MEDICAL HUMANITIES RESEARCH

Kathryn Cooper, MS2

Preceptor:
Max Fink, M.D.
Professor Emeritus
Stony Brook University
Psychiatry and Neurology

A historical review of the chemical induction of seizures and its relevance to the question – seizure or current?

Introduction:

Electroconvulsive therapy (ECT) was developed as a treatment for severe psychoses in Italy by Ugo Cerletti and Lucio Bini in 1938, and it is still widely used today. However, there was also a rich history of convulsive therapy before ECT became the treatment of choice. Metrazol was an injectable convulsant drug that was in wide use in the years immediately preceding the advent of ECT, and flurothyl (Indoklon) was an inhalant convulsive drug that emerged in the late 1950s. Both drugs produced seizures that were as effective in the treatment of psychotic patients as ECT, and in a study done in 1960 the EEG changes during seizures induced by all three methods were found to be equivalent. However, Metrazol and flurothyl were both discarded in favor of ECT. Today, the mechanism of action of ECT remains unclear, and there is debate as to whether ECT is effective because of the seizures produced or the electric current itself. A look back at the older chemical induction methods provides valuable insight to this question.

Objective:

To determine the history of chemical means of inducing seizures; why these methods fell out of favor; and their relevance to the current debate of whether the effect of ECT lies behind the seizure itself or the electric current used to elicit the seizure.

Method:

A literature review of different means of inducing seizures

Results:

The first experiments in humans to elicit seizures for the purpose of treating severe psychosis were conducted in 1934 using camphor dissolved in oil. Patients who consistently had seizures with this drug showed dramatic improvement, and it was hypothesized at this point that the seizure itself, not the chemical used, was responsible for improvement. Metrazol was an injectable drug that was found to be much more effective in reliably producing seizures, and this became the treatment of choice. The main complaint with this drug was a sense of intense fear that developed between the injection and onset of the seizure. Also, injections had to be given rapidly to give the greatest likelihood of producing a seizure, and this could lead to sclerosis of veins. When ECT arrived in 1938, it easily replaced Metrazol because seizure onset was immediate with the use of electrical stimuli, eliminating fearful reactions in patients, and the use of electricity was technically much simpler than intravenous injection. We lack randomized control trials comparing Metrazol and ECT, but in studies employing both methods they were regarded as equivalent in terms of therapeutic efficacy.

Flurothyl is an inhalant drug that has both anesthetic and convulsive properties. It was discovered in 1957 and in the 1960s was investigated by several clinicians as a possible alternative to ECT. It was shown to be extremely safe, and it had an advantage over Metrazol of a self-limiting dosing system – when a convulsive threshold of the drug was achieved, seizure onset was accompanied by a brief period of apnea. This prevented overdose and possible late convulsions. Randomized control trials found flurothyl convulsive therapy to be as effective as ECT, and by some accounts it produced less postictal confusion and memory loss. However, flurothyl was abandoned for use in psychiatric patients after the early 1970s. This was partly because it was more expensive then ECT and it was viewed as more cumbersome technically than ECT. The flurothyl gas also left treatment rooms with an ether-like odor. This was often disconcerting to treatment personnel after watching patients convulse after a few breaths of the gas, although such low concentrations in ambient air were never shown to cause any ill effects.

Conclusion:

Fears of electric shock keep many patients from accepting ECT, and because the seizure itself is the critical component of convulsive therapy, a look back at older chemical methods of producing seizures is warranted. Several technical issues would remain if Metrazol was to come back into use today, but flurothyl may be a more promising option. Because anesthesiologists are required to be present for ECT treatments, the use of an inhalant drug would not pose any additional difficulties for administration of treatments. Also, the principal objection to ECT is that it causes memory loss, and while more clinical trials would be needed to definitively conclude that flurothyl causes less memory loss than ECT, based on reports from older studies this may be the case. Finally, flurothyl may be viewed by patients as a more benign treatment option than electric shock, and may make convulsive therapy possible in patients who would have otherwise refused it.

References:

Bennett, A. E. Metrazol convulsive shock therapy in affective psychoses: A follow-up report of results obtained in sixty-one depressive and nine manic cases. *American Journal of Medical Sciences*, 198(5):695-701, 1939.

