THE MAYO, THE LANCET, AND THE REVOLTING POLIOS

Comments on Windebank AJ, Litchy WJ, Daube JR, Iverson RA. Lack of progression of neurologic deficit in survivors of paralytic polio: a 5 year prospective population-based study. *Neurology* 1996; 46: 80-84.

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First published in the Leicestershire Post-Polio Network Newsletter of May 1996 and subsequently, with additional comments from R.L. Bruno PhD, in the May 1997 issue of LINC-PIN.

Preface

The Mayo clinic in America has done a study in which 50 polio survivors, selected at random, were tested over a period of 5 years. The reports authors, led by Dr. Windebank, tried to measure the polios` muscle strength over that period of time, to see if they could measure new weakness. They could not. The Mayo researchers said they felt that progressive neurological deterioration was therefore rarer than previously thought.

The Lancet, is possibly Britains most prestigious magazine for doctors. It published a review of the Mayo`s findings in February 1996 under the unfortunate headline "Study throws doubt on post-polio syndrome".

Within weeks we heard from people whose doctors were assuring them that PPS did not exist, and in some cases the doctors mentioned that their information came from an article they had read recently. Three guesses which one…. One person was confidently told by a neurologist that an electrical muscle test (on one atrophied muscle, in one limb) showed no abnormalities therefore the patient did not have PPS, and anyway it had now been proved PPS did not exist!

Now regular readers of these columns [*Leicestershire Post-Polio Network Newsletter*] will appreciate why I, along with so many other polios, have come to view some doctors with less than total admiration. Many British neurology clinics offer a grossly sub-standard service when assessing new functional decline in polios. Their patients report to us the list of ingredients that are common to the cocktail that is PPS, but the Neurologists come up with wildly variable diagnoses; everything from Motor Neurone Disease to imagination, with detours through obscure conditions with impossible names. Witch doctors casting the runes or examining chicken entrails would probably be as useful.

If there isn`t any sort of chemical or electrical test for a condition then to some "scientific" minds it can`t possibly exist. This thinking took us from B.S.E. in cattle (scientists were sure it couldn`t possibly pass to

humans) to human C.J.D; brought us Gulf War Syndrome ("there is no evidence…") and is likely to be a factor in the very real M.E. problems. Fortunately there are also doctors who are not guilty of such lazy thinking, and who take the trouble to thoroughly research a subject before expressing opinions.

If your doctor is one of those relying on The Lancet to do their thinking for them (and in these pressured times G.P`s can be forgiven for doing so) you do not have to be an endlessly patient patient. Join the patient revolution. Become a revolting polio. Show your doctor the following inconvenient well qualified medical opinions.

Helena Edwards

COMMENTS : by Frederick M Maynard MD; Professor of Medicine, Case Western Reserve University; Medical Director, Metrohealth Center for Rehabilitation, USA. (From New Zealand PNN)

I have finally had a chance to see the Lancet summary of the Mayo Clinic by Windebank. I agree very much with the results of this study, that is, that true progressive nerve loss and muscle weakness (post-polio progressive muscular atrophy) is indeed a rare condition. The majority of problems in post-polio patients can be attributed to a variety of other new medical conditions, orthopedic strained conditions, arthritis, chronic overuse syndromes and so forth. *The good news of this study is that progressive neuromuscular failure is very uncommon.* The other good news is that most of the other conditions can be treated even if not completely.

Do not be too discouraged or distraught over the Lancet article, although it will reinforce many of the British medical establishment's opinion that there is no such thing as Post-Polio Syndrome. As I have said many times, the crux of this issue is the definition of Post-Polio Syndrome.

A large pharmaceutical company, INS, that manufacturers Mestinon, has recently funded a Post-Polio Task Force which includes seven experts from North America on Post-Polio Syndrome. Joan Headley and I were asked to sit with this group. We are planning to develop a consensus statement on definitions, appropriate diagnosis and management for Post-Polio Syndrome. We are also attempting to work with the American Academies of Neurology and Physical Medicine and Rehabilitation to establish practice guidelines on Post-Polio Syndrome. Hopefully you will be hearing more about this in the future."

COMMENTS : by Dr. John Petrie, MB FRACP, Consultant in Rheumatology and Rehabilitation, Queen Elizabeth Hospital, New Zealand. (From New Zealand PNN)

"Whilst the [Mayo] article is important, it does represent a purely medical model of neuromuscular failure with the expectation that particular forms of abnormality should be observable. *The fact that they were not observable does not deny the existence of post-polio syndrome, merely that the authors were mistaken in their initial premise.* It represents a point of view, the important issue as I have always believed is that people with post-polio syndrome do seem to be particularly prone to worsening of their disability and do require specific rehabilitation interventions. *I think that the sub-editor at the Lancet who calls post-polio syndrome into question is guilty perhaps of a little artistic license*."

