Johns Hopkins Hospital* 24/265 (1913), 69–83, here 70 and related footnote.

same room so that they hopefully catch this benign form of the disease. However, it is difficult to find out whether Sylvius' suggestion gained any traction among medical professionals. A few years after its publication it was cited word for word by the Swiss physician Théophile Bonet (1620–1689) in his *Mercury on the Crossroads* (1682).²⁵

At the very end of the 17th century, Prague professor Jan František Löw of Eriksfeld (1648–1725) published a treatise on smallpox, measles and other child diseases poetically titled *Medical Birth with Great Care by Leo unto the Light Delivered*, where he notes that so far only few authors discussed prevention against smallpox.²⁶ Löw explained that this silence might be the result of either the physicians' belief that prevention is not important, or the lack of interest among the general public. A few pages later we find Sylvius' idea that children should first be evacuated and then exposed to the infection if it turns out to be mild.²⁷ Although Löw did not attribute the text to Sylvius, the wording is very similar to the original and it is therefore likely that he was familiar either with Sylvius' or Bonet's passage.

Finally, at the beginning of the 18th century the recommendation was also mentioned in a medical dissertation on smallpox and measles defended by Johann Christfried Richter.²⁸ As far as I am able to ascertain, nothing is known about this author apart from the fact that he was born in the Thuringian city of Saalfeld and graduated in 1711 from the Jena university under the tutelage of Georg Wolfgang Wedel (1645–1721). Although Richter did not quote Sylvius, he used the same phrase for mild smallpox (*variola boni moris*) and acknowledged that some epidemics were indeed less severe than others. However, he disagreed with the practical application of Sylvius' suggestion. When two patients catch the same disease, Richter argued, they do not necessarily have identical symptoms; where one's suffering is short and light, the other may die. The Thuringian physician warned that exposing anyone to smallpox on purpose would be irresponsible because "there is no certitude in war and diseases".²⁹

Sylvius, Bonet, Löw, and Richter are the only sources I was able to find which in one way or another comment on the possibility of mitigating the disease by exposing children to symptomatically less severe episodes. I would like to emphasize that it would require more research in order to ascertain whether this idea took hold for the first time with Sylvius. Sorbait and Löw seem to be the only authors in Habsburg countries who wrote major monographs on smallpox.³⁰ While Sorbait did not record this prophylactic option, Löw did and it is therefore possible that the idea reached Prague and Vienna sometime between when their books were published, i.e. during the last quarter of the 17th century.

Apart from this prevention proposed by medical authors, there was also a method practiced in folk medicine called the "buying of pustules". Records in late 17th century scholarly literature provide sparse details on the subject but it was clearly also based on the assumption that children should be intentionally exposed to the disease. I believe that the earliest evidence of the custom was published in 1666 by Copenhagen professor of medicine Thomas Bartholinus

25 Theophilus BONETUS, *Mercurius compitalitius sive index medico-practicus* (Geneva 1682), 683.

26 Jan František LÖW, *Partus medicus multo labore a Leone in lucem editus seu tractatus novissimus de variolis et morbillis* (Nürnberg 1699), 107.

27 *Ibid.*, 110.

28 Johann Christfried RICHTER, *Dissertatio medica de praeservatione variolarum* (Jena 1711), 21–22.

29 *Nusquam tuta fides in bello et morbis*.

30 LÖW, *Partus*, see note 26, 110; SYLVIUS, *Praxeos medicae liber*, see note 24, 137–138.

(1616–1680) in his treatise *Ten Dissertations on Danish Domestic Medicine*.³¹ The passage reads:

“What I said about magical superstition, it thrives among common women [mulierculae], as they do not cure only with herbs but also with words, signs, or rituals of measurement.³² I cannot ignore buying of pustules [mercaturam variolarum], which many in our time perform. People believe, that those in want of smallpox, buy the pustules from someone who is currently laboring from the disease. Despite a lot of evidence for this ritual, I was unable to find a natural explanation for the custom. However, I frequently observed that those who bought certain number of pustules subsequently contracted the disease, perhaps on account of their nature being afraid of this occult medicine, because of a supernatural influence, or perhaps as a result of fixed idea of the buyer that [their body] will discharge less from the boiling matter in their bodies, so that the number of pustules will be limited. I consider this purchase among popular errors until someone wiser finds the cause.”³³

Two things in this quotation attract attention. First, Bartholinus clearly associated the buying of pustules with common, uneducated women, and while he obviously saw that the ritual resulted in contracting the disease, he found it difficult to fit it within his own medical framework. Second, Bartholinus’ reference to “boiling matter” is evidence that his concept of the pathology of the disease corresponds with what I have already explained regarding the contemporary academic perspective on the etiology of smallpox.

