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Restless Legs Syndrome, with Particular Reference to its Occurrence after Gastric Surgery

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Summary: There is a higher incidence of restless legs syndrome (Ekbom's syndrome) in patients after gastric surgery (11.3%) and with diabetes mellitus (17.0%) and uraemia (17.3%) than in patients who have been diagnosed as having a psychoneurosis (4.0%) and in controls (2.0%). Three patients with malabsorption syndrome complained of restless legs, but these patients had abnormal neurological signs. The incidence after gastric surgery and in diabetes mellitus and uraemia remained high even when patients with any abnormal neurological signs were excluded.

Introduction

"Wherefore to some, when being a Bed they betake themselves to sleep, presently in the Arms and Legs Leapings and Contractions of the Tendons, and so great a Restlessness and Tossings of their Members ensue, that the diseased are no more able to sleep, than if they were in a Place of the greatest Torture"—Thomas Willis. Since this description by Thomas Willis (1685) cases with such symptoms have been reported under a variety of names, including "anxietas tibiarum" (Wittmaack, 1861), "leg jitters" (Allison, 1943), and "asthenia crurum paraesthetica" (Ekbom, 1944). It was Ekbom (1944, 1945) who recalled the problem and elucidated the occurrence and character of the "restless legs" syndrome which is often named after him. The syndrome is thought to be not uncommon, but Ekbom (1960) reported a higher incidence in patients after gastric surgery than in the general healthy population. There have been relatively few reports concerning its incidence in patients after gastric surgery compared with that in patients with some other illnesses.

Patients and Methods

Five groups of patients have been studied (Table I). The 106 who had been treated by gastric surgery for peptic ulcer had had a variety of standard operations, mainly partial gastrectomy. These patients were attending for review at a follow-up clinic in the Royal Victoria Hospital, Belfast. Thirty-one of the 43 with malabsorption syndrome were referred from outpatient departments, but the remaining 12 had some neurological illness requiring hospital treatment. The patients with diabetes mellitus were well controlled and were attending the metabolic outpatient department, and the uraemic patients had chronic renal disease. The patients with psychoneurosis were interviewed either at a psychiatric day hospital or at the psychiatric outpatient department while the control group

comprised healthy medical, nursing, and domestic staff and also patients attending the neurological outpatient department who had complained of headache and had no neurological signs.

Patients after gastric surgery and those with malabsorption, diabetes, uraemia, and psychoneurosis were examined personally for neurological signs. A questionnaire (Table II) was completed for each subject, a diagnosis of restless legs syndrome being made if affirmative answers were given to questions one to four and negative answers to questions six to nine. It is emphasized that the distinction made by Ekbom (1944) between restless legs and two similar syndromes—acroparaesthesiae and nocturnal burning feet—was maintained and a diagnosis of restless legs syndrome was not accepted if the patient's symptoms were of tingling, pins-and-needles, cramps, or burning sensation.

Results

The incidence of restless legs was highest in the gastric surgery, diabetic, and uraemic patients (Table I). In four—two diabetic and two uraemic patients—the syndrome had existed before the onset of the disease. The type of gastric surgery was not related to the presence or absence of restless legs. Increased age of the patient and the length of time since the

TABLE I.—Incidence of Restless Legs Syndrome

Patient Group	No.	Sex		Age (years)		Restless Legs Syndrome			
		M.	F.	Mean	Range	No.	%	M.(%)	F.(%)
Gastric surgery	106	79	27	54.1	32-73	12	11.3	12.6	7.4
Malabsorption syndrome	43	19	24	50.4	20-72	3	6.9	10.5	4.1
Diabetes mellitus	53	26	27	53.2	20-79	9	17.0	7.7	25.9
Uraemia	52	26	26	56.3	20-72	9	17.3	11.5	23.1
Psychoneurosis	50	23	27	54.4	24-72	2	4.0	0	7.4
Control	50	23	27	50.2	24-66	1	2.0	0	3.7

TABLE II

Each patient was asked to answer the following questions:

1. Do you have any unpleasant feeling in the legs which keeps you from sleeping? If yes, describe the feeling
2. Is the unpleasant feeling completely relieved by walking about?
3. Do you have to move your legs when you have the feeling?
4. Does it appear on going to bed at night or sitting in the evenings?
5. Does the feeling affect any other parts of your body besides the legs—for instance the arms?
6. Is the feeling like a cramp which you might have while running, working round the house, or doing some exercise?
7. Is it similar to the tingling sensation felt after hitting the "funny bone"?
8. Is it similar to the sensation (pins-and-needles) felt in a leg which has gone to sleep?
9. Is it a burning sensation in the feet which gets better after placing the feet in the cooler part of the bed or outside the blankets?