COMMENT ON LANCET REPORT "STUDY CASTS DOUBT ON POSTPOLIO SYNDROME" by Associate Professor Mary T. Westbrook, Faculty of Health Sciences, University of Sydney.

"The Lancet report written by McCarthy refers to a study by Windebank et al, "Lack of progression of neurological deficit in survivors of paralytic polio: A 5 year prospective study" which appeared in the journal, Neurology in 1996*(1)*.

The main points McCarthy makes are that Windebank et al's findings show that post polio syndrome probably does not exist, that post polio syndrome is not progressive and although there is a "rare condition" called post polio muscular atrophy the symptoms that Windebank et al's subjects had can be explained by other diagnoses.

Before examining Windebank et al's actual paper I will address the first two claims that McCarthy makes. There is now a vast scientific literature which supports the existence of post polio syndrome, e.g. the recent volume of papers from the conference "The post-polio syndrome: Advances in the pathogenesis and treatment" *(2)* that was held by the New York Academy of Science.

The progression of post-polio syndrome is a somewhat more contentious issue. In a paper I presented at the 12th World Congress of Physical Medicine and Rehabilitation in 1995 I reviewed longitudinal studies of people with post polio syndrome and concluded that studies which encompassed longer time spans have usually found slow progression of symptoms *(3)*. Studies which have not found changes have typically retested after short periods, e.g. a year and/or have used small samples. When I retested 176 people with post polio syndrome (as identified using Ramlow et al's criteria *(4)*) I found that the average person had declined in that their symptoms were more severe and they experienced greater difficulty in carrying out the activities of daily life than they had five years previously *(3)*.

My findings were based on self reports. Those not convinced by what survivors say is happening to them should read several recent papers by Grimby et al. In 1994 they reported a 4-5 year follow-up of survivors who claimed to have experienced, or not experienced, increased weakness in their knees over the period. *(5)*

Grimby et al found that muscle strength had decreased significantly more in the group who said that their knees were weaker. The researchers also compared this muscle strength loss with the normal loss of strength that would be expected over this time due to aging. An able-bodied person of the subjects' age would experience a 2-5% decrease in strength whereas the unstable polio group experience 16-22% in the muscles tested.

Last year Grimby et al reported a four year follow-up of survivors *(6)*. They found a significant reduction in muscle area in subjects who reported that their legs had become weaker whereas this loss did not occur in stable legs. At the recent Post-Polio Conference in Sydney, Gandevia also reported a significant, but low, decrease in muscle strength when he retested post polio subjects. I said to him in the discussion following his presentation that as many polio survivors live at the absolute threshold of their physical ability, a slight decrease in muscle strength can have a very marked effect on the activities that can be carried out. Gandevia replied, "That is very true".

Examination of Windebank et al's paper *(1)* shows that it is one of a series that have been based on polio survivors in Olmstead County, Minnesota where full medical records of cases of paralytic polio have survived. In 1985 Codd et al *(7)* sent a questionnaire to survivors in part of the county and asked people questions as to whether they had experienced any decline in function since achieving their maximum recovery from polio. The 22% who indicated they had declined were phoned to obtain detailed information. The major symptoms reported were new pain, weakness and fatigue. This figure of 22% has frequently been cited in the post polio literature as evidence of the prevalence of post polio syndrome.

In 1987 Windebank et al *(8)* reported that Codd et al's survey had been expanded to include all cases in Olmstead county and that overall 22% reported new difficulties. From these 286 survivors Windebank et al selected a convenience sample of 50 cases for detailed examination and the eventual follow-up study referred to by the Lancet. At follow-up the sample had fallen to 46 cases. If we assume that 22% is an accurate estimate of the proportional of Olmstead survivors experiencing post polio symptoms (remember that none had been interviewed in person or clinically evaluated) we would expect Windebank et al *(8)* to have approximately 11 cases in their sample of 50, a very small number with which to study progression. In the follow-up survey referred to by the Lancet, Windebank reported that 30 patients (65% of 46 cases) had symptoms which "included combinations of pain, weakness and fatigue" which could be explained by diagnoses other than post polio syndrome. However 10 (22% of the sample) had symptoms for which there was "no alternative diagnoses". The authors then went on to suggest fibromyalgia as a possible diagnosis after rejecting the possibility that the 10 cases have chronic fatigue syndrome because they are not depressed! In a recent paper Trojan and Cashman *(9)* described 25% of the patients they had diagnosed as having post polio syndrome and as also having fibromyalgia.