The gender element again became an important part in the next reference to the ritual which was published only five years later in the journal of the German Academia Leopoldina. It is, curiously, also linked to Thomas Bartholinus, because the passage in question was attached as a commentary by the editor of the journal, Wrocławian physician Heinrich Vollgnad (1634–1684) to Bartholinus’ short paper on fever caused by imagination. Vollgnad wrote that during an outbreak of smallpox, “our women” sent healthy children with little coins to the infected in order to purchase a few scabs or pustules from the sick, believing that the buyer would suffer from a shorter bout of the illness with milder symptoms.³⁴

31 Thomas BARTHOLINUS, *De medicina Danorum domestica dissertationes X. Cum ejusdem vindiciis et additamentis* (Copenhagen 1666).

32 Term “ritual of measurement” or mensurandi ceremoniae is likely a reference to a practice called “Length of Jesus Christ”, which was used in folk medicine. The practice was based on using a strip of paper, which was cut to the same length as the presumed height of Jesus’ figure. Covered with religious symbols, the strip was applied to the patient’s body in the belief that it might cure an illness. One 18th century example of such an artifact is preserved in the National Library of the Czech Republic, Dýlka Pána a Spasytele nasseho Gežjsse Krysta, Gak gest on na Swětě byl, kterážto při geho swatým Hrobě v Geruzalémě, Léta 1655 nalezená býti se prawj, shelf no. 54-K-20.991.

33 BARTHOLINUS, *De medicina*, see note 31, 422–423.

34 Thomas BARTHOLINUS, *Febris ex imaginatione*, in: *Miscellanea curiosa medico-physica Academiae naturae curiosorum sive ephemeridum medico-physicarum Germanicarum curiosarum annus secundus* (Jena 1671), 264. It is worth noting that only the first part of the text was written by Bartholin; after Bartholin’s report there is a passage titled “Scholium” with comments of Vollgnad and another author, who remains anonymous.

In order to understand Vollgnad's description we have to look at its context, because it was part of discussion concerning the gullibility of lay persons and in particular women. The paper relates several stories which describe how many patients are easily impressionable. One depicts a noblewoman who suffered from fevers, her maid suggested "in jest" that she would "buy the fever from her" for two coins and as soon as the transaction was finished the poor maid became feverish while her mistress was cured. Another noblewoman handed over her disease by issuing an official decree, which was delivered by a servant to a signpost "in the middle of the road between Copenhagen a Køge". A servant read the text to the signpost, hung the document on it and left. As soon as he had performed the ritual, the patient was reportedly healed. There are other similar anecdotes in the paper, mostly concerning women, and nothing suggests that the authors or commentators believed that the buying of pustules described by Vollgnad might actually work.

The journal returned to the topic again in 1677, this time in a short paper by doctor Simon Schultz from the Pomeranian city of Toruń.³⁵ Schultz acknowledged the tradition of the buying of pustules, but his commentary was distinctly negative. The Toruńian physician claimed that children participating in the tradition often suffered from a more severe form of illness rather than milder, adding that it had happened to his younger brother John.

Prague professor of medicine Jan František Löw of Erlsfeld, who has already been mentioned in relation to Sylvius' method, also included a description of the ritual in his book on smallpox and measles.³⁶ Löw was a member of the Academia Leopoldina and therefore was familiar with its journal, so he cited both texts about the buying of pustules from 1671 and 1677, however, Bartholinus' Danish case was not mentioned. Löw's attitude toward the ritual is unclear, as it is part of the chapter on prevention against smallpox without additional commentary. Later in the 18th century the ritual was occasionally mentioned in dissertations and other medical books, often in the context of a more modern form of variolation by engrafting.³⁷

It is worth noting that the practice might have been more widespread than central European sources suggest. The English surgeon Peter Kennedy, while writing primarily about variolation, mentioned in 1715 that "this is more confirmed by some of the country people in Italy, in the more remote parts from towns; so also in some parts of the Highlands of Scotland, where they infect their children by rubbing them with kindly pock, as they term it."³⁸ Although we lack further details, it is possible that this practice of rubbing with "kindly pock" might have been related to the buying of pustules in other parts of the continent.

