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History of Breast Cancer - A Quick Review

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ABSTRACT

Breast cancer is an atrocious disease that haunts us as much now as it did in the past hundreds of years. The disastrous physical and mental conditions of cancer in general have been mentioned in medical records throughout the centuries. The women of these ancient eras suffered from not only noticeable bumps on their breasts, but also oppression from the people of their society. Unlike other cancers that typically have internalized tumors, breast cancer presents itself with external lumps that are extremely noticeable. The object of this article is to explore the history of this cancer and the developments in treating it in the present century.

Key Words: Breast Cancer, History, Lymph gland, Autopsies, Mammography, Chemotherapy

INTRODUCTION

When the month of October arrives, the first topic that usually comes to mind is the celebration of Halloween. In actuality, October not only entails Halloween, but also Breast Cancer Awareness Month. Homage is paid to those men and women who have survived or passed due to the malignant disease. Around 40, 000 women in the United States were expected to die in 2014 from breast cancer, although death rates have been decreasing since 1989. These decreases are thought to have been the result of treatment advances, such as earlier detection through screening and increased awareness. Although breast cancer is known for being a genetic disease, it has been found that about 85% of breast cancers occur in women with no family history of the disease. These instances occur due to genetic mutations that happen as a result of the aging process and life occurrences in general, rather than being inherited. Breast Cancer is a genetic disease and can be found in both men and women. The epidemic of breast cancer dates all the way back to the Greek and Roman Period of 460 BC.

Before the modern era, the concept of cancer was not easily understood and the attempted remedies for sick individuals typically included some type of ceremony constructed by entertainers, witch doctors, and "healers". In old Babylon (2100–689 BC) it was normal practice to place the sick out in public and allow strangers to judge their stage of disease. The Code of Hammurabi described how healers were paid for their successful surgical endeavors and punished for surgeries that resulted in death.

The consequence of a surgical death included the severing hands of the medical practitioners (Donegan). After 3000 BC, medical practitioners had finally realized the uselessness of treating tumors of the breast. Among the eight surviving Egyptian therapeutic papyri, Edwin Smith Surgical Papyrus was credited to hold the first reference to breast malignancy.

This surgical content, written in hieratic script, is a fragmented duplicate of a unique archive that related to the pyramid period of Egypt (3000–2500 BC) and was potentially composed by Imhotep, the medical practitioner draftsman who perfected the step pyramid in Egypt in the 30th century BC (Lakhtakia 2014). The article published the most factual information on the suturing of wounds and cauterization with blaze drills. More importantly, the manuscript discusses the findings and medical advances of eight instances of illness of the chest, significant to the bones and delicate tissues of the foremost chest re-

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gion. Most of which were in men because of the apparent wounds. One of the five cases identifying with delicate tissues (Case 45) depicts "protruding tumors" in the chest. The writer describes that if the tumors have spread over the breast, are cool to the touch, and are protruding, there is no cure and the prognosis is lethal.

THE GREEK AND ROMAN PERIOD (460 BC - 475 AD)

The ancient Greek civilizations were full of rich mythology, dependent upon faith in close cooperation between the living and divine beings. History experts believed that Aesculapius, the God of Medicine, may have had his origins in medicine around the time of the attack on Troy (≈1300 BC). In the Iliad, Homer said Aesculapius had two children who were respected physicians that joined the siege (Winchester and Winchester 2006, Lakhtakia 2014). The ancient Aesculapius is featured on the seal of the American College of Surgeons, where he is depicted by holding his staff weaved with a serpent, representing the image of life and insight.

During this time in ancient Greece, the Greeks looked for cures by immersing themselves in the baton at the sanctuaries of Aesculapius and appreciating the cohort showers and diversions, which are examples of present day health spas. Offerings for vows of fulfillment, such as breasts, offer proof that some came searching for cure of the unknown chest illness. Greek medicine was the most advanced during this time, successfully curing many diseases.

While on his conquests, Alexander the Great of Macedonia (356–323 BC) established the city of Alexandria on the Nile delta in 332 BC, where an internationally celebrated therapeutic school, that was founded around 300 BC, is still functioning. The library at Alexandria was the largest of its time, housing more than 700,000 books. Numerous notable Greek and Roman medical practitioners studied, taught, and flourished in Alexandria. The researchers of life systems were dependent upon dismemberment of human forms.

