FOR THE HISTORY OF DIALYSIS

John Dique: dialysis pioneer and political advocate

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Abstract

John Dique (1915-1995) epitomized the internationalism of medicine, the intellectual and manual dexterity of many pioneers of dialysis, and the social concern evinced by many nephrologists. Born in Burma of French, German, British and Indian ancestry; educated in India; an Anglo-Indian who described himself as British without ever having visited Britain; he moved to Australia in 1948 to escape the murderous inter-ethnic conflict that befell multicultural India as it and Pakistan became independent. Settling in Brisbane, he pioneered several novel medical techniques. After inventing some simple equipment to facilitate intravenous therapy, he established a neonatal exchange blood transfusion programme. Then, between 1954 and 1963, he personally constructed and operated two haemodialysis machines with which to treat patients suffering from acute renal failure, the first such treatment performed in Australasia. His patients' survival results were, for the era, remarkable. He subsequently helped found the Royal Australasian College of Pathologists and went on to establish a successful private pathology practice. The latter years of his life, however, saw him become a social and political advocate. He fiercely opposed the emerging ideologies of multiculturalism and social liberalism that, he predicted, would seriously damage the national fabric of Western society. Public vilification ensued, his medical achievements disregarded. It does seem likely, however, that in none of the areas that he touched - whether medical, social, or political - has the last word yet been said.

Key words: Australia, dialysis, Dique, India, multiculturalism, racism

Life in Burma and India

John Charles Allan Dique was born in August 1915 at Mandalay in Burma. His father, Stephen Dique, was a surgeon in the Indian Army Medical Corps and soon afterwards rendered distinguished military service in Mesopotamia during the First World War. His father was descended from a Frenchman who had arrived in India at Pondicherry at the time of the French Revolution although the family had later moved to Madras where his grandfather had managed the Public Health Office in the late 19th century. His paternal grandmother was the daughter of an Irishman who had served as a regimental sergeant major in the 105th Madras Regiment. His mother, Norah Heyne, on the other hand, was German. All family members of previous generations were of European ancestry, apart from one Indian woman whom one of his paternal ancestors had married. He thus had a quite cosmopolitan ancestry with strong medical overtones, but with the common strand of Roman Catholicism linking each generation.

John Dique and his brother were educated at the Philander Smith College, a boarding school in the Himalayan hill station of Naini Tal. This institution, originating from a benefaction by the widow of an American Methodist Episcopal philanthropist, achieved high academic standards along the lines of a classical British public school. Dique played much sport there and left not only having memorized parts of several of Shakespeare's plays and successfully taken the Senior Cambridge examination, but also become fluent in Hindi and passable when conversing in both Urdu and Tamil. He had, during the school vacations, enjoyed visiting the Andaman Islands where his father was a medical officer at the prison for political detainees of the British Raj. His later teenage years however were marred by the failure of his parents' marriage (an event for which he never forgave his father) and the poverty to which this reduced his mother and himself. Enthused nevertheless by a strong altruistic and religious drive, he enrolled in the medical school at the University of Madras, where he led an impecunious but enjoyable student life and graduated with the degrees of MB, BS in 1941 at the age of 26 years. He soon afterwards married Doreen Bartley, a descendent of a Scot who had arrived in India in the late 17th century to serve as a soldier in the East India Company's army. Her racial ancestry was largely European, although with a higher Indian admixture than her husband's.

Dique then joined and served in the Indian Army Medical Corps from 1941 to 1947, rising to the rank of Captain. His postings took him across the full breadth of British India. They culminated in his appointment to the 2nd Army Transfusion Centre at Poona in 1947, a position that gave him valuable experience for his future career. His wife and he, together with their five children, were dismayed by the events that surrounded the achievement of Indian and Pakistani independence at that time, the assassination of Mahatma Gandhi, and especially by the chaos with a huge death toll that accompanied partition of the two countries. Their loyalties were divided: descended from generations raised in India, they nevertheless perceived themselves proudly as British, even though neither of them had ever set foot in Britain. Their safety, like that of most Anglo-Indians, was not particularly threatened during the civil war that bedeviled the country during which Moslem and Hindu

protagonists tore apart a multicultural fabric that British administrators and a legion of local rulers had by civil and military means kept reasonably peaceful throughout the previous century. The future looked ominous so the Diques decided to follow some of their relatives to settle instead in Australia.