Chatrian, G. E. and Petersen, M. C. The convulsive patterns provoked by Indoklon, Metrazol, and electroshock: Some depth electrographic observations in human patients. *Electroencephalography and Clinical Neurophysiology Journal*, 12(3):715-725, 1960.

Cronholm, B. and Ottoson, J-O. Experimental studies of the therapeutic action of electroconvulsive therapy in endogenous depression: The role of the electrical stimulation and of the seizure studied by variation of stimulus intensity and modification by lidocain of seizure discharge. *Acta Psychiatr Scand*, 35, suppl. 145:69-102, 1960.

Dolenz, B. J. Flurothyl (Indoklon) side effects. *Am. J. Psychiatry*, 123:1453-1455, 1967.

Esquibel, A., Krantz, J. C. Jr., Truitt, E. B., Ling, A. S. C., and Kurland, A. A. Hexafluorodiethyl ether (Indoklon) – Its use as a convulsant in psychiatric treatment. *J. Nerv. Ment. Dis.*, 126:530-534, 1958.

Fink, M., Kahn, R. L., Karp, E., Pollack, M., Green, M., Alan, B., and Lefkowitz, H. J. Inhalant-induced convulsions: Significance for the theory of the convulsive therapy process. *Arch. Gen. Psychiatry*, 4:259-266, 1961.

Finkelman, I., Steinberg, D. L., and Liebert, E. The treatment of schizophrenia with metrazol by the production of convulsions. *JAMA*, 110:706-709, 1938.

Gazdag, G., Bitter, I., Ungvari, G. S., Baran, B., and Fink, M. László Meduna's pilot studies with camphor inductions of seizures: The first 11 patients. *Journal of ECT*, 25(1):3-11, 2009.

Goldstein, H. H., Dombrowski, E. F., Edlin, J. V., Bay, A. P., McCorry, C. L., and Weinberg, J. Treatment of psychoses with pentamethyelentetrazol. *Am. J. Psychiatry*, 94(6):1347-1354, 1938.

Karliner, W. and Padula, L. The use of hexaflourodiethyl ether in psychiatric treatment. *J. Neuropsychiatry*, 2:67-70, 1960.

Krantz, J. C. Jr., Carr, C. J., Lu, G., and Bell, F. K. The anesthetic action of trifluoroethyl vinyl ether. *J. Pharmacol. Exp. Ther.,* 108:488-495, 1953.

Krantz, J. C. Jr., Esquibel, A., Truitt, E. G. Jr., Ling, A. S. C., and Kurland, A. A. Hexafluorodiethyl ether (Indoklon) – an inhalant convulsant: Its use in psychiatric treatment. *JAMA*, 166:1555-1556, 1958.

Kurland, A. A., Hanlon, T. E., Esquibel, A. J., Krantz, J. C. Jr., and Sheets, C. S. A. A comparative study of hexafluorodiethyl ether (Indoklon) and electroconvulsive therapy. *J. Nerv. Ment. Dis.*, 129:95-98, 1959.

Laurell, B. (Ed.): Flurothyl convulsive therapy. *Acta Psychiatr. Scand. [Suppl.]*, 213:1-79, 1970.

Low, A. A., Sonenthal, I. R., Blaurock, M. F., and Sherman, I. Metrazol shock treatment of the "functional" psychoses. *Archives of Neurology and Psychiatry*, 39:717-736, 1938.

Meduna, L. Autobiography of L. J. Meduna. *Convuls Ther.* 1:43-57, 121-138, 1985.

Padula, L. and Karliner, W. Inhalation Indoklon convulsive therapy. *J. Neuropsychiatry*, 4:182-183, 1963.

Small, J. G., Small, I. F., Sharply, P., and Moore, D. F. A double-blind comparative evaluation of flurothyl and ECT. *Arch. Gen. Psychiatry*, 19:79-86, 1968.

Weigert, E. V. Psychoanalytic notes on sleep and convulsion treatment in functional psychoses. *Journal for the Study of Interpersonal Processes*, 3:189-209, 1940.

Ziskind, E., Somerfeld-Ziskind, E., and Ziskin, L. Metrazol and electric convulsive therapy of the affective psychoses: A controlled series of observations covering a period of five years. *Arch NeuroPsych*, 53(3):212-217, 1945.

