

Chlorpromazine And Graft Survival An Experimental Study

Dr. N.K. Keswani, M.S.
Dr. Tatsat Misra, M.S., M.S.
(Plastic Surg.)
Dr. D.C. Srivastava, M.S., M.Ch.
(Plastic Surg.)
Dr. Ajai Bansal, M.S.

KEY WORD

Length, Survival, Flap.

ABSTRACT

Large number of drugs have been used to make the longer length of the flap to survive in experimental animals. In present study, chlorpromazine has been used in experimental rats. In all, thirty albino rats were experimented. Longer length treated flap survival rate was observed in chlorpromazine group.

INTRODUCTION

Ischaemic necrosis of distal end of long flap is the main factor which limits the survival of flap for adequate reconstruction. While preparing the skin flaps, in the vessels there is marked decrease in blood flow. Further more there is constriction of feeding vessels due to release of noradrenaline from the severed nerve ends, thus making situation more poore; for the distal area of the flap to survive. To increase the vascularity at the distal end of a long flap, several drugs have been used, the main being the adrenergic blockers. In this study we have used chlorpromazine which has alpha - adrenergic block-

ing action and a wide variety of other actions to increase the chances of survival of a long flap.

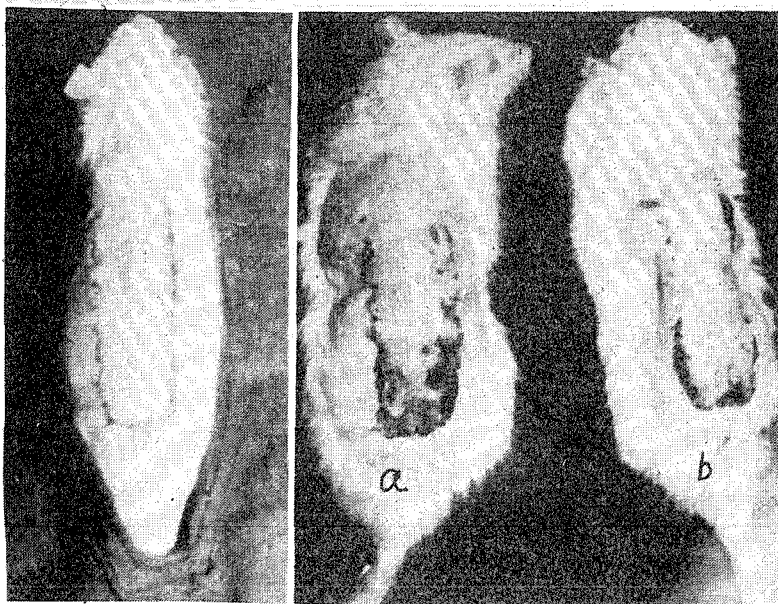
MATERIAL AND METHODS

Albino rats of either sex weighing between 150 - 215 gms were used for the study. Ten animals in control and twenty in trial group were studied. Inj. Chlorpromazine was given in the dose of 1.5 mg per 100 gm body weight in the following manners :

- i) Subcutaneous injection in the bed of proposed flap to be raised 30 minutes before operation.
- ii) Post operative injections were given in the same dose twice daily for seven days in 20 animals of trial group.
- iii) In control group of ten animals, similar volume of normal saline was injected pre and post operatively in the same manner.

Inj. Ketamine 10 mg intraperitoneally was used to anaesthetise the animals. Mcfarlane type of flap measuring 8 x 2 cms was raised. The flap was repositioned on the same bed and margins were stitched with 3/0 silk suture. No antibiotics were used in post operative period. The flap was examined on 3rd, 5th and 7th post operative days for capillary circulation, colour and dry blackening. Length of flap in control and study group was measured in centimeters.

Photographs



1) Photograph Showing Repositioned Flap
2) Showing Amount of Flaploss on Day 7 in
(a) Control Group (46%)
(b) Trial Group (10%)

RESULTS Control Group

No noticeable change could be made out in the flap of 10 animals of control group on 3rd day. On 5th post operative day overt congestion and early necrosis were evident in 40 % of flap size in distal part. On 7th day approximately 46 % of distal flap was black coloured, shrunken and necrosed (Fig. 2a), but the proximal 54 % of flap was healthy (Table - 1).

Table - 1 : Control group.

No. of animals	Average surviving length in cms			Percentage survival of surface area
	3rd day	5th day	7th day	
10	No detectable change seen	4.8	4.3	54 %

Trial Group

The flap looked well vascularised upto 3rd day but on 5th day the distal flap showed livid coloration and on 7th day the necrosis was clearly evident in 10-15 % of flap . In two animals the area of necrosis was only marginal (Table - 2).

