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DISCUSSION

Chairman. Dr A. Key

Chairman. I would be interested to know what members of the audience feel about Dr Watson's observation that female paraplegic patients should not require intravenous pyelograms (I.V.P.'s).

Dr Meinecke. (Germany). In the last 6 years between 4000 and 4500 patients were treated for spinal paralysis in the Federal Republic of Germany. Five per cent of these were patients who suffered injury following a suicide attempt. There is a constancy of male/female ratio, and about 27–28 per cent of all admissions are females.

Chairman. These are interesting figures. In the last 18 years in South Africa out of 3000 patients with spinal cord injury, as far as I can remember there were only one female and three male admissions resulting from suicide attempts.

Dr Silver. (Gt Britain). I have a series of questions. There has been no mention of the results of rehabilitation of female tetraplegic patients in the Polish series.

I am uncertain if Dr Kuhn mentioned that attempted suicide was the commonest cause of spinal cord injury, or the commonest cause of all deaths.

Dr Girard, quoting Dr Frankel's paper, said that the ratio of patients who suffer spinal cord injury following car/motorcycle accidents was about 8:1. This ratio has altered dramatically as a result of the recent increase in the cost of petrol. In a recent study we found that two-thirds of patients suffered spinal cord injury from motorcycle accidents and the remaining third from car accidents.

Dr Watson mentioned that intravenous urograms are unnecessary in female paraplegic patients, and Dr Thomas' view is similar. However, we have recently found female paraplegic patients with upper urinary tract dilatation. I would urge that routine intravenous urography should be performed in females just as it is done in the male.

Dr Ahmed. (Poland). We have not completed our analysis of female tetraplegic patients, but I can definitely say that cervical spine injury is more common among females than among males in Poland.

Dr Kuhn. (Switzerland). Last year there were 1200 deaths due to road traffic accidents in Switzerland. In the same year there were 1400 deaths due to suicide. Of all the spinal cord injury patients admitted, ten per cent were due to suicide attempts, and this percentage appears to be rising annually.

Dr Chawla. (Gt Britain). Did Dr Watson mention that he used drugs to control unstable contractions of the bladder? Such drugs may influence vesico-uretic reflux and could contribute to renal and urinary tract infection. I would make the same plea as Dr Silver, that female paraplegics should have intravenous urography done periodically.

Dr Watson. (Gt Britain). In a series of 200 patients, the IVPs were normal in 198. In only one woman was an upper tract dilatation noticed and the other patient had stones. This probably reflects the quality of urological care in Sheffield. I was being somewhat facetious when I said that female paraplegic patients do not require IVPs. We are tired of seeing normal IVPs in our female patients. Regarding

medication for patients having intermittent catheterisation or who take drugs to reduce severe bladder contractions, we have so far not encountered any complication. We are aware of possible reflux and its influence on renal function and are constantly on the lookout for any such hazards but so far have not come across such problems.

Dr Meinecke. Dr Watson, I am surprised at the rather large number of patients who were discharged with an in-dwelling catheter. This is uncommon in my Unit.

Dr Agerholm. (Gt Britain). It is important for us to understand the latest figures presented today in their proper perspective. It would be incorrect to draw a conclusion that there are more suicidal women in Switzerland; more female passengers in Switzerland, even though that is what the figures presented today may imply. Similarly, Dr Watson's paper gives one the impression that there are more older than young women. Thus the actual value of the figures presented today may give a distorted view of the problems. It was rewarding to note that at last female paraplegics' and tetraplegics' problems are being separately looked into because this has always been considered a chauvinistic field.

Mr Harris. (Gt Britain). I wish to point out that the subject has been largely based on patients with traumatic paraplegia and not due to neurological disease. In the various presentations falls appear to be a major cause of paraplegia amongst women. I wonder if any associated multiple injuries influenced the final outcome from spinal cord injury between the two sexes.

I presume that urinary infections are more common in women who are menstruating than in those who are not menstruating.

Chairman. Dr Ahmad mentioned a surprisingly low incidence of upper dorsal and a high incidence of dorso-lumbar injuries amongst women following falls. Our experience in South Africa is quite the reverse. A large number of female paraplegic patients have a T4 lesion; and many had a motorcycle accident.

Dr Chawla. Our experience suggests an increased incidence of bladder infection in women who are menstruating. In fact, the bladder function is disturbed, not only during menstruation but also during pregnancy or in relation to a miscarriage. Many of these women require bladder retraining which involves hospitalisation.

Dr Watson. In reply to Dr Meinecke's observation, I have to say that I consider it a waste of time to train a tetraplegic patient to achieve a catheter-free state. If the patient is unable to catheterise herself, an in-dwelling catheter is the safe and, probably, the only alternative.

In the industrial north of England, an extension injury to the neck following a fall down the stairs is a fairly common occurrence.

During menstruation a patient's bladder does tend to be rather undependable. These women should be prepared to be wet for two or three days during the menstrual cycle. Some women take probanthine during this period, which helps them to obtain satisfactory control of bladder function. I believe that it is a mistake to leave in an in-dwelling catheter during pregnancy (or miscarriage); this has resulted in at least one miscarriage in our patients. After labour there are no serious problems in returning to the previous state of bladder function. Thus there is no great need for major 'bladder retraining'.

In our experience, women suffer the same amount of multiple injuries as men following accidents.

Dr Girard. (France). We concur with Dr Watson in that women with complete tetraplegia are better off with an in-dwelling catheter.