Chad Brizendine, MS2

Preceptor(s):
Margie Shaw, Ph.D., J.D.
Assistant Professor, Bioethics
University of Rochester Medical Center
Division of Medical Humanities and Bioethics

Ben Rich, Ph.D., J.D.
Endowed Chair of Bioethics
University of California Davis
Internal Medicine and Bioethics

The Art and Science of Clinical Ethical Consultation

Introduction: Clinical ethics consultation became a widely spread service in U.S. hospitals in the late seventies as a response to several major events that occurred including the legal case of Karen Ann Quinlan and the President's Commission report. The primary mission of this service has always been to review and consult in cases that raised ethical issues for health care team members, patients, and their visitors. Medical students and physicians are trained *answer seekers*. But clinical ethics consultations are complex, emotionally charged, and variable. The different needs, biases, and understandings of the parties involved in individual cases can lead to diverse outcomes. Numerous health care team members are participating in the clinical ethics consultation process and they each come from different training backgrounds. Only 5% of the people doing ethics consultation in the U.S. have done a fellowship or graduate program in bioethics and a mere 41% have formal, direct supervision by an experienced member of their respective consultation service. The American Society for Bioethics and Humanities describes the current "state of affairs" for clinical ethics consultation as being absent practitioners trained and educated in ethics consultation. This is made more problematic by the fact that there is a "lack of educational and training programs specifically relevant to ethics consultation."

Objective: With the aid of Dr. Rich and Dr. Shaw the goal of this project was to take advantage of the ASBH task force's recommendation and explore via a directed self-education program the clinical consult process at the UC Davis academic medical center. The approach would rely on two pieces: a review of the literature that discusses the elements of a good bioethics consultation and a participatory experience with the UCDMC ethics consult service. The combination of both academic and clinical experience gave me the opportunity to put the knowledge I had acquired from the literature into action by analyzing and reviewing cases with the team.

Methods: The participatory observation of the ethics consultation service provided the greatest source of learning and skill development since I was permitted to observe consultant-patient interactions, ask questions of the primary care teams involved, discuss ethical issues with the ethics team members of the week, and assist them in writing up the final report. The academic element of researching through the available literature offered me insight into how the service at

UCDMC differed from other places and what seemed to work for them and what did not. It also enabled me to formulate more advanced ethical questions in cases.

Results: As a result of my experience at UCDMC, I learned the value and purpose of having an ethics consult service at healthcare institutions first hand. They help care teams navigate challenging patient care situations, engender critical thinking about ethical issues that arise from caring for a diverse patient population, and facilitate the policy creating arm of their institution by providing well-thought out policy changes that address current issues in clinic. During my experience I was able to work with a variety of professionals involved in the ethics service and see the advantages and disadvantages of having a large committee composed of individuals with a vast range of experience in ethics consultation, diverse personal backgrounds, and different professional experiences. Having such a wide base of experience available to the group discussion helps explore the complex ethical issues encountered in a western society founded on pluralist values. However, it also spotlighted the issues currently challenging the professional practice of ethics consultation: the need for a common conceptual approach to cases, the different ability in people to identify their own biases, and the persistent need to make a common ethical language available to consultants.

Conclusion: The project helped me become familiar with the process of going through an ethics consultation and taught me the basic requirements for doing an excellent clinical ethics consultation. It is clear that there are two main challenges ethics consultation services face in the immediate future: the question of how to meaningfully educate their consultants and how to utilize the growing availability of e-records in health care institutions to guide their development as a service and justify their existence in a health care world that is becoming more and more cost-justifying by way of analytics rather than patient care. The ability to develop accessible and specific ethics consultation education and training programs requires an extensive amount of work and it is likely that this work cannot be done in as comprehensive a manner as is required when many of the services at large academic medical centers are composed of professionals who volunteer there time. Ultimately, the best method of training may require a program that utilizes both academic study and apprenticeship to experienced members of clinical ethics services.

References:

Aulisio, M.P. (1999). Ethics consultation: is it enough to mean well? *HEC Forum*, 11(3), 208-217.

Fox, E. Meyers, S., & Pearlman, R. (2007). Ethics consultation in U.S. hospitals: A national survey. *The American Journal of Bioethics*, 7(2), 13-25.