Table - 2 : Trial group.

No. of animals	Average surviving length in cms			Percentage survival of surface area
	3rd day	5th day	7th day	
20	No detectable change seen	7.6	7 cm	87 %

DISCUSSION

Ischaemic necrosis of distal end of long flap is the major factor which limits the flap to be taken for adequate reconstruction. It is an established fact that any method of vasodilation improves the flap survival (12 - 14). In the present study chlorpromazine has been used in albino rats for better flap survival. The significant survival of about 87 % (Table 2), of flap surface area in trial group against only 54 % of control group is mainly due to wide variety of actions of chlorpromazine like alpha receptor blocking, antiinflammatory, decreased platelet adhesiveness, decreased metabolic demand, membrane stabilization and hypothermia.

Out of its varied actions probably membrane stabilization is the most important action in flap survival.

In our study, although we could not find out the minimum duration of treatment to achieve the maximum effect but it is evident that treatment beyond seven days has not resulted in better flap survival.

CONCLUSION

Chlorpromazine has wide variety of actions for better flap survival. In order to achieve still better results, it may be tried with some other recent drugs like pentoxifylline, piriectam, nicergoline etc.

REFERENCES

1. **Stephen, R., Kay, M.D., Lawrence, R. and Lewin, M.D. :** Neural influences on experimental flap survival. *Plast. & Recons. Surg.*, 1981, 67 : 42 - 46.
2. **Jurell, G. and Johnson, C. :** Increased survival of experimental flaps in rats following treatment with antiadrenergic drugs. *Scand. J. of Plast. & Reconstr. Surg.*, 1976, 01 : 169 - 172.
3. **John Reinisch, M.D. and M. Bert, M.D. :** Effect of local anaesthesia with epinephrine on skin flap survival. *Plast. & Reconstr. Surg.*, 1974, 54 : 329 - 331.
4. **Johnson, C.E., Jurell, G., Neylen, B. and Pandeya, N.:** Effect of phentolamine and propranolol on the survival of experimental skin flap. *Soc. and J. of Plast. & Reconstr. Surg.*, 1975, 9 : 98-101.
5. **Court Cutting, M.D. et al :** Changes in quantitative norepinephrine levels in delayed pig flank flaps. *Plast. & Reconstr. Surg.*, 1982, 1:69:652-655.
6. **Baldessarini, R. :** Drugs and treatment of psychiatric disorders. In A Goodman-Gillman, *Pharmacologic basis of therapeutics*, 6th ed., New York, Macmillan, 1980, p. 391.
7. **Buncke, H.J. and Blackfield H.M. :** The vasolegic effects of chlorpromazine. *Plast. & Reconstr. Surg.*, 1963, 31 : 353 - 356.
8. **O'Brien, J.R. :** The adhesiveness of native platelets and its prevention. *J. Clin. Pathol*, 1961, 14 : 140-144.
9. **Kieln, C.L. :** The effect of local hypothermia on pedicle flap tissues, enhancement of survival. *Plast. & Reconstr. Surg.*, 1961,25:349-351 .
10. **Mes, L.G.B.:** Improving flap survival by sustaining cell metabolism within ischaemic cells. A study using rabbits. *Plast. & Reconstr. Surg.*,1980,65:56-60.
11. **Guth, P.S., Sellinger, O.Z., Amaro, J. and Elmer, L.:** Additional permeability effects of chlorpromazine "Leakage of lysosomal phosphatase. *FedProc.* 1963. 22: 626-630.
12. **Finseth, F. and Cutting, C. :** An experimental neurovascular island skin flap for the study of delay phenomenon. *Plast. & Reconstr. Surg.*, 1978, 61 : 412 - 420.
13. **Reinisch, J.F. :** The pathophysiology of skin flap circulation. The delay phenomenon. *Plast. & Reconstr. Surg.*, 1974, 54 : 584-589.
14. **Myers, M.B. and Cherry, G.:** Enhancement of survival in devascularised pedicles by use of phenoxylbenzamine. *Plast. & Reconstr. Surg.*, 1968, 41 : 254-259.

Author's Name And Address

Dr. N.K. Keswani, M.S.,
Associate Professor of Surgery,
Dr. Tatsat Misra, MS, MS (Plastic Surg.)
Assistant Professor in Plastic Surgery.
Dr. D.C. Srivastava, MS, M.Ch. (Plastic Surg.)
Pool Officer in Surgery.
Dr. Ajay Bansal, M.S.
Medical Officer.

Deptt. of Plastic Surgery
M.L.N. Medical College
Allahabad.