

Kiwisch von Rotterau - a pioneer of European obstetrics, gynecology and gynecopathology

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"He whom the Gods love dies young". This quotation from antiquity (Menander-Plautus) is not only true for famous artists such as Raphael or composers such as Wolfgang Amadeus Mozart and Franz Schubert, but for many young and promising scientists such as the late physician **Franz Alexander Kiwisch Ritter von Rotterau** (Figure 1).



He died "unfinished", at the young age of 37, from tuberculosis, an epidemic that plagued the population in the first half of the 19th century [1]. He played a major role in focusing modern German obstetrics and gynecology and also was a pioneer of gynecologic pathology [2].

Franz Alexander Kiwisch Ritter von Rotterau was born on 30 April, 1814 in the provincial town of Klattau (today Klatovy) in the southwest of what was then the Kingdom of Bohemia (today the Czech Republic) of the Austrian Monarchy. His father was Ignaz Kiwisch (1783-1848), who in his function as a high administration official was ennobled as Ritter von Rotterau. The young Kiwisch attended primary school in Prague and high school in Klattau. He then went on to study philosophy and medicine at the Charles University in Prague. In Prague, he received his doctoral degree in medicine in 1837. In 1838, he received an additional master's degree in obstetrics, which was common at the time, when there were three different titles in medicine in Austria: Master's in Surgery, Master's in Obstetrics, and Doctor of (Internal) Medicine. In the same year, he became an assistant at the Obstetrical Clinic in Prague [1, 3]. This institution boasted an excellent reputation at the time and was attended by many people from abroad. As early as 1840, Kiwisch published his first scientific work on obstetrics [4]. In the same year, he went with friends for four months to France, the leading country in medical science at the time. In 1842, he took up a university lectureship for female disorders at Prague University and was appointed head of the newly established Clinic for Gynecology at the General Hospital in Prague. This institution was under the authority of the Obstetrical Clinic, but was, due to its focus on gynecology, a novelty in European medicine at

the time. Many people from abroad, especially physicians from Tsarist Russia, came to visit the clinic [1, 3].

In 1843, Kiwisch married Emilie Nadherny; they had one son and one daughter. Today, his descendants still live in the Austrian city of Graz.

In 1845, Kiwisch moved to Würzburg in neighboring Bavaria to work as a Professor of Obstetrics and Head of the School for Midwives and the Obstetrical Clinic. In addition to a list of his scientific achievements, his assessment for this position included the following description of him [3]: "He has nice handwriting and writes fluently both in Latin and in German. His oral skills also seem to be very good and his public appearance not only gives one the sense of a highly educated scholar, but a man with a broad educational background, a feature which always has a pleasant effect on everyone and is very welcome and highly desired by all physicians and absolutely necessary for obstetricians due to their unique position with regard to the gentle sex".

As Kiwisch was very well known, he was appointed personal physician to Grand Princess Helene of the House of Romanov, a member of the Tsar's family. This caused a conflict with his responsibilities at the medical faculty in Würzburg which as a result were neglected.

During his three years in Würzburg, he finished the first part of his epoch-making gynecological work "Klinische Vorträge über spezielle Pathologie und Therapie der Krankheiten des weiblichen Geschlechtes" (Clinical Lectures on the Special Pathology and Therapy of Diseases of the Female Sex) [5]. In 1849, he published part two of this work. The work with the young Rudolf Virchow (1821-1902), the rising star of pathological anatomy and histology at the time, in Würzburg resulted in a short-lived but productive collaboration for Kiwisch between 1849 and 1850 [2]. This great success in his profession was followed by a series of personal setbacks: the deaths of his father and his wife, and activation of his latent pulmonary tuberculosis. During this time, he received his long-awaited appointment as Professor of Obstetrics at the Charles University in Prague in 1850*.

* The old Austrian Empire, next to the imperial capital of Vienna, Prague, the capital of the Kingdom of Bohemia, boasted the most important faculty of medicine. Even when the famous and primarily German-speaking Charles University (founded in 1348) was forcedly divided into a German and a Czech university by emerging Czech nationalism in 1882, there was still a lively exchange of renowned physicians between Prague and Vienna and other Austrian universities.