Physicians of the Hellenistic period give vivid records of breast tumors. The Greek term "karkinoma" was utilized to depict the chest lump developments and "scirrhus" to portray physically rigid tumors. "Cacoethes" was a term that alluded to an early onset of some type of sickness. A "concealed" growth was one not apparent on the skin. Herodotus (484–425 BC), a history specialist on the wars between Greece and Persia, wrote that Democedes, a Persian medical practitioner living in Greece, cured the wife of Persian King Darius of a breast tumor that had ulcerated and metastasized.

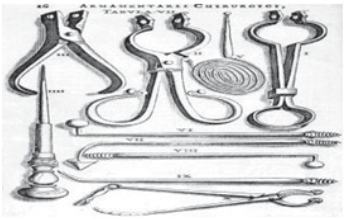

Figure 1: Surgical instruments [79 AD] from excavations of Pompeii and Herculaneum [Courtesy: Archives of Thomas Jefferson University, Philadelphia].

Hippocrates (460–375 BC), the most notable Greek doctor, wrote a medical book on his findings, titled the Corpus Hippocratic. He supported that each disease was dissimilar and emerged from characteristic reasons, not from divine beings or spirits (Lakhtakia & Chinoy, 2014). He put fact into the force of nature to mend the beginning of infections. He believed that a mixture of the four natural liquids: blood, phlegm, yellow bile, and dark bile were fundamental for exceptional health. Hippocrates, on the other hand, depicted instances of breast disease in portion. Hippocrates proposed that breast cancer, among other abnormal growths, was a 'systemic disease' caused by an excess of black bile. One of his cases was of a lady of Abdera who had a malignant growth within her breast that was seeping bloody drainage from her nipples. Hippocrates confirmed through his research that when the bloody discharge ceases, the woman would die. In addition, he found that when a women's monthly menstruation cycle ceased, it typically meant that she was suffering from breast cancer, thus in younger females he would try to restore their periods to combat the disease. Hippocrates findings still hold true today, in saying that the breast tumors usually metastasize by growing firmer, without the addition of pus, and metastasize to other areas of the body. When this happens the victim suffers from shooting pains from the breast into the shoulders, loss of appetite and thirst, and eventually becomes undernourished.

THE MIDDLE AGES (467-1500 AD)

The middle Ages started with the breakdown of the Roman Empire in 476 and finished with the Renaissance and finding of the New World in 1492. During the Middle Ages came feudalism, bubonic sickness, campaigns, and the period of confidence. The impact of the Church spread as the Holy Roman Empire and human dismemberment was disallowed by the Papal announcement; restriction to church principle constituted abuse to those who were discovered. To recover his soul, the space expert Copernicus (1473–1543 AD) was constrained to repeal his philosophy that the earth surrounded the sun, and the doctor Michael Servetus (1511–1553), who identified the air flow circulation of the lungs. Monks divided cures, and the chances of surgery were close to none.

Removal of the breast was depicted as a type of torture in the story of St. Agatha, the holy saint of bosom malady (Lakhtakia & Chinoy, 2014). Some of the remarkable healing were attributed to saints and faith healing which included laying hands over the affected parts. Traditional folk style medicine was sometimes used and included freshly sliced dogs or cats.

After the death of the prophet Muhammad (570–632 AD), the ascent of Islam brought about the Arab victory of the southern shores of the Mediterranean from Persia to Spain, ultimately ending the therapeutic focus in Alexandria. Medicinal records that survived were made Arabic for study and protected; interpreted later from Arabic to Latin, thus re-entering the European landmass. Some of the most powerful doctors of this period were Avicenna (980–1037 AD), the Jewish doctor Maimonides (1135–1204 AD) and Albucasis (936–1013).6 Avicenna's notoriety equaled that of Galen, however he had no new knowledge about chest malignancy. Lbucasis in Moorish Spain supported the harsh provisions for medicine of chest malignancy, however, conceded that he himself had never cured an instance of breast growth and knew of no one else who had. Scathing glue (a mixture of zinc chloride, stibnite, and Sanguinaria Canadensis) was utilized as a treatment for breast cancer until the 1950s in the United States. The glue was used to connect the tissue, necrosis, which was then removed or permitted to mend by granulation, or through the forming of new connective tissue and blood vessels over a wound. After gluing, the utilization of charms, supplications to God, medicaments, and caustics in conjunction with surgery and cutting edge routines were how modern breast cancer treatments were performed.

