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A Psychiatric Study of Amputees

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Summary: Psychiatric manifestations were studied in 72 amputees in the post-operative period. All were right handed. Besides phantom limb phenomena, which were observed in nearly four-fifths of the cases and are described in another paper, nearly two-thirds had psychiatric symptoms in the form of depression (45 patients), anxiety (38), crying spells (38), insomnia (34), loss of appetite (23), suicidal ideas (21) and psychotic behaviour (2). Right arm amputees had phantom phenomena and insomnia significantly more often than left.

Nearly one-fifth of the cases were diagnosed as having psychotic depressive reactions, two-fifths as having depressive neurosis and two, both with right upper limb amputations, as schizophrenic.

Psychiatric aspects of amputation have received scarcely any attention. Various aspects of the phantom limb phenomenon have been studied, to the total exclusion of other psychiatric sequelae (Handerson and Smyth, 1948; Cronholm, 1951; Sunderland, 1968; Melzack, 1971; De Gutierrez-Mahoney, 1970; Carlen *et al*, 1978; and Wilson *et al*, 1978). This is surprising, in view of the significance of the procedure and its impact on the patient's future life and adjustment.

The present communication reports a prospective psychiatric study of seventy-two consecutive cases undergoing various amputations in an Indian teaching general hospital.

Material and Methods

The study was carried out in the M.L.B. Medical College, Jhansi (India). It included seventy-two consecutive cases subjected to amputation during a period of three years, excluding those with a history of previous psychiatric illness. The patients were interviewed daily for one week and at weekly intervals thereafter so long as they could be contacted. Patients developing psychiatric symptoms were seen more frequently, depending upon their condition. The mean period of follow-up was 5.2 ± 1.1 weeks, usually limited to the in-patient stay. In every case a reliable relative was also interviewed. The interviews were based on a prearranged schedule encompassing socio-demographic aspects, the cause and site of the amputation, psychiatric features following the procedure and their progress with treatment.

The psychiatric abnormalities were classified in accordance with the Diagnostic and Statistical Manual (DSM-2) of the American Psychiatric Association (1968). Patients developing depressive symptoms were treated with tricyclic antidepressants, anxiolytics and hypnotics. Neuroleptics and hypnotics were used for schizophrenic symptoms. In addition to pharmacotherapy all patients were listened to frequently, patiently and sympathetically and offered emotional support by the psychiatric team. Psychiatric progress was watched and the findings recorded. At the end of the study the data were tabulated and the results analysed statistically.

Results

General characteristics of cases

The age distribution of our cases is given in Table I. Nearly two-thirds of them were in the age group 10–30 years, most commonly in the second decade (26 cases). Most of the patients (68) were male, the sex ratio therefore being 17:1. The majority were poorly educated (24) or uneducated (32), only 11 having been to secondary school and seven to university. Three-fifths were poor and the rest middle-class.

Indications for amputation

More than two-thirds (50) of the patients had limbs amputated during or following accidents. Of these, 43 had crush and the remaining seven had blast injuries. Threshing-machines accounted for more than half of the crush injuries. Osteosarcoma necessitated amputation in seven cases. Six limbs were chopped off by dacoits or enemies, Burger's disease and electric burns were responsible for three ampu-

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tations each and leprosy, madura foot and chronic osteomyelitis for one each.

Site of amputation

There were almost equal numbers of cases with amputations of upper and lower limbs. The right:left ratio in lower limb amputees was almost unity. The upper limb amputees, on the other hand, had right sided amputations in nearly two-thirds of cases (Table II). Where there were amputations at more than one site the major one was taken into account. All the patients were right-handed.

Psychiatric symptoms following amputation

The commonest symptom was the phantom limb phenomenon (62 cases), details of which are reported in a separate communication (Shukla *et al*, 1982). Sadness (45 patients), anxiety (38), crying spells (38), insomnia (34) and loss of appetite (23) were other common psychiatric sequelae. Twenty-one patients harboured suicidal ideas and two of them attempted suicide (Table III). Two cases, both males with right upper limb amputations, manifested psychotic behaviour of a schizophrenic type. All these symptoms developed within one to two weeks of amputation. Since our follow-up was quite short it is likely that more patients developed symptoms on return to work or family. However, only a very small proportion returned for further follow-up. Thus it was not possible to ascertain the long-term psychiatric fate of our sample.