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operation seemed to predispose to the onset of restless legs after gastrectomy, but the numbers were too few for statistical analysis. There were nine patients—two after gastric surgery, three with malabsorption, two with diabetes, and two with uraemia—with restless legs syndrome in whom abnormal neurological signs were present. In one patient with malabsorption syndrome the restless legs preceded the appearance of evidence of peripheral neuropathy, and in another they appeared when the patient was recovering from subacute combined degeneration of the spinal cord. The incidence of restless legs in patients who had no neurological signs and no symptoms other than restless legs is given in Table III. It can

TABLE III—Incidence of Restless Legs in Patients Without Abnormal Neurological Signs

Patient Group	No. of Cases Without Neurological Signs	Restless Legs	
		No. of Cases	Incidence (%)
Gastric surgery ..	88	10	11.4
Malabsorption syndrome ..	31	0	0
Diabetes mellitus ..	49	7	14.3
Uraemia ..	49	7	14.3
Psychoneurosis ..	50	2	4.0
Control ..	50	1	2.0

be seen that there is still a high incidence in patients after gastric surgery, with diabetes, and with uraemia.

Clinical Syndrome.—The patients described their discomfort in different ways. In response to the questionnaire most of them said, "It is an unpleasant feeling. I cannot describe it." One patient said, "As soon as I lie down I feel a knotted feeling in my calf muscles." Some other expressions used were: "a pull in the back of the leg," "a creepy feeling," "bag of worms," "as if blood is clotted," "a feeling as if the legs were turning round inside." The difficulty in describing the symptom was illustrated by one patient who said, "It feels sore, like dead, like prickling, like crawling, I do not know." Some also complained of "legs keep jerking." All of them had difficulty in getting off to sleep because of their restless legs and had an irresistible desire to move the legs, which was often satisfied by walking round the room at night or going downstairs and taking tea. The duration of the sensation at night varied from 10 minutes to six hours and did not occur every night. Some of the patients were troubled with a restless feeling when they sat down during the daytime and especially towards evening. There were 10 patients with restless legs who also complained of tiredness and a feeling of weakness in the legs. Though the subjects readily acknowledged the symptoms of restless legs when asked directly about them, the condition was noted as a presenting symptom in only two patients.

Discussion

Views on the aetiology of the restless legs syndrome are conflicting. Anxiety has been suggested as a psychological factor, as restless legs occurs in 5% of the general population and is often present in most to a minor degree (Gorman *et al.*, 1965). Ekbom (1944, 1945) considered a vascular aetiology, but this has never been widely accepted, and in the present series there was no correlation with peripheral vascular disease. Occasionally a pattern of inheritance is found (Ekbom, 1945), but in our study one subject in the control group reported a familial aggregation. It has been reported more commonly in women, and indeed in the present series only female subjects were affected in the psychoneurosis and control groups. In the other groups, however, there were a substantial number of male sufferers.

Though in all the 12 patients who had gastric surgery the symptoms of restless legs began for the first time after operation two diabetic and two uraemic patients had had the symptoms before the onset of their disease, which could be expected from the reported incidence in the population in general. The increased incidence of restless legs in three diseases, however, suggests some organic factor in that syndrome. Callaghan (1966) reported the syndrome in 5 out of 20 patients who had uraemia. One of these had clinical neuropathy, and in the other four who did not have clinical neuropathy slowed motor conduction was found. Motor nerve conduction was slower than normal in the lateral popliteal nerve in 6 of the 12 with restless legs after gastric surgery. Gorman *et al.* (1966) reported two patients with restless legs who had diabetic neuropathy. Harriman *et al.* (1970) made a careful study of the intramuscular innervation in motor nerve endings of the perineus brevis muscle in 10 patients with Ekbom's syndrome and five with burning paraesthesiae but without clinical evidence of peripheral neuropathy. The muscle biopsy vital staining and electron microscopy findings did not provide any convincing evidence of an organic basis for Ekbom's syndrome.

The causation of restless legs after gastric surgery is likely to be more complex, but it would be important to define the factors involved because of the relatively high incidence (12.6%) reported by Ekbom (1966) in a follow-up of 317 patients who had had gastric surgery for peptic ulcer. Earlier, Ekbom (1960) suggested that iron-deficiency anaemia was often present in patients with restless legs syndrome after gastric surgery. Nordlander (1953) also remarked on anaemia, and treated patients with restless legs with iron preparations. In the present series, however, anaemia and a low serum iron was also found in subjects who did not complain of restless legs.

It is recognized that many people with restless legs syndrome in the "normal" population never develop signs of peripheral neuropathy even in old age and after many years of symptoms. One can only speculate that there are people predisposed to develop restless legs perhaps because of a somewhat different nerve metabolism which is still compatible with normal nerve function. Provoking factors will include the illnesses discussed in the present paper and other conditions such as vitamin deficiency, certain drugs (such as prochlorperazine), and cancer (Ekbom, 1955). Restless legs has also been described as occurring during pregnancy, the symptom disappearing after delivery (Ekbom, 1945). In all subjects the frustration of sleepless nights over many years because of restless legs and ineffective treatment might be expected to lead to symptoms suggesting anxiety and neuroses.

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