

Autonomic Dysreflexia

A Life Threatening Emergency

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THE nursing instructor on a neurosurgical ward was demonstrating tracheostomy care to a group of 2nd year nursing students who arrived on that ward for a six weeks clinical experience. The patient was Mr T, a pleasant young man of 25 years, who suffered from a cervical cord injury three months ago and was quadriplegic as the result of the injury. He had a tracheostomy and an indwelling catheter connected to a drainage bag for drainage of urine.

As the students were standing around him; carefully observing the demonstration, he suddenly screamed "STOP. I have a terrible headache". Anybody would have interpreted it as an attention getting activity. But looking at his face nobody could mistake that there was something terribly wrong. His face looked flushed and he was very diaphoretic. He was extremely anxious. The instructor immediately suspected what might have been happening and called for immediate help. A student was asked to roll him up to a high Fowler's position and another was asked to check the blood pressure. She checked the bladder drainage bag which was empty and immediately noticed the full bladder and proceeded to empty the bladder using 'Crede' method, while trying to reassure the patient. As soon as the bladder was emptied he began to calm down. His blood pressure which went up to 260/120 mmHg and pulse 60/min. during the episode started to come down. Of course the doctor was informed of this emergency. By the time the doctor arrived he was almost back to normal. So dramatic was the onset and relief that all around heaved a sigh of relief.

What Mr. T went through was a phenomenon known as autonomic dysreflexia. Even though this phenomenon was first described by Bowley in 1890, it still remains not too well known even among medical professionals. This lack of familiarity among professionals about autonomic dysreflexia can result in misdiagnosis and mismanagement of this acute emergency.

Who are the victims?

Autonomic dysreflexia is experienced by spinal cord injury patients where the level of injury is at T4 or above. Most common spinal injury above that level is cervical. The attack can occur anytime after

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the spinal shock is over and even after 10 years post injury. More and more patients who are quadriplegic live in the society fairly independently and continue to work with the use of modern equipments suited to travel, such as motorized wheel chair and other gadgets. As a result of it not only the medical personnel, but also the patient and family and the people with whom he works and lives should be aware of the symptoms of this phenomenon and should be prepared to handle this emergency. In case of an attack, if appropriate action is not taken immediately, one episode can lead into blindness or death of the patient.

Pathophysiology

Autonomic dysreflexia called autonomic hyperreflexia is the result of a massive sympathetic discharge (Mew 1981). In a patient with a cord damage at T4 level or above, any pressure at the perineal area causes impulses to be carried along afferent pathways. Massive amount of norepinephrine is released. Normally this response will be inhibited by an overflow from vasomotor centres. But in the spinal cord damage, the messages can no longer be passed along to evoke the compensatory mechanism below the level of the lesion. The reflex action is continued below this level. The norepinephrine causes general body vasoconstriction and can increase the blood pressure to a dangerous level. Eventually pressure receptors in the carotid sinus and aortic arch interpret the hypertension and send out messages slowing the heart rate and causing vasodilatation above the lesion.

Causative factors

The stimuli starts from a pressure at the perineal area, such as pressure caused by full bladder or bowel, indwelling catheter, irritation from decubiti, catheterization, urinary infection, uterine contractions or pelvic examination. But two of the most common stimuli are from a full bladder or constipation.

Signs and symptoms

As mentioned above, the occurrence of the problem is in people with spinal cord injury above T4 level. Typically, it is a sudden episode, usually begins with a sudden throbbing headache, then paroxysmal hypertension and fast pulse followed by diaphoresis and flushing of skin above the lesion, bradycardia, nausea, blurred vision, nasal congestion and pilomotor spasm or "goose flesh". Understand-

ably the patient will be extremely anxious. If allowed to progress, without intervening the outcome may be increase in intracranial pressure, cerebral hemorrhage, retinal bleeding or myocardial infarction and even blindness or death.

Intervention and management

Immediate intervention is of utmost importance in this situation. Quick action along with intelligent observation and assessment can save the patients' life. The immediate action is to have the patient in full Fowler's position to reduce the intracranial pressure using gravitational force, while looking for the cause. As soon as the cause is identified try to eliminate the cause. Inform the doctor while checking the pulse and blood pressure every five minutes.

The causes that should be looked for are any obstruction or kink in the catheter or full bladder. In the case of Mr T, the cause was a full bladder due to spasm at the bladder sphincter. Check for bowel impaction, but use nupercaine or some other kind of anaesthetic ointment before the digital check up.

Doctor might give some antihypertensive drug intravenously. Keep trying to reduce the patients anxiety, by being with him and carrying out the necessary intervention, conveying confidence that the situation will be under control. Once the stimuli is removed, patient will get better. The recovery could be as dramatic as the onset as in Mr T's case. Be careful to observe the patient for at least three hours for any further episode or sudden fall in blood pressure.

Prevention

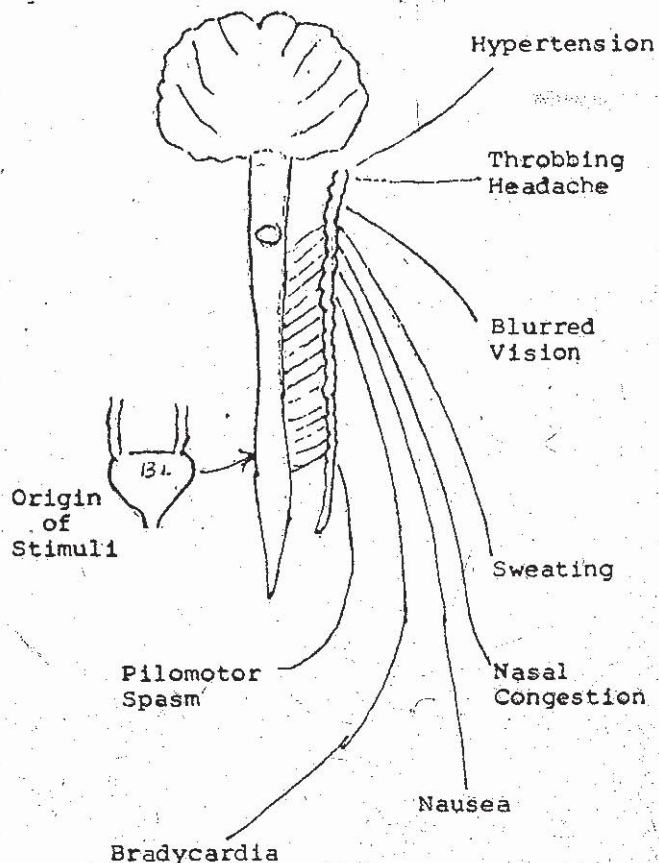
Spinal cord injury patient can expect this episode, even after many years but usually the first episode will be within the first year. As the time goes the frequency may come down, but not the severity of the episode. Episodes can be prevented by avoiding the stimuli, that is by avoiding constipation, urinary infection and by frequent checking of the catheter for any obstruction. Avoid undue pressure of clothes and carefully treat any decubiti. If disimpaction should be done or enema should be given, make sure that anaesthetic cream is used prior to the attempt.

It should be made sure that the patient and his significant others know, what this phenomenon is, and what to do if it occurs. A new comer to the neurological area can get lot of help if he/she tries to listen to the patient as he might know more about this. In case of Mr T, he was aware of this problem and was able to alert people on time.

Thus the frequency of occurrence of autonomic hyperreflexia can be brought down and the dangerous outcome of these episodes can be avoided by

the knowledgeable management of the care of the spinal and injury patient.

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