TABLE I

Age distribution of amputees (N = 72)

Age (years)	No.	% of total sample
10–20	26	36
20–30	20	28
30–40	12	17
40–50	4	5.5
50–60	4	5.5
60 and above	6	8
Total	72	100

TABLE II

Site of amputation (N = 72)

Site of amputation	Right		Left		Total	
	No.	%	No.	%	No.	%
Upper limb	24	63	14	37	38	53
Lower limb	18	53	16	47	34	47
Total	42	58	30	42	72	100

TABLE III

Psychiatric symptoms following amputation. (Percentages given in parentheses) (N = 72)

Symptoms	Total (72)	Upper limbs			Lower limbs		
		Total (38)	Right (24)	Left (14)	Total (34)	Right (18)	Left (16)
Anxiety	38 (53)	19 (50)	11 (46)	8 (57)	19 (56)	9 (50)	10 (63)
Phantom limb	62 (86)	34 (90)	24 (100)*	10 (71)*	28 (82)	15 (83)	13 (81)
Sadness	45 (62)	23 (61)	16 (67)	7 (50)	22 (65)	11 (61)	11 (69)
Crying spells	38 (53)	22 (58)	14 (58)	8 (57)	16 (47)	9 (50)	7 (44)
Insomnia	34 (47)	19 (50)	16 (67)†	3 (21)†	15 (44)	7 (39)	8 (50)
Loss of appetite	23 (32)	15 (40)	11 (46)	4 (29)	8 (24)	3 (17)	5 (31)
Suicidal ideas‡	21 (29)	10 (26)	10 (42)	—	11 (32)	5 (28)	6 (38)
Psychotic behaviour	2 (3)	2 (5)	2 (8)	—	—	—	—

*t = 2.79; P < 0.01; †t = 2.69; P < 0.02; ‡Two attempted suicide.

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Age, sex, education, social class and cause of amputation did not influence the frequency of psychiatric symptoms. Further, there was no difference in the frequency of such symptoms between lower and upper limb amputees or between right and left lower limb amputees. In contrast, right upper limb amputees had phantom limb phenomena ($t = 2.79$; $P < 0.01$) and insomnia ($t = 2.69$; $P < 0.02$) significantly more often than left upper limb amputees (Table III).

Psychiatric diagnosis

When phantom limb phenomena were excluded only one third of the cases could be considered normal psychiatrically. Nearly two-thirds had depressive features, ranging from depressive neurosis (29 patients) to reactions severe enough to be labelled as psychotic depression (16 patients). Two patients manifested frank thought disorder and emotional inappropriateness and were diagnosed as schizophrenic (Table IV).

Response to treatment

All the 16 patients with psychotic depressive reactions were feeling better at the time of discharge, nearly two-thirds of them (10 cases) having recovered almost completely. Those with depressive neurosis had a somewhat poorer response, nearly three-quarters (22 cases) still having some symptoms at the time of discharge. Nine of these 22 had been nervous all their lives.

Both the patients with schizophrenic symptoms responded well to neuroleptics and became symptom free within a month.

Discussion

Amputation is perhaps the most ancient of all the surgical procedures. However, the earliest amputations were performed mostly as a form of punishment in many of the ancient so-called civilized societies, and are still carried out as such even today in some primitive cultures (Tooms, 1971). It is therefore hardly surprising that the procedure is, consciously or unconsciously, looked upon as a punitive measure by some patients.

Facing and undergoing an operation are unique psychological and physical experiences for any person (Abrams, 1975). The impact, understandably, is likely to be much more if the procedure entails loss of bodily parts, particularly of limbs. Such procedures tend to become associated with castration anxiety, infantile fear of punishment and whatever cathexes are attached to the organ to be operated upon (Freedman *et al*, 1976). Personal mutilation by amputation leads to hostility directed towards significant others which, being unacceptable, is repressed and is replaced by guilt and/or depression (Kolb, 1954). Further, psychiatric symptoms may be manifestations of mourning the loss of a limb that was an essential part of the patient's body schema.

