Aspects of Sexual Medicine

Sexual Problems in Disorders of the Nervous System

I. Anatomical and Physiological Aspects

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One of the most distressing aspects of chronic diseases of the nervous system is the loss or impairment of bladder, bowel, and sexual function. Patients are often willing to accept that they have lost the use of their legs, but it is the loss of social acceptability caused by the dysfunction of bladder and bowel, resulting in incontinence of urine and faeces, that causes them the most unhappiness. There are many published works on how the bowels and bladder may be managed, but there is a dearth of information on the sexual aspects. To deal adequately with the subject it is best to discuss, firstly, those patients who are likely to be affected, secondly, the anatomy and physiology of the sexual act and its impairment in men and women with chronic diseases of the nervous system, and, thirdly, the practical aspects of intercourse, marriage, and pregnancy and labour.

Patients Affected

The patient who is dying of malignant disease due to metastases in the spinal column and suffering from toxæmia due to pressure sores will be so preoccupied with his general ill health that sexual problems will be the least of his problems. It is young patients with chronic diseases of the nervous system, such as traumatic tetraplegia or paraplegia; slowly progressive conditions such as multiple sclerosis; or spinal tumours who wish to know whether they can get married, have intercourse, be fertile, and be able to satisfy their partners and who find these sexual problems particularly irksome and worrying, since they are full of fears, doubts, and anxieties. In some conditions, such as diabetes or multiple sclerosis, sexual problems may be the presenting complaint; the patient may come to the doctor complaining of impotence.

Patients with spinal cord injuries, however, present a unique population as they have been followed up regularly and continuously for some 30 years since spinal centres were established. Their problems have been analysed in detail and the most information is available about their sexual problems, but other patients who have diseases of the spinal cord have similar problems and the experience may be extrapolated.

Anatomy and Physiology of Intercourse

Erections.—Erection takes place purely on a segmental reflex basis; suprasegmental connexions are unnecessary. In paraplegic

patients the afferent sensory impulses that initiate the reflex are caused by tactile stimuli of the glans and travel to the second, third, and fourth sacral segments by way of the internal pudendal nerves. Efferent impulses leave these same segments by way of the parasympathetic supply and cause dilatation of the arterioles of the penis with distention and congestion of the corpora cavernosa and spongiosum. Efferent impulses also leave some segments over the internal pudendal nerves to cause contraction of the periurethral muscles, with resultant compression of the venous drainage channels of the penis. Blood is thus trapped within the penis and an erection results.

Ejaculation.—Ejaculation is basically a complex, purely spinal, segmental reflex function mediated by pathways and centres in the lower thoracic and upper lumbar segments. Suprasegmental connexions are not necessary for the act. The first part of the reflex is controlled by the sympathetic nerve, which releases semen from the seminal vesicles. The second stage in ejaculation is also reflex. It is initiated by sensory impulses set up by the presence of semen in the posterior urethra, which set up efferent impulses that cause contraction of the periurethral muscles and result in the actual ejaculation of semen from the meatus. These efferent and afferent impulses travel over the internal pudendal nerves by way of the second, third, and fourth sacral segments. The final release of semen is facilitated by the contraction of striped muscles of the pelvic floor. In normal men these reflexes are under the control of the higher centres, and psychical stimuli may either inhibit or excite these reflexes.

The scrotum receives a rich nerve supply, the skin from the sacral segments and the testicles from the sympathetic system, so that in a patient with a lesion at T 12 the scrotal skin may be denervated but testicular sensation preserved.

IMPAIRED FUNCTION IN DISEASES OF THE NERVOUS SYSTEM

Degree of Cord Damage

Though erections and ejaculations are purely spinal reflexes, they may be inhibited or stimulated by higher psychical stimuli, which are obviously extremely important since the first symptom of cord compression may be the loss of libido. In general, even if there is only a little sparing of sensation or motor power so that the cord lesion is incomplete there is a greater likelihood that the patient will retain sexual function. Though the exact pathways within the cord for the control of the sexual act are not known they are closely related to the pathways that control micturition.

Effects of Level of Transection

Hence erection is a reflex phenomenon, and if the pathways serving erection in the lumbar and sacral parts of the cord are

intact erections can take place. Thus, most patients who have a clearcut transection of the spinal cord in the cervical or thoracic region will preserve the ability to have erections provided the damage has not extended longitudinally down the cord to impair the pathways in the lumbar and sacral segments. In fact, these erections are easily elicited during a spasm or during manipulation of the penis during a spasm. They are not necessarily well sustained, and they appear at inappropriate times and not in response to psychical stimuli unless the cord lesion is incomplete. On the other hand, patients with lesions in the lower part of the cord, where there is destruction of the pathways, are less likely to have erections, but they may still occur, and about half the men with low lesions may still have erections, even when the pathways to the bladder are interrupted, as shown by an autonomous bladder without reflex contractions, or when the anal reflex is absent.