After many years, a connection had been made between hormones and breast cancer. In the 14th century, breast cancer was known as the nun's disease because of its high frequency amongst nuns. The act of never having borne a child put nuns at a higher-than-average risk.However, most women at that time had borne children at a young age and therefore had a relatively low risk.

In the late middle Ages, Henri de Mandeville (1260–1320 AD), surgeon to the lord of France, refined Galen's dark bile hypothesis with a connection between dark bile from the liver. The dark bile from the liver made a hard tumor in the chest (a sclerosis), which eventually metastasized. He described breast cancer accurately, as being ulcerated with thick edges and baring a sour scent. The prescribed medication was to slim down and cleanse and de Mandeville liked that inadequate evacuation of the medication regularly brought about non-healing (Lakhtakia&Chinoy, 2014).

RENAISSANCE PERIOD

Renaissance can be termed as the "rebirth of era" leading to the evolution of a new creative force in art and science. It can also be termed as the bridge between the middle Ages and the modern period. It was during the beginning of twelfth century, with the establishment of universities in the Western Europe there is been a remarkable awakening in the history of literary culture. A wide variety of practitioners were involved: university trained physicians, literate and illiterate 'empirics', religious figures, surgeons, barbers, apothecaries, midwives, relatives of the patient and specialist healers. University trained physicians tossed the term 'empiric' to refer to those practitioners who are illiterate and non-university trained but gained their skills by practical training. The scientific study of medicine and medical practice by the physicians was simulated during the Renaissance period.

16TH CENTURY

In 1518, King Henry VIII founded the Royal College of Physicians of London. This medical college in England is the oldest known medical college in the history. Thomas Linacre, the first president of the College of Physicians, London, found an academic body of physicians rather than an organized guild (Royal College of Physicians, 2017). Physicians were treated as the educated elite of the medical world. The publication of the London Pharmacopoeia in 1618 created the first standard list of medications and their ingredients and purposes were published in England.

Breast cancer has been described for centuries. Recognition of "bulging tumors of the breast" is recorded in the valuable Edwin Smith Papyrus of 1600 BC found at Thebes, Egypt in 1862 and has been translated since then.

Anatomy and physiology brought a critical reexamination to scientific surgery. Andreas Vesalius (1514-1564) the author of "De Humani Corpis Fabrica" (The Fabric of the Human Body), was a revolutionary Renaissance study of the human body that greatly contributed to the advancement of surgery. It also greatly opposed Galen's doctrines (Lakhtakia & Chinoy, 2014).

The theory that cancer is caused by excess of black bile continued to prevail through the 16th century. At this time cancer was still considered incurable, however, a variety of temporary measures were available including creams and pastes, surprisingly containing arsenic.

Bartoleny Gabrol (1590) in Montpellier advocated an extreme mastectomy, which was brought to life by Halsted, 300 years later. However, the lack of anesthesia and the problem of wound infections (due to the lack of the aseptic techniques) generated significant problems for the surgeons of that time. Surgery was often 'heroic' but primitive and even inhumane by current standards (Lakhtakia & Chinoy, 2014). Therapeutic rejection of religious principles was the common attitude regarding breast cancer, at least among the

vast majority of surgeons.

17TH CENTURY

Autopsies, performed by Harvey (1578-1657) in the 17 century, gave insight into the circulation system (Lakhtakia & Chinoy, 2014). By about the same period, Gaspare Aselli (1581-1626) discovered the lymphatic system, which led to the termination of a century old theory that excessive black bile caused cancer. A French physician, Claude Gendron, suggested that cancer arises locally as a hard, growing mass, is untreatable with drugs, and must be removed along with all of its filaments. The discovery of the microscope and further experiments by Anthony van Leevenhoek (1632-1723) added momentum to the quest for the cause and cure of cancer.

The opinion of Nicholas Tulip (1593-1674) of Amsterdam, who saw the need for early surgery said that, "The sole remedy is a timely operation," (Lakhtakia & Chinoy, 2014). The procedure varied from impalement of the breast with needles and ropes followed by amputation instrumental techniques, performed entirely without the use of anesthetics.

Figure 2: "De Humani Corporis Fabrica" by Andreas Vesalius Title page

Figure 3: Anatomical Study, illustration from "De Humani Corporis Fabrica" by Andreas Vesalius. Courtesy: Copyright © 2002-2013 www.renaissance-in-art.org.