American Society for Bioethics and Humanities Clinical Ethics Task Force, *Improving Competencies in Clinical Ethics Consultation*, 2.

Karishma Dara, MS2

Nancy Chin, Ph.D., MPH
University of Rochester Medical Center
Public Health Sciences

P. Charles Inboriboon, M.D., MPH
University of Missouri Kansas City
Emergency Medicine

Sonia Oyola, M.D.
University of Chicago
Family Medicine

Surinder Nand, M.D.
University of Illinois at Chicago
Psychiatry

"What's going on at home?": The Role of the Medical History and Physical in Domestic Violence Interventions among Immigrant Populations

Introduction:

"Violence against women … is now widely recognized as a serious human rights abuse, and increasingly also as an important public health problem that concerns all sectors of society" (WHO 2005). Victims of domestic violence are physically, mentally, and emotionally strained. Despite its drastic costs to individuals and systems, the culturally censored nature of the discussion of domestic violence allows abuse to go unnoticed and unexplored by communities and institutions. WHO believes that "the health sector has unique potential to deal with violence against women, particularly through reproductive health services, which most women will access at some point in their lives" [1].

The identification of the health care sector as a point of access does not imply that health providers are adequately trained or competent in domestic violence interventions. The role of the health provider in such interventions is desired, but not defined. This role ambiguity contributes to confining health care to a much smaller point of access.

For immigrant populations this access is limited even further because of their marginal status, lack of language skills, and cultural taboos. Unfortunately, it is in these same populations that there is a great risk of domestic violence. Health providers are challenged to effectively intervene in the context of different cultural and life experiences.

Objective:
This study examines the health providers' perceptions of the role of the health sector in domestic violence interventions among immigrant populations. The project aimed to understand the following:

- challenges that arise when addressing domestic violence in an immigrant community
- health providers' perceived barriers that patients face when disclosing domestic violence
- opportunities which allow for expansion and optimization of health provider roles in identification and prevention of domestic violence

Methods:
Semi-structured in-depth interviews were conducted with 18 health care professionals from various arenas. Eight were part of a focus group conducted within the Family Medicine department of the University of Chicago. The interviews were all either conducted in person and audio recorded or by telephone. An interview guide was created beforehand to frame the discussions, but not to dictate their directions.

Interviews were analyzed qualitatively and coded for themes. This identification of themes was done periodically so that I was able to use further interviews to expand on views that came up frequently. This study received Institutional Review Board approval.

Results:
Themes of patient barriers, health provider challenges, and opportunities for change emerged from the interviews. Through these categories the health providers' perception of the role of the health sector in domestic violence interventions among immigrants and the needs to increase effectiveness was clarified.

Patient Barriers:
The health providers offered their perceptions of the barriers that prevented a patient from disclosing a violent relationship. The main barriers identified were language/culture, inability to recognize violence as a problem, a fear of judgment or stigma, and the burden of prevention falling solely on the victim. Some physicians believed that a shared cultural or linguistic background established better rapport between patient and physician. Others found that this facilitator might also become a barrier for the patient if he/she believes his/her health provider would share information with their community.

Health Provider Challenges:
Health providers identified a lack of time, a lack of training, and a discomfort of knowing next steps after a patient discloses as the main challenges that they face when considering if they should screen a patient for domestic violence. Specifically within immigrant populations they noted the difficulties that come with language and cultural barriers. Additionally, because immigrant health care access is often limited by insurability many immigrants utilize the free health clinics available. One physician noted that these free clinics do not allow for a physician to build a long-term relationship with a patient. He emphasized this relationship is important to developing the safe environment in which patients can disclose domestic violence. Another

physician noted that the over-all health system that includes social workers is over-burdened and has trouble responding to cases.

Opportunities/Solutions: Providers suggested various unique opportunities that allow them to participate in domestic violence interventions. Some of which include that patient encounters provide for easy access points in which providers can recognize unexplained symptoms. To some health providers it seems easier for victims to access physicians instead of their own personal social workers.

Role:

Health providers determined their main responsibilities to be recognizing a problem, connecting patients to resources, and explaining the health implications of domestic violence.