Ejaculations are present in a much smaller percentage of patients with spinal cord lesions. About 10% of the patients with high transections who have erections may have ejaculations, and only a very small percentage of those with low lesions can ejaculate. The intact lumbar cord and its motor connexions are not necessary for the production of ejaculations. Clinical absence of such connexions, as evidenced by the absence of an anal reflex and an autonomous bladder, are not necessarily a bar to erections. To have an ejaculation the periurethral muscles must be innervated at least reflexly and be activated by way of the internal pudendal nerves. Patients with cauda equina lesions, paradoxically, are unable to have an erection because of the destructive lesion of the cauda equina and yet, because the testicles and seminal vesicles are innervated by the sympathetic nervous system, they may be able to have emissions.

Fertility

There is a loss of fertility in men with complete cord transections above the lumbar and sacral segments, even if they are able to ejaculate. Sperms are not mobile and there are fewer of them. The cause of these features is unknown, but it may be due to intercurrent infections of the bladder or, possibly, to the change in the temperature regulation in the scrotum seen in paraplegic patients.

Because most paraplegic patients have been men—in the first instance they were war veterans—there is much more information about sexual function in paraplegic men than in paraplegic women. The nerve supply to the female genital organs is similar to that in the male, the clitoris being innervated by the pudendal nerve and the vagina by the sacral segments, but it is doubtful whether there are reflex centres in the spinal cord that subserve sexual function in the same way as in the man. As a consequence of a spinal injury with complete innervation of the sacral centres women experience little sensation during intercourse, but, in contrast to male paraplegics, their fertility and their ability to have children is usually unaffected. The denervation of the ovaries, contrary to the experience in the male, does not seem to reduce their fertility. Immediately after a cord transection there will be some change in the periods, but these will resume after a few weeks unless there is a secondary amenorrhoea due to intercurrent toxicity.

Intercourse

Intercourse in a paraplegic patient does not revolve simply around the innervation of the sexual organs. Paraplegia, if it is complete, will cause loss of power and sensation in the bladder, bowels, and lower limb muscles, and there may also be pressure sores and severe spasticity. The denervation of the bladder may result in infection, and the patient may be incontinent of urine during intercourse or may be inhibited from having intercourse by fear of infecting his female partner. Spasms in the legs may prove a problem since the legs in the man can draw up

and flex so that it is impossible to achieve satisfactory penetration, and, similarly, severe spasms may occur in the woman that adduct the legs and prevent penetration. If the patient has pressure sores these too can render the act of intercourse distasteful or can be aggravated by attempting intercourse.

Operative Interventions.—After a spinal injury many patients have an operation in the form of a bladder neck resection to enable them to empty the bladder completely. This will destroy the sphincter of the bladder, which normally prevents semen regurgitating into the bladder during intercourse, and will thus make the patient sterile, and it is important to explain the risks involved to a patient before this operation is contemplated. It has recently been shown that an external sphincterotomy will also temporarily inhibit the ability to have an erection, probably because of local damage to the blood supply of the penis. Operative intervention such as a cordotomy or an alcohol block on the cord will also impair the power of erection.

Certain drugs that are used for the treatment of spasticity, such as diazepam and barbiturates, may well inhibit erections.

Intercourse for the Patient with a Normal Partner.—Before having intercourse the male patient should remove his catheter and empty his bladder by suprapubic compression. Many men are afraid of infecting their partner so they usually use a condom. The next thing is to achieve an erection. This can be achieved by manual stimulation, which, as it is often badly sustained, may be maintained by tying a soft condom around the base of the penis to maintain the turgidity, though care must be taken to avoid damaging the penis. Paraplegic patients can achieve a superior position, but tetraplegic patients are unable to do this and the woman must take the more active part by assuming the superior position. Care must be taken to avoid pressure sores by placing a pillow beneath the buttocks. For the female paraplegic with a normal husband the problems are less difficult since there is not the necessity to achieve an erection, but similar problems pertain with regard to emptying the bladder and removing the catheter and protecting the buttocks from pressure sores.

Side Effects.—A disturbing side effect seen in patients with high cord transections is autonomic hyperreflexia, which may be serious. In this condition blood pressure rises sharply and a bradycardia develops, and there have been several cases of people having subarachnoid haemorrhages.

Marriage

Surprisingly, such severe disability resulting in impotence and sterility does not preclude the paraplegic patient from marrying. Comar¹ studied 858 patients with spinal injuries: 20% were unmarried before and remained so after injury; 48% were married before injury; and 26% were unmarried before injury but married for the first time after injury. Of those who married after injury, 20% were later divorced. In 1964 Guttman² analysed his experience of 1505 living paraplegics in the United Kingdom and found a small divorce rate—57 out of 975 married patients—that was only slightly greater than that for normal people in the United Kingdom. Divorce was less likely in those already married at the time of injury than in those who married subsequently, because in the former group there was already the basis for a normal married life and companionship and, therefore, the loyalty of the normal partner would be greater.