18TH CENTURY

Sir Astley P. Cooper (1768-1841), an English surgeon who performed a number of successful surgeries and made contributions in several different branches of medicine and surgery, published On the Anatomy of the Breast just before his death. The book depicted Cooper's medical mastery through outstanding illustrations. It "includes one of the earliest descriptions of hyperplasic cystic disease of the breast, which Cooper referred to as 'hydatid disease'" (Lakhtakia&Chinoy, 2014).

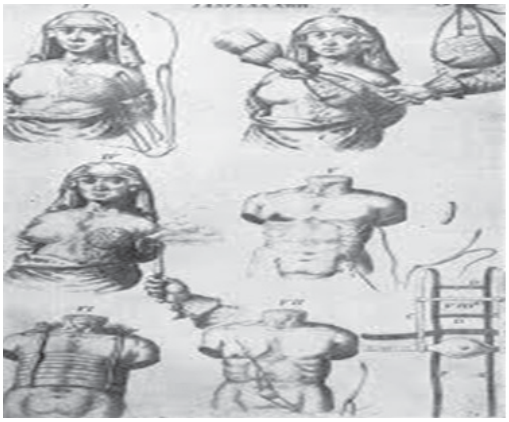

Figure 4: Mastectomy Procedure of Scultetus in the Seventeenth Century. (Courtesy Robinson JO: Am Surg 151:302 1986.)

John Hunter (1728-1793) amassed more than 2,000 pathological preparations of his own that eventually found their

way into the Hunter Museum. The accumulated data presented numerous cases of cancer, indicating Hunter's early contributions to oncology. His collection included different examples of tumors; early instances in which cancer of the breast and rectum had spread to regional lymph nodes, initial cases of pathological atheroma, and evidence of malignancies from carcinoma.

Observing the rapid growth of ulcerating breast cancers, Claude Nicholas le Cat (1700-1768) in Rouen postulated that exposure to air was a stimulant to cancers. Multiple affected family members supported the suspicion that breast cancer was infectious long before the hereditary aspect of the disease became known (Lakhtakia & Chinoy, 2014).

In 1749-1806, Scottish surgeon Benjamin Bell (1749-1806) and French surgeon Jean Louis Petit (1674-1750) were the first to remove affected breast tissue and underlying chest muscle to treat breast cancer. The European doctors linked the tumors in the breast to the lymph glands in the armpit, brought on by the belief that removing the breast and enlarged lymph glands would prevent the cancer from spreading further (Fillmore).

In 1779, Dutch anatomist and surgeon Petrus Camper explained that breast cancer may drain to lymph nodes along the internal mammary artery. In 1952, Margottini introduced the extended radical mastectomy to remove these lymph nodes. Removal of portions of the first three ribs and the sternum was an integral part of this extensive operation. No evidence suggests that this approach improved the survival rate.

19TH CENTURY

Major advances were made in human pathology and in the safety of surgery during this time. Hungarian physician Ignac Semmelweis (1818-1865) and Professor of Anatomy Oliver Wendell Holmes (1809-1894) both promoted hand washing and the need for a sterile environment while operating. Antiseptics techniques, surgical masks, and sterile gloves were introduced as means to further decrease the risk of contamination during surgery. From 1838 to 1840, Holmes worked in Dartmouth College as a Professor of Anatomy and later after this he returned to his Boston practice. Holmes only contribution of high distinction was published in the year 1843. The title of his work was "Contagiousness of Puerperal Fever" (Scientific Papers, 1910) .

The microscope proved to be an essential piece of equipment in the advancements of pathology. Matthias Schleiden (1804-1881) and Theodor Schwann (1810-1882) recognized that animals and plants were made up of living cells, with the nucleus being the most important feature (Hudis, Norton, Winchester, Winchester, 2006). The English naturalist Robert Hooke (1635 - 1703) coined the term "cell" after viewing slices of cork through a microscope. The term came from the Latin word *cella* which means "storeroom" or "small container". He documented his work in the *Micrographia*, which was written in 1665.

Johannes Müller (1801-1859) made contributions in numerous domains of physiology, in the specific areas involving the voice, speech and hearing; as well as the chemical and physical properties of lymph, bile, and blood. His first important works, *Zurvergleichenden Physiologie des Gesichtsinns* ("On the comparative physiology of sight," Leipzig, 1826) and *Über die phantastischen Gesichtserscheinungen* ("On visual hallucination," Coblenz, 1826), are of a subjective philosophical tendency. Müller was the first to report that cancers are also composed of living cells. He noted the similarity of cells in a "scirrhus" of the breast and its metastases in the ribs and noted that cancer cells had lost the proportions of normal cells (Schneider, Zimmerman, Depprich, Kubler, Engers, Naujok, &Handschel, 2009).