The relief he found in Prague in teaching and research as well as in the form of a generously equipped clinic, was sadly not enjoyed for long. Due to his severe illness, he could not finish his last work, "Die Geburtskunde mit Einschluss der Lehre von den übrigen Fortpflanzungsvorgängen im weiblichen Organismus" (Obstetrics including the Science of the Other Reproductive Processes in the Female Organism [6]. In 1851, only a torso of this work together with the first volume, an atlas volume, and the first part of the second volume were printed. Kiwisch died as a result of hemorrhage due to tuberculosis on 29 October, 1851 at the age of 37 [1, 3].

Kiwisch' three most important publications were all books. He also published a number of obstetric/gynecological as well as pathological/anatomical articles in different regional and international journals [1].

1) *Die Krankheiten der Wöchnerinnen, nach den in der k.k. Entbindungsanstalt und im allgemeinen Krankenhaus zu Prag gemachten Beobachtungen. 1. Band 1840, 2. Band 1841 J. G. Calve. Prag [4].*

(Diseases of women who had recently given birth according to Observations made in the Imperial and Royal Delivery Institution and the General Hospital in Prague. 1. First volume 1840, second volume 1841 J. G. Calve. Prague [4]).

Kiwisch published this work at the age of only 26. In the foreword to this book, he expressly points out the contrast between the traditional speculative orientation of medicine towards natural philosophy, of which Carl Gustav Carus (1789-1869) was the most important German proponent [7], and new medicine which was oriented towards science and pathological anatomy.

He treated the diseases of women who had recently given birth according to the insights gained from his wealth of observations. The first volume is dedicated to epidemic puerperal diseases which he subsumes under the term "puerperal fever". Kiwisch divides puerperal diseases into epidemic and sporadic. However, he still believed in the then popular concept that this disease was caused by an "atmospheric miasma" and denied contagious spread (*see below*). The exponents of the hitherto natural philosophy approach in medicine (*see above*) repudiated this work. He was accused of introducing the new and not yet established pathologic-anatomical point of views of Carl von Rokitansky (1804-1878) into Obstetrics and Gynecology [1, 3].

2) *Klinische Vorträge über spezielle Pathologie und Therapie der Krankheiten des weiblichen Geschlechtes, in drei Bänden. J. G. Calve. Prag 1. Band 1845, 2. Band 1849, 3. Band nur 1. Teil, unvollendet [6].*

(Clinical Lectures on the Special Pathology and Therapy of Diseases of the Female Sex, in three volumes. J. G. Calve. Prague Volume 1 1845, Volume 2, 1849, Volume 3 only Part 1, incomplete [6]).

This work is the first scientific German work in the field of gynecology [3]. The title had already been used by the above-mentioned Carl Gustav Carus in 1820 for his book on this subject [7]. In contrast to his previous publication [4], this one was highly acclaimed by experts.

The first volume, published in 1845, was solely devoted to abnormalities of the uterus. The second volume, published in 1849, was concerned with diseases of the ovaries, tubes and the external sexual organs as well as ectopic pregnancy. The third volume, which focused on diseases of the breast, the urinary tract and "diseases of the nervous system specific to women", was completed posthumously by Kiwisch's successor in Würzburg, Friedrich Wilhelm Scanzoni von Lichtenfels, and published in 1855 [1].

In the foreword to the first volume Kiwisch reemphasizes the growing importance of the new pathological anatomy of Rokitansky for gynecology. For Kiwisch, this also included the use of microscopy, of which, he was an early advocate, as was Hermann Lebert at around the same time [8], of microscopic examination of uterine cancer:

The first volume systematically deals with the external and internal examination of the patient with all the new physical and instrumental possibilities at the time including the vaginal speculum and uterine probe. Dislocations and deformities of the uterus are then described. Inflammation and abnormal bleeding are given detailed attention. Benign tumors of the uterus, the clinical picture of tuberculosis, which was very important at the time and puerperal fever including its symptoms, are described extensively. Carcinoma of the uterus is featured in this work: he notes that uterine cancer originates from the cervix uteri in most cases. He anticipates research of the mid-20th century, according to which cervical carcinoma initially remains confined to the cervix uteri for a long time without spreading longitudinally towards the corpus uteri and then only later spreads laterally to the parametria and to the surrounding organs [9]. In contrast to Rokitansky, Kiwisch also recorded cases of corpus carcinoma. However, the difference between cervical and corporal carcinomas remained a mystery to him. Like Lebert [8], he was familiar with the morphology of cancer cells. Kiwisch observed that the initial stage of uterine cancer occurred several years before it was clinically manifest and that he had never seen this type of cancer in virginal individuals and before the age of 20. Very little, if anything, has changed concerning the latter observations [10]. The symptomatology of invasive cancer and the hopeless prognosis is well described. Kiwisch raised the possibility of cure through surgical removal of the uterus but notes that all attempted operations had to date failed.

Until the liquidation of the German-speaking Universitas Carolina in Prague in 1945, lecturers and professors from Prague were frequently appointed to other German universities: for example, in the 19th century, Kiwisch and his successor, Friedrich Wilhelm Scanzoni von Lichtenfels (1821-1891), were appointed to Würzburg in Bavaria [3]. In the 20th century, the famous Austrian gynecologist Hermann Knaus (1892-1970), from Graz, co-discoverer of the then well known Knaus-Ogino contraceptive method, was appointed Full Professor of Gynecology and Obstetrics in Prague in 1934.

In the second volume, Kiwisch, deals with diseases of the remaining internal and external sexual organs: The anatomy and physiology of the ovary is described in a detailed way. The pathology and therapy of ovarian diseases is treated at length, then diseases of the tubes, ectopic pregnancy and finally the pathology and therapy of diseases of the external genitalia including venereal diseases. In terms of the origin of ovarian cysts, the Graafian follicle is the focus of his pathogenetic considerations. A detailed description of the clinical behavior of simple ovarian cysts follows as well as complex cysts. Dermoid cysts and teratomas are mentioned several times, but their origin is thought to be the Graafian follicle. Among the complex cysts, what are known today as serous and mucinous cystadenomas and borderline tumors, as well as those with obvious malignant change are dealt with. It should be mentioned that cystic ovarian alterations had already been described by Thomas Hodgkin in 1829 [11].

Kiwisch discusses the surgical procedures of the Anglo-American doctors of his time, who were known as the "ovariotomists" [2]. Total extirpation is considered to be a life-threatening option and the last remedy. Only conservative procedures like puncture are considered productive. In a detailed table, Kiwisch presents all the operations performed on ovaries up to his time including the positive and negative outcomes. The chances of curing an ovarian tumor at the time were 50% at most and that at a time in which there was neither antisepsis nor asepsis and no anesthesia. Kiwisch discusses ovarian carcinoma at the end of his text. He differentiates medullary, fibrous and primitive forms. At this point, a *literal* quotation from his work is appropriate: "Ovarian cancer is one of the most difficult things to describe anatomically in that it appears in such a wide variety of forms, and through complications with other degenerations it is altered in such a way that there are continually new forms that cannot be covered by general descriptions. In terms of cancer formations, the general characteristics are the very frequently discussed microscopic composition of the tissue, in particular, the abundance of cells, the progressive endogenous development of cells, the thereby resulting development of the tissue, the dissolution, the penetration of every part of the tissue and even the neighboring structures". On pages 182 and 183, Kiwisch offers a detailed *microscopic* description of an ovarian tumor, apparently a typical *adenocarcinoma*. In his entire oeuvre, Kiwisch had never published such a detailed histopathological report. At the end of this chapter, the clinical presentation of ovarian carcinomas including the symptomatology, prognosis and therapy are presented, although concerning the latter point Kiwisch once again advises against radical surgery.

3) *Die Geburtskunde mit Einschluss der Lehre von den übrigen Fortpflanzungsvorgängen im weiblichen Organismus, in 2 Bänden. Erlangen, Verlag von Ferdinand Enke 1851* [6].

1. Band: *Physiologie und Diätetik, mit einem lithographierten Atlas.*

2. Band: *Pathologie und Therapie, unvollendet.*

(*Obstetrics including the Science of the Other Reproductive Processes in the Female Organism, in 2 volumes. Erlangen, Ferdinand Enke Publishing House 1851* [6]).