Some workers have reported certain personality correlates of psychiatric symptoms following amputation or, for that matter, any operation (Parkes, 1973; and Solomon and Schmidt, 1978). The patients developing such symptoms have been found to be at the rigid end of an 'adaptable-rigid' dimension and show dislike of and resistance to change, thus making coping with amputation more difficult (Parkes, 1973). Parkes' patients also showed 'compulsive self-reliance'. For such individuals the experience of relative helplessness and the need to rely on others, however loving, would be a galling and humiliating one.

However, these personality correlates were difficult, if not impossible, to ascertain in our patients who, being poorly educated and rather unsophisticated, could not provide the necessary details to elucidate their personality characteristics. In them it would be reasonable to assume that amputation posed a real threat to their very livelihood, and to the existence of the whole family, the patient generally having been its most active and probably its only earning member. This was particularly so if the lost limb happened to be the most active one, i.e. the right arm in a right-handed person. Thus psychological symptoms occurred more commonly following the amputation of the right arm, though the difference was significant only with respect to two symptoms, viz phantom limb phenomena and insomnia.

TABLE IV

Psychiatric diagnoses ($N = 72$)

Diagnosis	No.	%
Normal	25	35
Psychotic depressive reaction	16	22
Depressive neurosis	29	40
Schizophrenia	2	3
Total	72	100.0

References

ABRAMS, H. S. (1975) Psychiatry and surgery. In *Comprehensive Textbook of Psychiatry* (eds. A. M. Freedman, H. I. Kaplan and B. J. Sadock). Vol. II. Baltimore: Williams & Wilkins.

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AMERICAN PSYCHIATRIC ASSOCIATION (1968) *Diagnostic and Statistical Manual* (*D.S.M.-2*). Washington: American Psychiatric Association.

CARLEN, P. L., WALL, P. D., HADVORNA, M. D. & STEINBACH, T. (1978) Phantom limb and related phenomena in recent traumatic amputations. *Neurology*, **28**, 211–7.

CRONHOLM, B. (1951) Phantom limb in amputees. *Acta Psychiatrica Neurologica Scandinavica* (*Supplement*), **72**, 1–310.

DE GUTIERREZ-MAHONEY, C. G. (1970) The treatment of painful phantom limb. *Surgical Clinics of North America*, **28**, 705–8.

FREEDMAN, A. M., KAPLAN, H. I. & SADOCK, B. J. (1976) *Modern Synopsis of Comprehensive Textbook of Psychiatry*. Baltimore: Williams & Wilkins.

HANDERSON, A. M. & SMYTH, G. E. (1948) Phantom limb. *Journal of Neurology, Neurosurgery and Psychiatry*, **11**, 88–112.

KOLB, L. C. (1954) *The Painful Phantom: Psychology, Physiology and Treatment*. Springfield, Illinois: Charles C. Thomas.

MELZACK, R. (1971) Phantom limb pain. *Anaesthesiology*, **35**, 409–19.

PARKES, C. M. (1973) Factors determining the persistance of phantom pain in amputees. *Journal of Psychosomatic Research*, **17**, 87–108.

SHUKLA, G. D., SAHU, S. C., TRIPATHI, R. P. & GUPTA, D. K. (1982) Phantom limb: A phenomenological study. *British Journal of Psychiatry*. (Accepted for publication). **141**, 54–58.

SOLOMON, P. F. & SCHMIDT, K. M. (1978) A burning issue: Phantom limb pain and psychological preparation of the patient for amputation. *Archives of Surgery*, **113**, 185–6.

SUNDERLAND, S. (1968) *Nerves and Nerve Injuries*. Baltimore: Williams & Wilkins.

TOOMS, R. F. (1971) Amputations. In *Campbell's Operative Orthopedics* (ed. A. H. Crenshaw). Vol. I. Tokyo: Igaku Shoin.

WILSON, P. R., PERSON, J. R., SU, D. W. & WANG, J. K. (1978) Herpes zoster reactivation of phantom limb pain. *Mayo Clinic Proceedings*, **53**, 336–8.

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