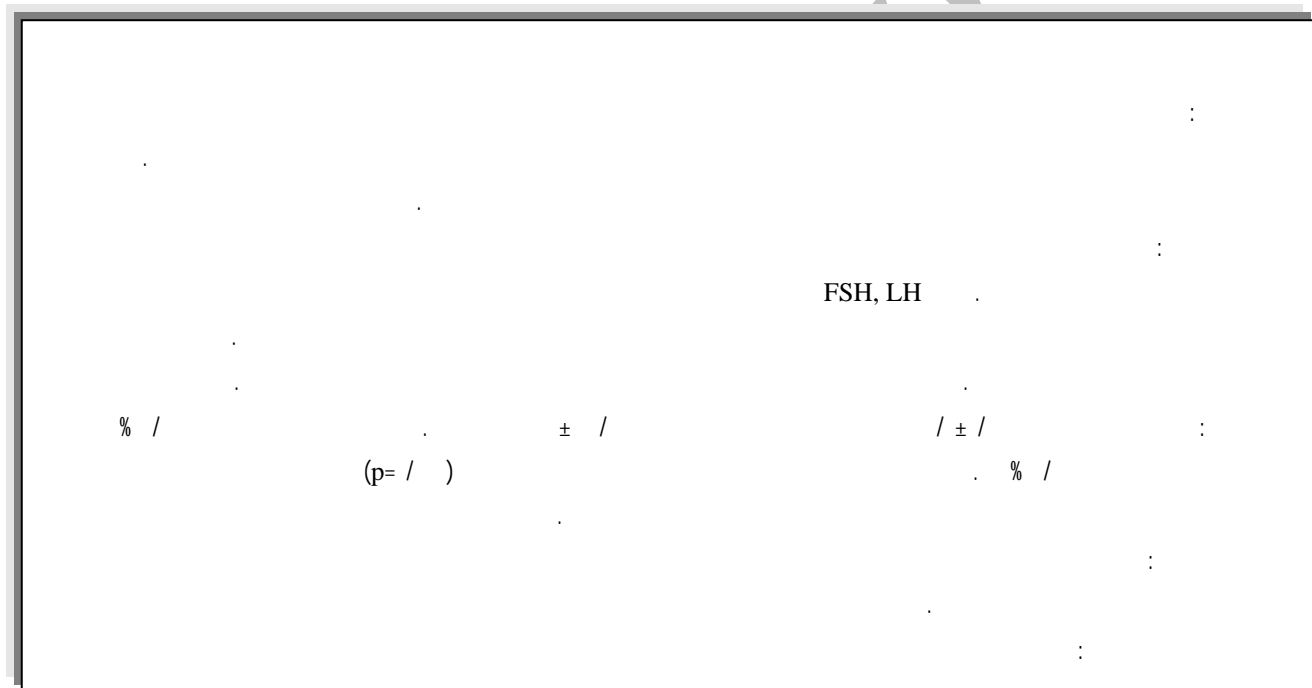




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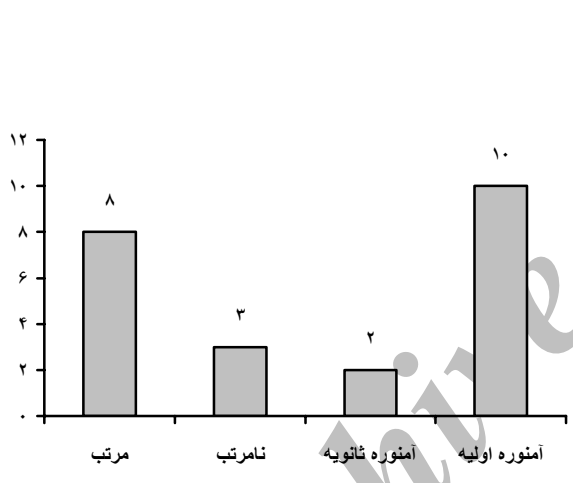
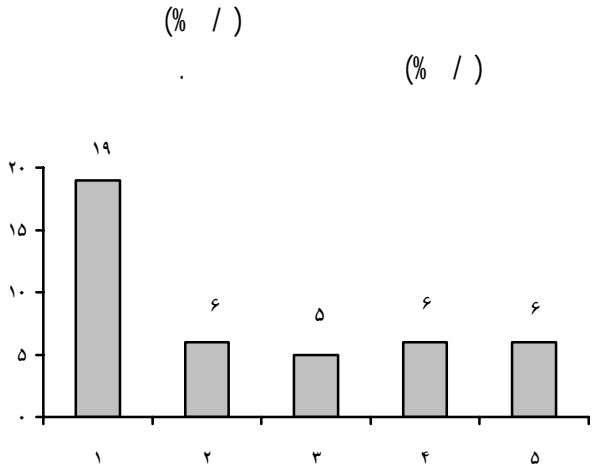
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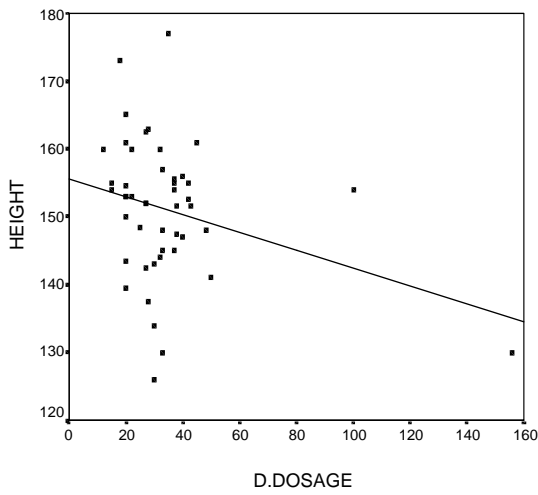
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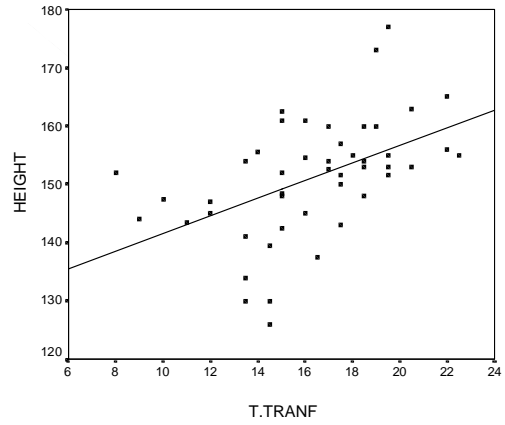
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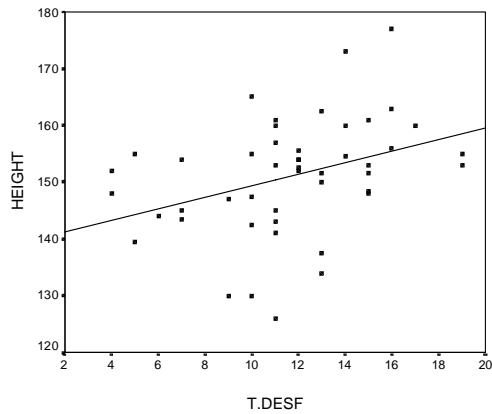
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**References:**

- 1- Larsen PR, Kronenberg HM, Melmed SH, et al. Puberty: Ontogeny, neuroendocrinology, physiology, and disorders. in: Melvic M, Glumabaen. and Dennis M, Styne: Endocrinology. 10<sup>th</sup> ed. Philadelphia: Sunders; 2003: 1183-1184.
- 2- Chatterjee R, Katz M. Evaluation of gonadotropin insufficiency in thalassemia boys with pubertal failure: spontaneous versus provocative test. **J pediatr endocrinol metab** 2001; 14 (3): 301-12.
- 3- Chern J, LinKH, Tsai WY, Wang SH, Lu My, Lin DT Hypogonadotrophic hypogonadism and hematologic phenotype in patients with transfusion – dependent beta – thalassemia major. **J pediatr hematol oncol** 2003; 25 (11): 880-4.