My impression is that Windebank et al's decision to question the existence of post polio syndrome resulted from a) their failure to demonstrate deterioration over time and b) their failure to define post polio syndrome as part but not all that is involved in the late effects of polio. Regarding (a) I believe a contributing factor to their failure to show change may have been the lack of sensitivity of some of the instrumentation. For example, Windebank et al derived their "Neurological Disability Score" from the results of manual muscle testing, a method that is notorious for overestimating polio muscle strength *(10)*. Several of their measures were based on speed of performance rather than endurance. Regarding (b) I found the lack of definitions in Windebank et al's articles a problem. The late effect of polio are usually divided into two main groups. The first group is symptoms caused by the neurological changes unique to polio (the loss or dropout of the extra nerve fibres that reinnervated the muscles weakened at the onset of polio). These are usually described as post polio syndrome. Other late effects are caused by factors such as overuse of weak body parts, deformities such as scoliosis which may lead to pain, degenerative arthritis etc. Polio survivors may experience both types of symptoms as did many of Trojan and Cashman's patients.

In conclusion, some researchers such as Windebank et al *(1)* have not demonstrated that PPS is progressive. Others such as Grimby et al have provided convincing evidence that it is. Most researchers and clinicians comment on the enormous differences between people's rate of progression. Others such as Bruno and Yarnell have found that changes in lifestyle can slow or halt deterioration. Incidentally Ramlow et al's population based study of polio survivors from Allegheny county, Pennslyvania found that the prevalence of PPS was 28.5%.

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Our Added Comment from Richard L Bruno, PhD, West Orange NJ to the Editor of Neurology.

[Includes the published reply from Anthony J. Windebank to Richard L. Bruno's letter. LincsPPN Web Administration.]

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Post-polio syndrome

To the Editor: The article by Windebank et al was both reassuring and disturbing *(1)* Their findings support the 1984 Post-Polio Task Force rejection of the terms Post Polio Syndrome and Post-Poliomyelitis Progressive Muscular Atrophy (PPMA) and acceptance of Post-Polio Sequelae (PPS) as the generic descriptor of late-onset symptoms reported by America's 1.63 million polio survivors. *(2)* PPS would certainly include the 'mechanical' problems found to cause some of the subjects' symptoms.

However, the authors state that late-onset muscle weakness may result from 'age-related attrition of motor neurons.' The literature more often relates new muscle weakness to the metabolic failure of poliovirus-damaged neurons *(3)*. An inability to document 'progressive neuromuscular failure ' by measuring the number of motor units would be expected, because it is the size of motor units, that has been correlated with new muscle weakness. *(3)*

Further, surveys of more than 1,000 polio survivors have found an association between PPS, physical overexertion and emotional stress, not aging. *(4)*. The lack of progression of symptoms in 'unstressed' subjects also should have been expected.

The suggestion that chronic fatigue syndrome (CFS) and fibromyalgia - disorders for which there is no known etiology, effective treatment, or even agreement as to their existence - as causes of PPS in the 20% of subjects with 'no alternative explanation' for new symptoms is far from parsimonious and allows the inference that PPS does not exist. Such an inference is evidenced by the Lancet summary of the authors' paper headlined 'Post Polio Syndrome Called into Question'. Post-polio fatigue has actually been suggested as a model for the pathophysiology of CFS, because poliovirus lesions in the reticuiar activating system are well documented, and recent studies have shown lesions on MRI of the brain, neuroendocrine and neuropsychological abnormalities in polio survivors with fatigue that are identical to those in CFS. *(5)*

Polio Survivors must be assured that their symptoms are 'real', do have a physiological basis, and that a decade of clinical research has identified 'rational therapuetic approaches' based on decreasing physical and emotional stress, that do indeed 'produce substantial benefits' to those with PPS.

Richard L. Bruno, PhD
West Orange, NJ

Reply from the Author: The comments of Dr. R.L. Bruno are important. Our study identified a population-based cohort of individuals who had paralytic polio. As Dr. Bruno mentioned, these were individuals who had paralytic polio but were not 'stressed' other than by the average stresses of life and aging. We found that it was very reassuring that these individuals as a group did not have any evidence of progressive neuromuscular failure. We thought that it was also important that those individuals who had symptoms compatible with 'post-polio syndrome' also showed no evidence of progressive neuromuscular failure. We would agree that aging or interval since onset of polio are not risk factors for developing subsequent difficulties. This was reported in our first study. *(1)* We agree entirely with the conclusion that it is important to evaluate patients on an individual basis to identify specific causes for their difficulty. Most patients in the studies, had new symptoms, but most of these could be accounted for by factors not directly related to post-polio neuromuscular failure. Quantitation of fatigue is challenging because fatigue was not a major symptom in this population-based group of polio survivors. As neurologists who treat many patients who come for evaluation of post-polio symptoms, we would agree that most patients have symptoms that are real. One of the major points that we made in our first manuscript *(6)* was that the psychological profile of these individuals was completely normal. Overall, therefore, we would agree with Dr. Bruno's comments: there is no doubt that polio survivors are subject to many different types of problems. However, as a population they do not appear to be at risk for developing progressive neuromuscular failure in significant numbers. We were impressed and very reassured that in this population-based study, polio survivors as a group did not have any evidence of progressive neuromuscular failure.

Anthony J. Windebank, MD
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