35 Simon SCHULTZ, *De modo emptionis variolarum ab infectis*, in: *Miscellanea curiosa, sive ephemeridum medico-physicarum Germanicarum Academiae naturae curiosorum annus octavus* (Jena 1678), 22–23. Note that this volume was edited in the year 1677 but published in 1678.

36 Löw, *Partus*, see note 26, 109.

37 Johannes Fridericus MÜLICH, *De variolarum insitione modesta epicrisis* (Aldorf bei Nürnberg 1725), 11; Joseph LITTLE, *Tentamen medicum inaugurale, de variola* (Edinburgh 1780), 23; Joseph FRANK, *Praxeos medicae universae praecepta, ... partis primae volumen secundum continens doctrinae de morbis cutis, sectionem primam. Editio secunda* (Torino 1821), 334.

38 Peter KENNEDY, *An Essay on External Remedies. Wherein it is Considered, Whether all the Curable Distempers incident to Human Bodies, may not be cured by Outward Means* (London 1715), 156–157.

Conclusion

There are a few points I would like to make at this moment. First, the early history of smallpox prevention is more global than it was perceived to be just a few decades ago. It seems that information about the Eastern method of inoculation (engrafting) did not arrive to Europe through a single route ending in Britain, but that it was popping up in various places like Central Europe or the British colonies in America. This demonstrates the complexity of knowledge-sharing about nature in the 18th century world.

The early modern pathological perspective on smallpox is important for understanding the contemporary attitudes towards the illness. It helps us to comprehend why physicians discussed epidemic prevention only rarely, as many believed that smallpox could not be avoided. Academic medicine considered a smallpox episode to be a useful albeit dangerous period in human life, which facilitated the elimination of accumulated impurities. This complicates our understanding of the adoption of anti-smallpox measures by early modern society. What we know about the historical pathology of smallpox allows us to explain how some physicians moved from the relative passivity of the 17th century to the seemingly proactive stance after the adoption of variolation in the 1720s. Within this context, variolation would be understood as just another way to trigger the necessary cleansing process. I would suggest that contemporary medical theory was already well equipped to explain why variolation worked and therefore required a smaller “leap of faith” than we would normally presume. The concept of smallpox as an unavoidable purgation of the body also explains why most physicians limited their research to the alleviation of individual symptoms.

However, there seem to be rare examples of medical writers from the late 17th century demonstrating that they occasionally tried to mitigate the impact of epidemics with a more primitive form of variolation than the Eastern inoculation introduced in the 1720s. The writings of Sylvius, Bonet, and Löw indicate that some physicians possibly attempted to reduce the substantial risk associated with the confluent form of the disease by consciously exposing individual children to “milder” cases. Unfortunately, we do not have enough information to find out how widespread these experiments were or whether these authors actually had a chance to put their theory into practice at all.

Equally sparse is the information preserved about the ritualized buying of pustules. It was clearly widespread in regions around Wrocław and Toruń in what is now Poland, it might also have been used in Italy and on the British Isles. Contemporary reports associated the practice with folk medicine and particularly with women, and therefore it aroused suspicion among academically educated men.

Perhaps the most intriguing thing about the history of smallpox is how often the gender element shows up in various contexts. As Barnes showed in her 2012 study, the introduction of inoculations to Britain, which put Lady Mary Wortley Montagu in the spotlight, led to an interesting political and cultural dynamic in which the association of certain practices with the female world was used to weaken claims about their efficacy. Reports concerning the “buying of pustules” suggest similar tensions between supposedly “rational”, scholarly, and male narrators describing “gullible” female subjects. This corresponds with my reading of the historical pathology of smallpox, which was also traditionally understood as a kind of “stain” handed down from mother to child. In other words, women were ultimately responsible for the scourge of smallpox and their cure was not to be trusted.

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