Migration to Australia

Migration to Australia from India in 1948 was however potentially difficult. Australian governments had, throughout the 20th century, pursued what was commonly called *The White Australia Policy*. This strongly supported immigration, but only of people of European ancestry. Coming from India required the Diques to demonstrate by genealogical evidence that they were sufficiently white. John Dique had no difficulty, but his wife was borderline until she could prove that she had less than 25% indigenous ancestry. They eventually managed to surmount this hurdle, but only at the price of considerable delay during which they had to live in what was euphemistically entitled *The Homeward Bound Trooping Centre* at Deolali, north of Bombay. The newly independent Indian government used this squalid camp for the ethnic cleansing of its army of those who chose not to take its citizenship. Hygiene was poor. Food was scarce. Storms caused flooding. An epidemic of typhoid fever erupted. Dique's mother contracted it. He could not save her and she died. Eventually though they managed to board the *S.S. Stratheden*, a modern ocean liner: fresh, well organized and secure, bound for Western Australia.

Dique went ashore at each of the cities at which the ship berthed (Perth, Adelaide, Melbourne, and Sydney, where the voyage ended) visiting a major hospital and seeking a position as a medical officer. None of them could accommodate him. Running very short of money, he then left his family behind and travelled by train to Brisbane where he sought a position at the Brisbane General (later Royal Brisbane) Hospital. He was appointed as Transfusion and Resuscitation Officer and his career immediately flourished [1]. He rapidly gained a reputation for his skill in cannulating veins that others found impossibly difficult. He then turned his mind to devising an improved blood transfusion administration set that was inexpensive, sterilizable and compatible for the administration of both blood and crystalloids [2]. He next developed a novel apparatus suitable for use in the administration of fluids through the umbilical veins of infants suffering from erythroblastosis foetalis. Using this, he established an effective service for treating neonatal jaundice in Brisbane that produced results significantly superior to those previously published internationally. His assistant, Dorice Wrench, and he managed 289 babies between 1949 and 1956, analyzed their results with statistical rigor, and proposed clinical guidelines for future use [3] [4] [5].

Introducing dialysis to Australia

The prospect of using haemodialysis treatment in the management of patients suffering from acute renal failure was another novel therapy that attracted his attention, perhaps because of the potential need for major blood transfusions to facilitate it. A clear concept of acute renal failure had only developed in the early 1940s. Willem Kolff, who had undertaken the earliest successful human dialysis treatments in The Netherlands, had published a book in which he described in detail his therapeutic methods in 1947 [6]. Occasional hospitals internationally had treated occasional patients successfully before 1950. Dique, encouraged by Alexis Shaw (the Director of the Red Cross Blood Transfusion Service in Brisbane) and by Aubrey Pye (the Superintendent of the Brisbane Hospital) and assisted by Harold Lloyd (the hospital's chief electrician), followed the published description and built a dialysis apparatus very similar to that designed by Kolff.