Rudolph Carl Virchow,"the father of modern pathology," worked at the University of Berlin, and later became Robert Froriep's successor. Unlike his German peers, Virchow had great faith that clinical observation, animal experimentation (to determine causes of diseases and the effects of drugs) and pathological anatomy, particularly at the microscopic level, were the basic principles of investigation in medical sciences. Virchow also developed a standard method of autopsy procedure, named after him. Many of his techniques are still used today. He is also credited with inventing the liver probe, a device used to take the temperature of a dead body.

Paget had an invaluable scientific gift of being able to pinpoint a key question – "What is it that allows tumor cells to spread around the body?" – a question that still remains unanswered. In the early years of the 19th century, a French doctor by the name of René-Théophile-Hyacinth Laennec explained how skin cancer could spread to the lungs before he went on to invent the stethoscope in 1816. The mother of this invention was a young lady whom he described as having a 'great degree of fatness,' which made her heartbeat difficult to hear by the then conventional method of placing ear to chest. Using a piece of paper rolled into a tube as a bridge, Laennec was somewhat taken aback that the beat was more distinct than he had ever heard before.

It was another French surgeon, Joseph Recamier, who subsequently coined the term metastasis, (to be precise 'métastases'') to describe the formation of secondary growths derived from a primary tumor (Lakhtakia & Chinoy, 2014). Tumor cells that find a way to spread to other areas of the body are termed 'secondary tumors.' However, these tumors generally remain dormant for months or years until some trigger finally sets them off. The same group has now modeled this 'pre-metastatic niche' for human breast cancer cells,

showing that the switch between dormancy and take-off is controlled by proteins released by nearby blood vessels. The critical protein that locks tumor cells into hibernation appears to be TSP-1 (thrombospondin-1). As long as TSP-1 is made by the blood vessel cells metastatic growth is suppressed. This effect is overridden by stimuli that turn on new vessel growth and in so doing switch secretion from TSP-1 to TGFB (transforming growth factor beta). Now proliferation of the disseminated tumor cells is activated and the micrometastasis becomes fully malignant. It should be said that this is a model system and may possibly bear little relation to what goes on in real tumors. However, the fact that specific proteins that are, moreover, highly plausible candidates, can control such a switch strongly suggests its relevance and also highlights potential targets for therapeutic manipulation.

Marie Velpeau (1795-1867) deducted, after studying 400 malignant and 100 benign tumors under the microscope that, "the so-called cancer cell is merely secondary product rather than the essential element in the disease. Beneath it, there must exist some more intimate element which science would need in order to define the nature of cancer." Paget disease of the breast (also known as Paget disease of the nipple and mammary Paget disease) is a rare type of cancer involving the skin of the nipple and, usually, the darker circle of skin around it, which is called the areola. Most people with Paget disease of the breast also have one or more tumors inside the same breast. These breast tumors are either ductal carcinoma in situ or invasive breast cancer. Paget disease of the breast is named after the 19th century British doctor Sir James Paget, who, in 1874, noted a relationship between changes in the nipple and breast cancer. Paget stated, "…certain chronic affections of the skin of the nipple and areola are very often succeeded by the formation of sirrhous cancer in the mammary gland…" These changes of the nipple generally preceded breast cancer (Hudis, Norton, Winchester, Winchester, 2006). (Several other diseases are named after Sir James Paget, including Paget disease of bone and extra mammary Paget disease, which includes Paget disease of the vulva and Paget disease of the penis. These other diseases are not related to Paget disease of the breast. This fact sheet discusses only Paget disease of the breast.)