Dr Pinkerton. (Canada). I agree with Dr Watson in the management of the bladder of a complete tetraplegic female patient. Occasionally, suppression of menstruation may be indicated in some women who develop bladder dysfunction during menstruation.

Dr Ruth Jacobs. (Gt Britain). I wonder if you have found out what these women feel about the suppression of menstruation?

Dr Pinkerton. The decision regarding suppression of menstruation is to a very large extent taken by the women themselves. There are some who would prefer to have their menstrual periods at the expense of minor bladder dysfunction during the cycle.

Sir George Bedbrook. (Australia). I think the acceptance of in-dwelling catheters in females is rather pessimistic. It results from the fact that we do not try hard enough and we allow the bladder at some stage to get over-distended. I believe that it is possible to get rid of more catheters with adequate bladder management than has been mentioned this morning.

Dr Sabre. (Kuwait). I have one observation about attempted suicide causing spinal cord injury. During the last year, out of eight female paraplegics, three were the result of attempted suicide; all had a previous psychiatric history.

Professor Rossier. (USA). The incidence of bladder cancer is definitely high in males who have in-dwelling catheters for long periods of time. Dr Watson mentioned that a high proportion of his female patients have in-dwelling catheters for several years, and I would ask—do you take any special measures to detect carcinomata developing in these patients?

Dr Watson. During the period of our study no woman had carcinoma of the bladder. During the same period, five men developed carcinoma of the bladder, but not all had in-dwelling catheters. Women who have in-dwelling catheters routinely have cystoscopies at least once a year. Any suspicious areas found during cyctoscopy are biopsied, and these patients are re-cystoscoped as often as is necessary.

There is no doubt that women who have in-dwelling catheters form bladder stones more often than those who do not have catheters. Stone formation seems to be particularly common during the first five years after the paraplegic patient is discharged with an in-dwelling catheter. They are removed during routine cystoscopy. After the first five years, however, bladder calculi appear to be less common. We have had one patient who had renal calculi in association with urinary diversion, which is one reason why we do not favour urinary diversion.

Professor Minaire. (France). We have performed urinary diversion on four tetraplegic patients. These were performed only for social reasons, and the patients are extremely grateful. They have perfect kidneys and good urinary tracts.

Dr Donovan. (USA). I do not feel that there is any reason why these women should be denied intermittent catheterisation, particularly in the acute phase. Maintaining them on intermittent catheterisation with sterile urine at least allows one to eliminate the urinary tract as a cause of any febrile episode that might occur during the acute phase. In the long term, however, in complete tetraplegic patients who are not able to catheterise themselves, an in-dwelling catheter appears to be a better alternative than diversion. Diversions should be restricted for a very few cases.

Chairman. Dr Merritt, I will not consider a residual urine of 150 ml as satisfactory if the total bladder capacity was only 200 ml.

Dr Merritt. (USA). Yes, I agree to that. In an earlier study we found that a linear correlation exists between the residual urine and the incidence of urinary infection, irrespective of the bladder volume. If the residual volume was about 100 ml the incidence of urinary tract infection runs around 4 per cent, and if it is 150 ml the incidence of urinary tract infection is around 8 per cent. We use 150 ml as a cut-off point.

Chairman. Isn't it better to express the residual volume as a percentage of the bladder volume rather than expressing it as millilitres.

Dr Yeo. (Australia). In Sydney, we are against enthusiastic bladder training as has been mentioned this morning. Because of the frustrations that often occur during such bladder training, I would like this audience to appreciate that there is an alternative management in the form of suprapubic drainage, and this is also useful in some of the less developed countries, particularly in the South Pacific. In fact, a number of our female patients have opted for suprapubic drainage.

Dr Pinkerton. I believe there are times when suprapubic catheter drainage is a good alternative.

Sir George Bedbrook. I refer to the first two papers presented here in this Session. There is very little said about the aged paraplegic. Do they return to the community, and what happens to the high tetraplegic, particularly those who require a lot of assistance and help? Do they return back to the community?

I have one other comment to offer. It appears that in most of the developed countries there is attendant help available round the corner. If such is the case, will it influence the bladder management as stated by the authors?

Dr Forner. (Spain). We did not study the elderly paraplegic patients because they were unable to come to the hospital for follow-up study. They tended to remain at home and do nothing.

Dr Agerholm. We have seen the Olympic teams of tug-of-war made up of the pro-voiding and pro-catheter drainage, pulling the patient in the middle. I think it is important to realise that each patient has to be evaluated carefully and her needs, particularly those related to the demands of menstruation, given due credence before a decision is made about bladder training.

Dr Pool. (Holland). I am uncertain about the role of the husband in helping the wife, particularly with regard to her bladder management.

Dr Barbalias. (USA). I believe it is important to study bladder sphincter dyssynergia by proper urodynamic assessment in most patients. In 200 cases we found that detrusor-sphincter synergia existed in only 4 patients.

Professor Rossier. I think it is now adequately established that suprapubic drainage does produce upper urinary tract problems. Do we have to repeat what previous history has already established?

Dr Pearman. (Australia). Our *in vitro* studies have shown that at about 80 ml of residual urine the growth of bacteria is such as to produce problems. Above this level these problems multiply.

Six weeks appears to be the right time when the decision regarding the continuation of bladder training can be made.

A company in Copenhagen appears to have succeeded in developing a urinary continence device for women.

Dr Silver. It is a pity that these various authors have grouped together complete and incomplete lesions in evaluating the outcome of their training. We know that even minimal neurological sparing could make a lot of difference to the final outcome of bladder training.