The Brisbane machine consisted of a bath of dialyzing fluid in which a drum (52 inches [130 cm] long, 18 inches [45 cm] in diameter, made of beech wood slats) rotated, and around which a tube (120 feet [3.65m] long and 0.75 inch [1.88cm] in diameter) of semi-permeable Cellophane was wrapped. A stream of blood taken from a radial artery in the arm of a patient fed into one end of it, dialyzing it as it traversed the tube, and then returning it via a cannula inserted into a saphenous vein in the patient's leg. Vascular access occurred through glass needles placed in an artery and vein by surgical cutdown. The container was a plastic bathtub of 150L capacity. The frame of the machine was a ward trolley. A heater controlled the temperature of the dialyzing fluid that was composed of tap water containing 1500g of dextrose, 900g of sodium chloride, 300g of sodium bicarbonate and 60g of potassium chloride, but with the last added only as necessary guided by biochemical measurements. The blood circuit was decontaminated by rinsing it with 10L of sterile saline solution before priming it with 1500ml of heparinized blood obtained from donors. A motor rotated the drum through the dialyzing fluid in which its lower one third was submerged. The rotating motion of the drum propelled the blood along the Cellophane tube, acting like an Archimedes pump, but an external pump then propelled the blood back into the patient. The blood flowing from the patient and returning travelled via 500ml flasks that an attendant on each side repetitively filled and emptied to maintain the patient's estimated blood volume in equilibrium, thereby addressing a deficiency in Kolff's design that provided inadequate control of ultrafiltration. The attendants collected blood for hourly measurements of arterial and venous serum concentrations of sodium, potassium, chloride and urea, and of blood sugar. They also collected for pre- and post-dialysis haemoglobin, protein and bicarbonate levels.

Dorice Wrench and Bruce Gutteridge assisted Dique in performing the first dialysis treatment per-

formed in Australia on 10th February 1954. The patient was a 36-year old woman who, after failing to comply with antenatal advice, had delivered a dead and macerated fetus twelve days earlier. The placenta was partially retained and became infected with *Clostridium welchii*. She had developed septicaemia, hypotension, cyanosis and oliguria. She had failed to respond to antibiotics and fluid therapy. Her pre-dialysis serum urea level was 440mg/dL (normal <55mg/dL) and potassium 5.2mEq/L (normal <5.5mEq/L). She received dialysis for 6 hours 15 minutes, during which she also received an intravenous dose of calcium gluconate. Her blood pressure remained stable, her clinical condition improved and her urea level fell to 196mg/dL. She had a total blood flow through the dialyzer measured at 46,200mL. She received antibiotic treatment and a uterine curettage. Her condition improved progressively and she survived [7].

Dique and his colleagues treated nine patients suffering from acute renal impairment between 1954 and September 1956 using their rotating-drum dialysis machine. Six were women and three men, aged between 21 and 47 years with complications of pregnancy in three cases, complications of surgery in two cases, trauma in two cases, malignant hypertension in one case, and underlying chronic renal failure in one case. Seven received one dialysis, one two and one three treatments. Four survived and five died, but none directly as a result of the treatment given [8].

The first dialysis machine that Dique built thus proved effective in relieving uraemia, but tedious to use. It took at least four hours to set up and another hour to dismantle. It also required two attendants to monitor blood volumes throughout each treatment. Blood leaks occurred through the Cellophane tubing and often remained hidden. He therefore decided to build a second machine modified from the design described by Nils Alwall who had pioneered dialysis in Sweden in 1946 [9]. This consisted of a 150L translucent Perspex tank containing dialyzing fluid and a hollow Perspex drum. The latter had a Cellophane tube about 100 feet in length wound around it in layers separated by a clear Perspex jacket and secured by binders, the whole capped by a clear Perspex lid. An electrically driven propeller sat within the dialyzing fluid to circulate it within the tub around the Cellophane tube. The connections to the patient, 'sterilizing' methods, and dialyzing fluid composition resembled the arrangements with the previous apparatus. The advantages of the tank machine over the rotating drum one were that it was smaller, more portable, quieter, faster to assemble, easier to clean, required less supervision, and revealed blood leaks promptly. Its advantage over Alwall's design was the improved visibility provided by use of translucent Perspex. Its disadvantages over the rotating drum machine were that blood leaks, when they occurred, were more difficult to control; removal of urea was less efficient; and some pooling of blood occurred in the lower extremities of the coil. Dique and his assistants nevertheless used it to treat eleven patients between September 1957 and September 1963. Six were women, five men, aged between 19 and 59 years. Nine received one dialysis, one two treatments, and one three. Three suffered from obstetric complications, two came after trauma, two after transfusion reactions, two after drug reactions, one after surgical removal of a sole functioning kidney, and one had chronic glomerulonephritis. Five survived and six died, but again none directly as a result of the treatment [10].