1. Volume 1: *Physiology and Dietetics with a Lithographic Atlas.*

2. Volume 2: *Pathology and Therapy, unfinished.*

In the preceding work, the "Beiträge zur Geburtskunde" (Contributions to Obstetrics) in 2 volumes (1846-1848), Kiwisch had only commented on selected obstetric questions [1]. In his last work, he attempted to produce as complete a synopsis as possible on the knowledge of obstetrics at the time. With a very modern systematic approach for the time, Kiwisch presents the physiology of the reproductive process. At the same time as the first volume, an illustrated atlas was published with anatomical drawings and obstetric instruments.

Shortly before his untimely death, Kiwisch was working on the second volume on pathology and therapy in obstetrics. He only managed to publish the first volume and thus his life's work remained unfinished. It was this last work on obstetrics that would sustain Kiwisch's high scientific standing for years to come.

Finally, we must consider the regrettable role that Kiwisch, still caught up in the spirit of his age, played in obstetrics with regard to his reception of the theory of Ignaz Philipp Semmelweis [1]:

The horror of every obstetrician, in the first half of the 19th century, was the incidence of infectious puerperal fever in obstetrical institutions. The mortality rate at the time was on average 4-12% and sometimes was as high as 40%. It was during Kiwisch's time in Würzburg that Semmelweis made the claim in Vienna in 1847 that the cause of puerperal fever was due to the transmission of an iatrogenic, contagious (i.e., bacterial) medium. Semmelweis was able to significantly reduce the mortality rate of women who had recently given birth in his institution by simple hygienic measures. The professors of obstetrics at the time, however, repudiated Semmelweis' discovery, sometimes aggressively. Kiwisch also rejected the contagious origin of puerperal fever and still believed in an atmospheric origin via what was known as a "miasma" (= noxious vapor). This was at the same time when the contagious origin of cholera was proved during the cholera epidemics in London in the mid-19th century.

Unfortunately, in the case of puerperal fever, the authority of Kiwisch led to this remaining a scourge of women who had recently given birth in the Würzburg clinic for many years. Regrettably, Kiwisch's successor, Friedrich Wilhelm Scanzoni von Lichtenfels, had even less understanding of the epoch-making findings of Semmelweis. The desired change in thinking regarding the etiological evaluation and prophylactic therapy of contagious diseases by Semmelweis did not occur until the acceptance of the concept of antisepsis proposed by Joseph Lister (1827-1912) in the 1870s.

Kiwisch early on used the technical term “gynecopathology” in the “Cannstatt’sche Jahresberichte über die Fortschritte der gesamten Medizin in allen Ländern” (Cannstatt Annual Reports on the Progress of Medicine in Every Country), a reference journal from 1844/45 no longer in existence [1].

Even before Kiwisch’s time, the comprehensive textbooks and handbooks of the Paris School from the first half of the 19th century already contained a wealth of details on macroscopic gynecological pathology and the pathology of pregnancy. Among these, the work of Jean Frédéric Lobstein (1777-1835), “*Traité d’anatomie pathologique*” with numerous examples from the field of gynecopathology from 1829 to 1832, stands out. Carl von Rokitsky devotes a large part of his work “*Handbuch der speciellen pathologischen Anatomie*” (Handbook of Special Pathological Anatomy), which was published in 1842, to this new speciality of pathology [2]. In terms of gynecopathology, the first microscopic examinations were carried out by Kiwisch’s contemporaries, Alfred Donné (1801-1878) and Hermann Lebert (1813-1878), in the 30s and the 40s of the 19th century [2, 8]. This subspecialty really emancipated itself from pathology a few decades later through the efforts of Carl Ruge (1846-1926) and Robert Meyer (1864-1947) [2].

The memory of Kiwisch should be honored as he was one of the first clinicians of the 19th century to introduce modern pathologic-anatomical concepts into clinical gynecology and obstetrics. Kiwisch was also one of the forerunners of the modern gynecopathology because he recommended, as one of the first to do so, the application of the microscope for bioptic examination of uterine (cervical) cancer. In this regard Kiwisch obviously anticipated the seminal work of Carl Ruge, the “Father of gynecopathology”, with his “Stückchendiagnose - small piece diagnosis” [12].

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