During the late 1860's in Liverpool, Charles Moore (1821-1870) recommended intact removal of the breast and, if clinically involved, the lymph nodes. In 1887 William Banks removed the breast and lymph nodes (Lakhtakia & Chinoy, 2014). The Halsted theory explained that cancer spread in an orderly fashion from breast to the lymph nodes and later to other organs in the body. The predominance of the Halsted radical mastectomy as the method of choice for the surgical extirpation of breast cancer remained dominant for nearly 80 years. The operation paid the price with high morbidity of large open wounds left to heal by granulation, near universal lymph edema, and overall disability. Ernst G. F. Küster (1839-1922) in Berlin was performing routine axillary clearance and reported that it virtually eliminated recurrences in the axilla. In 1875 Richard von Volkmann (1830-1889) was routinely removing the pectorals major fascia, and Kuster's assistant Lothar Heindenhain (1860-1940) held the muscle itself suspect. The mastectomy samples revealed the cancer in deep pectoral fascia, as well as the muscle in some cases. The work of these surgeons, as well as Joseph Lister and Samuel D. Gross, who were strong proponents of detailed axillary dissection, had a significant influence on William Stewart Halsted (Lakhtakia & Chinoy, 2014).

The origin of the word mastectomy traces back to the Greek term "*mastos,"* meaning the breast. The advancement of mastectomy over the past century has evolved considerably from the description from Halsted and Meyer in the mid-1890s. Near the turn of the century, William Stewart Halsted published the Johns Hopkins Hospital experience and the standard of care became the radical mastectomy. Halsted is well known for his role in the history of mastectomy, and in this as in other areas of his career he can illuminate these themes for students. Halsted's radical mastectomy included the removal of the breast along with its skin, the auxiliary lymph nodes, part of the pectoralis major muscle, and areas of the supraclavicular region. The history of radical mastectomy has particular power for many because the tensions that the measure introduced into the lives of sufferers continue to be recognizable in our own. Although the radical mastectomy was associated with significant postoperative deformity and diminished upper extremity function and the operative procedure itself resulted in significant intraoperative blood loss, it had a dramatic impact on loco regional control and was quickly adopted (Lakhtakia & Chinoy, 2014).

In the 1930 DH Patey of London popularized the modified radical mastectomy, which spared the pectoral muscle while removing the breast, axillary contents and a large ellipse of skin. The safety of modified radical mastectomy was demonstrated when long term follow up failed to demonstrate any breast cancer recurrences in the preserved pectoral muscles, and presented no difference in survival compared with radical mastectomy.

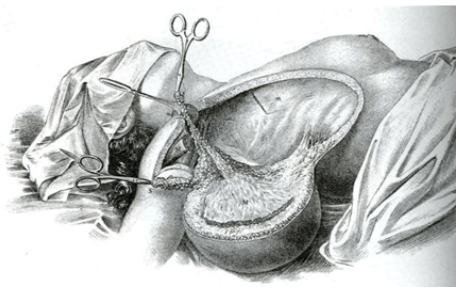

Figure 5: Illustration from the surgical papers of William Stewart Halsted, Volume 2, Plate 50. Published in Baltimore by John Hopkins Press, 1924. From the Wellcome Library, London.

The end of Halsted radical mastectomy arrived when it became apparent that although dramatically affecting local recurrence rates, the procedure had no significant impact on overall survival.

Cushman D. Haagensen was both a staunch supporter and a critic of radical mastectomy (Lakhtakia & Chinoy, 2014). His book *Diseases of the Breast* published in 1956 is a classic. In opposing breast reconstruction, Dr. Haagensen said he believed that cancer could be spread by another operation, that the cosmetic results he had seen were not esthetically successful and that if there was enough skin left to do an implant, the surgery had not been radical enough and the patient had less chance of survival. By the end of the nineteenth century two events became famous for critical treatment to be applied for breast cancer. The first was the discovery of X-rays by Wilhelm Conrad Röntgen in 1895, which provided the basis for radiotherapy and mammography. These rays were capable of penetrating through tissue and killing cancers. The second was the breakthrough that breast cancer occurrence was hormone dependent. A year following Röntgen's discovery of X-rays, a scientific lab was established. Three cases of breast cancer were treated with the help of X-rays by Hermann Goethe in Hamburg and Emile Grubbe in Chicago (Lakhtakia&Chinoy, 2014). All the three cases involved advanced stages and inoperable tumors. Likely equipment for X-ray production was developed and continued to be used in almost all medicinal fields. The invention of radioactivity by Marie and Pierre Curie in 1898 added to the treatment of breast cancer by exposing the tissue or tumor to radium.

Hormonal treatment began with oophorectomy. Oophorectomy is a surgical procedure that involves the removal of one or both ovaries. Prophylactic oophorectomy is usually reserved for women with a significantly increased risk of breast cancer and ovarian cancer due to an inherited mutation in the BRCA1 or BRCA2 gene — two genes linked to breast cancer, ovarian cancer and other cancers. High-risk women age 35 and older who have completed childbearing are the best candidates for this surgery. Prophylactic oophorectomy may also be recommended if the patient has a strong family history of breast cancer and ovarian cancer but no known genetic alteration. It might also be recommended if there is a strong likelihood of carrying the gene mutation based on family history but choose not to proceed with genetic testing (Cline, 1963).