Dique did not pursue dialysis treatment for renal failure beyond this point. Facilities had by then opened elsewhere in Australia equipped with commercially manufactured dialysis machines, the efficiency and ease of use of which he applauded, but the expense of which he decried. Where then does this leave him in the history of dialysis? He belonged to the small band of physicians in the earliest years of the procedure's clinical evolution who not only believed that it offered advantages over the pre-existing conservative methods of treatment, but who themselves designed and built machines, personally operated these, and documented the outcomes of their treatment. They thereby combined several roles that within a decade would develop into discrete areas of activity, each becoming the task of subspecialists. The machines that he built soon appeared quite primitive. They required dedication by a gadget-minded clinician to manufacture, were cumbersome to use, challenged the laws of antisepsis, and had no automated monitoring features or safety alarms. Certainly they were inexpensive and did not require sophisticated facilities for servicing, but their fate was sealed by the prospect of well-engineered equipment designed and manufactured by companies with capital resources that would permit them to reach levels of quality, safety and convenience that went far beyond the idiosyncratic ability of any hospital workshop. John Dique nevertheless was the man who introduced dialysis treatment for uraemia to Australia and did it with remarkable success.

Changing to pathology

The late 1950s and early 1960s marked a time of renewed upheaval and change for Dique. His three year-old son, David, developed nephrotic syndrome and died of chronic renal failure in 1957. The local Catholic priest opposed cremation for the boy, which Dique desired, leading to the latter"s temporary alienation from the Church. He had, at a professional level, become increasingly interested in biochemistry and laboratory haematology. This led him to alter his relationship with Royal Brisbane Hospital, establish an association with the Mater Misericordiae Hospital in Brisbane, join the College of Pathologists of Australia (later Royal College of Pathologists of Australasia) as one of its founding members, and establish a private pathology practice with collection rooms in central and suburban Brisbane that he continued to operate until 1983.

Political and social advocate

John Dique also started from the mid-1960s to take an increasing interest in social and political issues. The Australian government at the time had instituted some trade sanctions against the "white" government of Southern Rhodesia, followed shortly afterwards by relaxing somewhat the administration of the White Australia policy. He perceived the former action as one that would sacrifice a civilized, educated and achieving group within a multiracial society upon the altar of an egalitarian political ideology. He gradually developed from this base a coherent political creed that developed out of a belief in the saying 'For God, for King, and for Country'. His approach featured personal independence, polite conduct to all, low taxation, and support for home life and large families. He opposed Communism, socialism, and unrestrained capitalism, regarding them all as failed philosophies. He could not, after his experience in India, see any merit in attempts at multiculturalism, perceiving it as inevitably eventually failing, probably with disastrous (possibly even violent) social consequences. His pro-life views led him to oppose contraception, whereas his anti-multicultural views led him to oppose indiscriminate immigration. His local thrust was to view Australia as lying geographically in Oceania, not Asia, and he opposed its 'Asianisation'. He, on the other hand, strongly supported and provided personal assistance to Australian aborigines [11] [12] [13] [14] [15] [16] [17] [18].

Pursuit of these political and social objectives led Dique to hold meetings, to write provocative letters to the editors of newspapers (which they rushed to print), to publish booklets, and to associate increasingly with various Right-Wing groups of people. This all culminated, however, in a prominent and long-established leftist Australian political magazine, *The Bulletin*, interviewing him in preparation for an article that it ran on racism. It quoted him as saying: 'I am a racist. Everybody is racist. Everybody likes the company of people of his own kind'. The implication was that to him 'racism' meant enjoying the company of people like oneself; it clearly did not mean adverse discrimination against people unlike oneself. The author of the article nevertheless succeeded in totally vilifying him, portraying him as a person worthy only of the greatest contempt. His experience in fact indicated that the word *racism* can have many interpretations, but that mere mention of it is enough to destroy a person's reputation [19]. This stigma dogged him for the remainder of his life.