- 4- Arguoropoulou MI, Kiortsis DN, Metafratzi Z, Bitsis S, Tsatoul M, Efremidis SC. Pituitary gland height evaluated by MRI in patients with thalassemia major: a marker of pituitary gland function. **Neuroradiology** 2001; 43 (12) 1056-8.
- 5- Vaskaridou E, Kyrtsolis MC, Terpos E, Skarditi M, Theodor Bergele A, et al. Bone resorption is increased in young adults with thalassemia major. **Br j Haematol** 2001; 112 (1): 36-41.
- 6- Ferrave M, Matavese SN, Fraancese M, Borreli B, Coppola A, Esposito L et al. Effect of VDR polymorphism on growth and bone mineral density in homozygous beta thalassemia. **Br j Haematol** 2002; 117 (2): 436-40.
- 7- Uriarte MM, Baron J, Garacia HB. The effect of pubertal delay on adult height in men with isolated hypogonadotropic hypogonadism. **J clin Endocrinol Metab** 1992; 74: 436 -40.
- 8- Keam EY, Lee AC, Li AN. A cross sectional study of growth, puberty and endocrine function in patients with thalassemia major in Hong kong. **J pediatr child Health** 1995 ; 31 : 83 –87.
- 9- Caruse – Nioletti M, De sanetis U, Covallo L, Ruggiero L, et al. Management of puberty for optimal auxological results in thalassemia major. **J pediatr Endocrinol metab** 2001; 14 (2): 939 –44.