20TH CENTURY

The twentieth century produced new techniques to treat breast cancer by the introduction of mammography and chemotherapy. Breast cancer was recognized as the major health problem in the Western world, stimulating a concerted effort against it. Research confirmed a hereditary component of breast cancer. Clinical investigators controlled trials with sophisticated statistical analysis of data. Radical mastectomy was the pillar of medication for the starting four decades of the twentieth century. In spite of the fact that radical mastectomy helped extend a woman's survival, particularly if performed early, numerous ladies chose to opt out of the surgery because it left them deformed. Moreover, there were issues like a twisted midsection divider, lymph edema or swelling in the arm because of lymph hub evacuation and torment.

Mammography, a useful development in the detection of breast cancer, was developed along with surgical techniques. Mammography allowed clinical testing and observation of ductal carcinoma, which was regularly curable. Film-screen mammography is one such technique in which a blast of X-rays is incident on the targeted breast tissue to activate a rare earth screen that glowed in response. This screen is visually exposed on photosensitive screen, developed, and then stored in cassettes that provided an image source of the disease. Though X-rays were first used on breasts in 1913, mammography did not grab the attention of the medical field because it was not yet a reliable tool. There were no precise images or techniques for technicians to replicate, and many thought it would never prove useful. With the hope that tumors will alter the beam of bright lights, doctors developed like trans-illumination techniques instead of radiology. The technique involved doctors pressing the affected breasts of patients with bright light beams in a dark black closet. This technique was a failure andcaused skin problems (Rebecca, 2001).

Screening with mammography and physical examination determined that 30% of cancers could be detected by mammography alone, and deaths from cancers among screened woman were reduced by 30% compared with unscreened. Later mammography was followed by a number of innovative means for imaging the breast like magnetic resonance imaging (MRI). As the twentieth century advanced, radical surgery was opposed greatly by Kaae and Johansen of Denmark by protesting that selective uses of radical mastectomy did not offer an overall increase in cures. Bernard Fisher, Professor of Surgery at the University of Pittsburgh and a researcher in the biology of metastasis, critically evaluated the treatment of breast cancer. Referring to the Halsted's rationale for radical mastectomy (1979), Fisher wrote in 1970 that "…either the original surgical principles have become anachronistic or, if they are still valid, they were conceived originally for the wrong reasons" (Fisher B, 1970).

Chemotherapy developed in parallel with changes in local treatment. Its beginnings can be traced to the use of mustard gas in World War I. Exposure caused lymphoid tissue followed by death from pneumonia. In 1942, Goodman and Philips used mustard gas on human lymphoma at Yale Uni-

versity. The results were suppressed throughout the war until 1946. Systemic "chemotherapy", a word coined by the researcher Paul Ehrlich, often produced temporary regression and occasionally complete disappearance of advanced breast cancers (Hawley, Fagerlin, Janz, & Katz, 2008).

A similar approach involved combining the drugs cyclophosphamide, fluorouracil and methotrexate improved survival effectively. In humans, exposure to ionization radiation increased the risk as demonstrated through the survivors of Japan after the atomic bombings in Hiroshima and Nagasaki. This chemotherapy introduction to treatment of breast cancer coordinated the specialists in bringing to bear a medley of surgery, radiation therapy, and systemic hormonal chemotherapy on the components of diseases. The discovery of predisposing mutations in BRCA1 and BRCA2 genes of families prone to breast cancer confirmed genetic transmission and provided a means to identify individuals at great risk.

CONCLUSION

Breast cancer still remains a challenging issue to deal in the field of science and medicine. For practicing physician's radiotherapy, medical oncology, surgical oncology, and even breast surgery had become specialties. According to the recent cancer statistics by American Cancer Society, in 2015 there will be a total of 1.6 million new cancer cases expected to be diagnosed and close to 600,000 deaths due to cancer in America. With screening and modern therapy, the death rate had begun to decline and overall relative survival 5 years after diagnosis, cured and uncured, was 86.6%.

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Conflict of Interest

None of the authors of this paper has any competing interests and declare no conflict of interest with other people or organizations.

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