Needs:

Through recognizing the barriers that prevent screening and the opportunities that allow it, physicians were also able to articulate needs to increase the frequency and effectiveness of interventions. Many reiterated the need for a training on effective and sensitive screening in immigrant populations, knowledge of local survivor and perpetrator resources and services, and an understanding of patient expectations. One physician suggested an improvement in graduate medical school education that emphasized communication and cultural competency skills. He noted that many students fail to realize the relevance of tools of communication when presented with other medical tools of higher technology.

Reference:

WHO Multi-country Study on Women's Health and Domestic Violence against Women. Publication. Geneva: World Health Organization, 2005. Print.

Elizabeth L. Saionz, MS2

Preceptor:
Laurence B. Guttmacher, M.D.
Clinical Director, Rochester Psychiatric Center
Clinical Professor of Psychiatry and Medical Humanities
Associate Dean, Advising
University of Rochester School of Medicine and Dentistry

Racial disparities in psychiatric care at the Rochester State Hospital

Introduction: The impact of race in healthcare delivery is an important issue in the current practice of medicine in the United States. In order to address this disparity effectively, the role of race today must be considered in the broader context of a history of doctor-patient interactions spanning our collective cultural memory. Examination of primary historical sources, especially patient records, offers unmatched insight into these interactions. Critical analysis of such documents within the framework of contemporaneous historical events, cultural beliefs, and medical knowledge will contribute to our understanding of the role of race, in both the past and present, as a determinant of health – and, therefore, how the issue can successfully be addressed today.

Objective: The purpose of this study is to explore the differences between black and white patients residing at the Rochester State Hospital (RSH) during the 1940 US Census. The study aims to explore if there were differences in quantitative characteristics between the black and white patient populations at the time of the 1940 US Census.

Background: Western New York was a microcosm for demographic and medical institutional change in the first half of the twentieth century. As black Americans moved away from the rural South to escape violence, segregation, and economic stagnancy, many found their way to the burgeoning industrial city of Rochester. The so-called "Great Migration" came on the heels of a prior "Great Wave" of international immigration, which had brought tens of millions of Europeans to American cities. Urbanization noticeably impacted psychiatry in New York. The State Hospital system was established to deal with the growing number of people seeking psychiatric care; before the advent of anti-psychotics in the 1950s and the arrival of Medicare and Medicaid in 1963, such care generally meant institutionalization. RSH alone cared for over 3000 patients in 1940, including 67 documented as "Colored". Earlier work has shown that immigrants were grossly overrepresented among those hospitalized at RSH from 1890-1919. Today, data suggest that black patients are more likely to end up in state hospitals than white patients (1). Additionally, black patients are more likely to receive diagnoses of schizophrenia than white patients (2,3). Some scholars argue that this difference originates in the Civil Rights era in conjunction with the stereotype of the "angry black man" (4). We hypothesize that, relative to white patients, the frequency of schizophrenia-related diagnoses will be greater among the black patients at RSH in 1940, and the black patients will be admitted at younger ages than white patients.

Methods: The case population was drawn from the 1940 US Census, and included all of the "Colored" persons identified as "inmates" of the "Rochester State Hospital" or "1600 South Avenue, Rochester NY". Sixty-seven "Colored" individuals were identified, with seven individuals excluded due to illegible names. Sixty individuals were then identified in the RSH case files, which reside at the Rochester Psychiatric Center. Fifty-nine controls were identified by obtaining the next white patient admitted to RSH after each case, as recorded in the Admissions Logs of the Rochester State Hospital, which reside at the University of Rochester Medical Center's Edward G. Miner Library. Data recorded from each case and control included: race, sex, age at admission, place of birth, time in New York, marital status, diagnosis, committer, length of stay, and psychiatric treatments received.

