# Role Of Anabolic Steroid (Nandrolone) And Propranolol In Paediatric Burn In Terms Of Reversal Of Growth Arrest- A Randomized Controlled Trial

Azwa Janjua, Fatima Naumeri, Zahra Auqil, Batool Fatima, Hira Zahid, Sadaf Abbas
Affiliations: Department of Pediatric Surgery, Mayo Hospital , King Edward Medical University, Lahore, Pakistan

## INTRODUCTION

- Burns are a major cause of mortality and morbidity in the pediatric population worldwide.
- A series of metabolic events occur after the burn, leading to a major catabolic phase and ultimately growth arrest.
- Nandrolone is a proven potent anabolic steroid and has already been used after major surgery and severe trauma but has not yet been investigated for burn injuries in children.
- Propranolol is the most effective therapy for reducing the hypermetabolic response and other morbidities resulting from burn injuries.

## METHODOLOGY

- Randomized controlled trial in the Pediatric Surgery Department of Mayo Hospital, Lahore
- Duration of study = 2 years and 3 months ( oct 2020 - jan 2023 )
- Sample size = 114 ( 3 groups of 38 patients each)
- Sampling technique = Simple random sampling
- Group A = Propanolol alone
- Group B = Nandrolone alone
- Group C = Both Propanolol and Nandrolone
- Weight, height, and serum albumin levels were measured at the time of admission, at discharge and 03 monthly follow ups for 2 years

## OBJECTIVE

To compare the effects of propanolol alone , nandrolone alone and propanolol with nandrolone in combination in pediatric burn population in terms of reversal of growth arrest.

## RESULT

Most of the patients included in our study belonged to the age group of 5 to 6years (n=58,50.8%) followed by the age group of 10 to 12 years ( n= 25, 21.9 %). Majority of the patients in our study were females ( n= 63 , 55.2 %)

| GROUPS | NO OF PATIENTS | BMI AT ADMISSION ($Kg/m^2$) | BMI AT DISCHARGE ($Kg/m^2$) | BMI AT 3 MONTHS $Kg/m^2$ | BMI AT 6 MONTHS $Kg/m^2$ | BMI AT 9 MONTHS $Kg/m^2$ | BMI AT 12 MONTHS $Kg/m^2$ | P-VALUE |
|---|---|---|---|---|---|---|---|---|
| Group A | 38 | 14.8 ± 2.7 | 15.78 ± 3.8 | 17.87 ± 3.7 | 17.87 ± 3.3 | 17.99 ± 2.9 | 18.34 ± 3.9 | 0.019 |
| Group B | 38 | 15.7 ± 2.9 | 17.78 ± 3.3 | 17.89 ± 4.7 | 17.23 ± 3.7 | 17.76 ± 2.9 | 17.23 ± 3.7 | |
| Group C | 38 | 15.1 ± 1.9 | 16.98 ± 3.8 | 17.33 ± 3.22 | 17.98 ± 3.5 | 17.56 ± 3.9 | 18.99 ± 4.8 | |

Table 1: The Mean Body Mass Index (BMI) of included patients divided into groups on admission at discharge, at 3, 6, 9 and 12 months follow up.

## DISCUSSION

- Approximately 90 % of burns are caused by household accidents.
- Growth arrest is one of the major complications, especially in those involving 20% or more TBSA.
- All three groups in our study showed equal levels of albumin at the end of follow- up.
- Group C had improvements in weight, BMI and bone mineral densities.
- This showed that there is no association of nandrolone and propranolol with the synthesis of albumin but a significant effect on catabolic phase reversal.

| GROUPS | NORMAL BMD | REDUCED BMD | P-VALUE |
|---|---|---|---|
| Group A | 9 (40.9%) | 13 (59.1%) | 0.026 |
| Group B | 12 (48%) | 13 (52%) | |
| Group C | 19 (67%) | 9 (32.1%) | |
| TOTAL | 40 (52.2%) | 35 (47.7%) | |

Table 2: Bone Mass Density (BMD) of the spine after 1 year of follow-up

## CONCLUSION

Nandrolone and propanolol when given in comibination have a better effect on patients' BMI and bonemineral densities as when both drugs were given separately.

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