Personality

Dique, at a personal level, was a devout Roman Catholic, but he preferred the King James translation of the Bible that he read in full more than three times. He loved the Beatitudes: 'And now abideth faith, hope, charity, these three, but the greatest of these is charity'. He was personally frugal, but financially generous to others. Although he suffered in his final years from cardiac and respiratory disease, his final illness in 1995 involved renal failure, however he declined to have dialysis treatment: 'it would unnecessarily waste money'. He left behind a wife, a family of greater than forty children, grandchildren and great-grandchildren; a legacy of solid scientific achievement, especially in dialysis and neo-natal exchange blood transfusion; and a reputation as an unredeemed racist. He had, nevertheless, political insights that now seem way ahead of his time for Australia or indeed the Western world, suggesting that multicultural policies can destabilize society, embitter individuals, trigger civil strife, breed terrorism, and even create civil wars. His family and friends, though, saw him principally as a fine Anglo-Indian, a great Briton, a devoted Australian, and a very kind man [20].

References

[1] Tyrer JH. (1993) History of the Brisbane Hospital and its affiliates. A pilgrim's progress. Boolarong Publications, Brisbane, pp 317-318

[2] Dique JC. An inexpensive and efficient transfusion set. The Medical Journal of Australia 1951 Jul 21;2(3):80-3

[3] Dique JC. Exchange transfusion and transfusion in infants and young children. The Medical Journal of Australia 1953 May 30;1(22):764-70

[4] Dique JC, Wrench DL. Erythroblastosis foetalis: a survey of three hundred and twenty-eight cases. The Journal of Obstetrics and Gynaecology of the British Empire 1959 Apr;66(2):251-69

[5] Dique JC, Stable WG, Wrench DL et al. Exchange transfusion in very small infants. The Medical Journal of Australia 1962 Sep 1;49(2):344-7

[6] Kolff WJ. (1947) New ways of treating uraemia. The artificial kidney, peritoneal lavage, intestinal lavage. J & A Churchill, London

[7] Dique JC. The artificial kidney in the treatment of severe puerperal infection due to Clostridium welchii, with report of a case. The Medical Journal of Australia 1955 May 28;42(1 22):781-9

[8] Dique JC. Experiences with the artificial kidney. The Medical Journal of Australia 1957 Apr 13;44(15):507-14

[9] Alwall N. On the artificial kidney; apparatus for dialysis of the blood in vivo. Acta Medica Scandinavica 1947 Aug 1;128(4):317-25

[10] Dique JC. A "perspex" artificial kidney of the alwall pattern with a report of cases. The Medical Journal of Australia 1964 Jun 13;1:912-6

[11] Dique JC. Australia in Asia. The Medical Journal of Australia 1968 Sep 14;2(11):478-9

[12] Dique JC. Australia in Asia. The Medical Journal of Australia 1968 Oct 26;2(17):750-2

[13] Dique JC. (no date) Our national survival. The falling birth-rate. Its cause. Self published, Brisbane

[14] Dique JC. (no date) Immigration or subjugation. An abridgement of an address by J.C.A. Dique originally delivered to the Conservative Club in Brisbane. Self published, Brisbane

[15] Dique JC. (1979) Immigration. The silent invasion. Australian League of Rights, Brisbane

[16] Dique JC. (1984) Australia's declining birth rate—its relation to increasing taxation. Veritas, Bullsbrook WA

[17] Dique JC. (1988) The Asianisation of Australia. The Australian League of Rights, Windsor Qld

[18] Dique JC. (no date) Immigration: a policy of perfidy. The Australian League of Rights,, Windsor Qld

[19] Crisp L. (1989) Harvest of hate. The Bulletin April 4:42-48

[20] Dooley DJ. (1995) John Charles Allan Dique MB BS (Madras) FRCPA. Medical Journal of Australia 163:201