Results: For age at admission, the race groups were statistically significantly different. The mean age at admission for white patients was 52, and the mean for black patients was 41 (Student's t-test, p=0.001). When controlling for sex, the overall age difference disappeared for females (χ^2, p=0.119) but remained significant for males (χ^2, p=0.037). When analyzed by age groups, younger patients were more likely to be black and older patients were more likely to be white (χ^2, p=0.004). Black patients were more likely than white patients to be diagnosed with thought disorders (Fisher test, p=0.009). When organic disorders were considered, the two groups were not different (Fisher contingency test, p=0.107). However, when all medical diagnoses were included (organic+alcoholism), black patients were less likely than white patients to have their psychiatric symptoms be ascribed to a medical cause (Fisher contingency test, p=0.030). Additionally, length of stay was significantly longer for black patients compared to white patients (Student's t-test, p<0.001). The mean number of days was 7541 for black patients, versus 3882 for white patients For all metrics of close social structure, including marital status, being committed by a relative, and likelihood of parole, there was no difference between black and white patients. Regarding birthplace of patients (NY State, US outside of NY state, and Foreign-born), there were significant differences among the black and white patient populations (χ^2, p<0.001). White patients were largely born outside of the US, whereas black patients were mostly born in mid-Southern US states.

Conclusion: The data suggest that there were many differences in psychiatric care between black and white patients at RSH in the mid-20th century. Black patients tended to be admitted at younger ages than white patients; when controlling for sex, this difference disappeared for women but remained for men. Black patients also tended to be diagnosed disproportionately with thought disorders, whereas white patients tended to carry medical diagnoses. This suggests that the origins for today's high rates of schizophrenia diagnoses among black Americans may have its origins even earlier than the Civil Rights era. Furthermore, black patients had lengths of stay that were almost twice as long as white patients. One interpretation of these data is that the black patients had some exposure – genetic, physiologic, or environmental – that made them more susceptible than the white patients to developing thought disorders, and their social structures caused them to be institutionalized earlier and longer. However, attributing such racial differences to genetics and physiology is somewhat implausible, if not impossible to test: genetic ancestry and historic – even modern – racial categories do not necessarily correlate. Furthermore, the environmental and social structural differences across the black and white patient groups are not significantly different – both groups are largely comprised of immigrants to New York, and had similar metrics for social structure. An alternative interpretation is that the black and white patients were not intrinsically different, but sociocultural biases in the diagnostic and treatment approach contributed to their different experiences in the state hospital system; it is worth noting that all of the professional staff at RSH during this time period were white. Understanding the historic origins of racial disparities in psychiatric care will be important in addressing the current disparities in the mental health system.

Further Directions: To determine whether the differences observed between black and white patients at RSH in the mid-20th century were due to inherent patient characteristics or diagnostic biases, more research needs to be done. This study could involve a group of psychiatrists reviewing the patients' intake mental status exams (MSE), blinded to the initial diagnosis and the race of the patient. While it would not account for biases in the recorded MSE, it would be an important step towards appreciating the influence of diagnostic biases in the observed racial disparities.

Acknowledgements: Special thanks to Robert Riley, Public Information Officer, Rochester Psychiatric Center; and John Crilly, Rochester Psychiatric Center.

Citations:

(1) Barnes, A. Race, schizophrenia, and admission to state psychiatric hospitals. Admin Policy Mental Health 31:241-52, 2004.
(2) Rost, K; Hsieh, YP; Xu S et al.: Potential disparities in the management of schizophrenia in the United States. Psychiatric Services 62:613-618, 2011.
(3) Eack, S; Bahorik, AL; Newhill CE et al.: Interviewer-perceived honesty as a mediator of racial disparities in the diagnosis of schizophrenia. Psychiatric Services 63:873-881, 2012.
(4) Metzl, J. (2009). The Protest Psychosis. Boston: Beacon Press.

References:

1. Cassedy, J. G. (1997). African Americans and the American Labor Movement. Prologue: Special issue on federal records and African American history, 29 (2).
2. Gregory, J. N. (2009). African American Urban History: The Dynamics of Race, Class and Gender since World War II. (K. L. Kusmer, & J. J. Trotter, Eds.) Chicago: University of Chicago Press.
3. Rochester State Hospital. (1940). Fiftieth Annual Report of the Rochester State Hospital. Utica, NY: State Hospitals Press.
4. Shorter, E. (1997). A History of Psychiatry: From the Era of the Asylum to the Age of Prozac.
5. University of Rochester Medical Center. (2013). Records of the Rochester State Hospital. Retrieved from Edward G. Miner Library: https://www.urmc.rochester.edu/hslt/miner/historical_services/archives/RecordGroups/RochesterStateHospital.cfm
6. Wilkerson, I. (2010). The Warmth of Other Suns. New York: Random House.