Pregnancy and Labour

Twenty-two babies—13 boys and 9 girls—were born to the paraplegic women studied by Guttman.² Four of the women had two children each after being paralysed. These patients were more liable to develop pressure sores and subsequent sepsis due to the loss of sensation and mobility. The dangers of anaemia and renal infection had to be watched out for and, owing to the

paralysis of their bladders, the paraplegic women were more likely to develop infection than normal women. Of particular interest in the management of patients during labour are the more serious infections that occur in paraplegic patients, since these women are liable to the acute reaction of the autonomic nervous system, which causes a great rise in blood pressure. These reactions are both disturbing and dangerous.

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Letter from . . . Carolina

Things Worth Remembering

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When a man has been happy in a place reasons for return are never difficult to find. Some 18 months ago we were happy in Carolina. For each of us, parents and three daughters, there were many reasons for coming back—for the youngest the challenge of many unsampled flavours of ice cream; for parents and older children the call of friends; and for me the excitement of seeing how a university teaching practice, whose delivery I had attended, had grown to childhood. But for all of us there was the call of the southern spring, the only season we had not seen on our last visit.

After the dreariness of an English winter the porcelain purity of spring in Carolina is exquisite to the point of pain. Azaleas exult in primary reds against a backdrop of new green, pastel camellias glow against deep emerald foliage. Judas trees fill the woods with drifts of pink smoke puffs and wild wistaria climbs wantonly in the limbs of hickory and gum. This blaze of colour is softened and annealed by the ubiquitous profusion of pure white dogwood and an air of sagacity is added by the bearding of the live oaks with spanish moss. The campus glows again with bronzing men and beautiful girls.

Liberalism

The campus has changed in the last few years. Student disquiet due to intolerance at home and war abroad, erupting in drugs, violence, and political unrest, has given place to the lesser problems of beer and streaking in a calmer academic atmosphere. This change is symptomatic of the quiet revolution sweeping through the South. Changes in religious belief from the implacable retribution of the Baptists redolent with sulphurous hell fire to the newer, more liberal faiths grow fast. In many churches, whatever one's personal belief, a service is informal, is fun, and very moving. These churches encourage black and white to worship and, perhaps stranger, to confess together. Such racial integration is growing fast and it is ironic that the South, who a century ago lost the war over this very issue, should lead in emancipating the Black man. Now in Carolina the Blacks share in the general liberalism, though there is much

squalor and poverty, of which the Black gets more than his share, and there are still rural areas where the spirit of Ku Klux Klan dies hard.

The South is becoming more affluent as its agriculture and industry improve and the rich Yankees, fleeing from the pollution of the urban industrial North, come south to bright skies and clean air. Though poverty shows overall improvement there is no sign yet of a decrease in crime and the general recession, with an unemployment rate of 9%, increases the tensions leading to violence. In this trigger-happy nation homicide still ranks second only to accident as prime cause of death between the ages of 5 and 45. This violence is the legacy of past and gory history, of civil war, the bloodshed attendant on the opening of the West, and, more recently, the debacle of South-east Asia. Crime is the last thing to change in a movement away from materialism toward the reassessment of human values.

Emphasis is laid on tolerance, friendship, and freedom to do one's own thing. This is seen well in Schulz's cartoon strip *Peanuts* (it was not accident that named a major piece of space equipment Snoopy). The women's liberation movement, so much stronger here than in Britain, represents revolt against sexual intolerance. Everywhere people are aware of man's rape of his planet and there is concern about pollution and spoliation of this beautiful land. Young men and women recoiling from the cupidity of their elders seek a simpler life in the woods. Opting out, this is called now. Perhaps later it may be recognized as the first thrust of a new philosophy. With these changes in values comes the new permissiveness here strangely compounded with a prudery which makes it difficult for a woman to expose her body even to her physician. As in Britain, sexual mores have undergone great change: the campus throbs with sensuality and the commonest infection is caused by the gonococcus which may be cultured from rectum or throat as often as from the genitals.

Family Medicine

This change towards liberal thinking, to religious, racial, and sexual tolerance, and the re-evaluation of human quality is reflected in the changes in medicine. American medicine, since Flexner's revolutionary report of 1910 which started it on the depersonalizing path of technology, has lost much of that essential but indefinable art which fortunately still remains in Britain. Technology has made medicine so expensive that illness may cripple as much or more financially as physically. Evidence of popular unrest at current medical philosophy increases. The man in the street is unhappy and increasingly bewildered by

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