Alcohol y hueso

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THE "BATTERED ALCOHOLIC SYNDROME"

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The Battered Alcoholic Syndrome is here defined by the presence of three or more fractures in the same individual but in differing chronological stages of healing. These may be identified either on the basis of radiographs or by history. Because only three per cent of alcoholics are of the skid-row stereotype, and because the treatment of an alcoholic may differ from that of a nonalcoholic, the recognition of this syndrome is of value in the initial and long-term management of such individuals. In 100 consecutive fracture patient admissions at Harborview Medical Center the incidence of this syndrome in Seattle was eight per cent of fracture patients admitted to the hospital; 62% of patients with a third discrete fracture were alcoholics. Etiologic factors which may play a role in its development include greater exposure to trauma, psychologic predisposition, nutritional depletion, and the direct toxic effects of alcohol itself.

Cigarette Smoking, Alcohol Consumption, and Risk of Hip Fracture in Women John A. Baron, MD; Bahman Y. Farahmand, BSc; Elisabete Weiderpass, MD; Karl Michaëlsson, MD; AkkeAlberts,MD; Ingemar Persson, MD; Sverker Ljunghall, MD

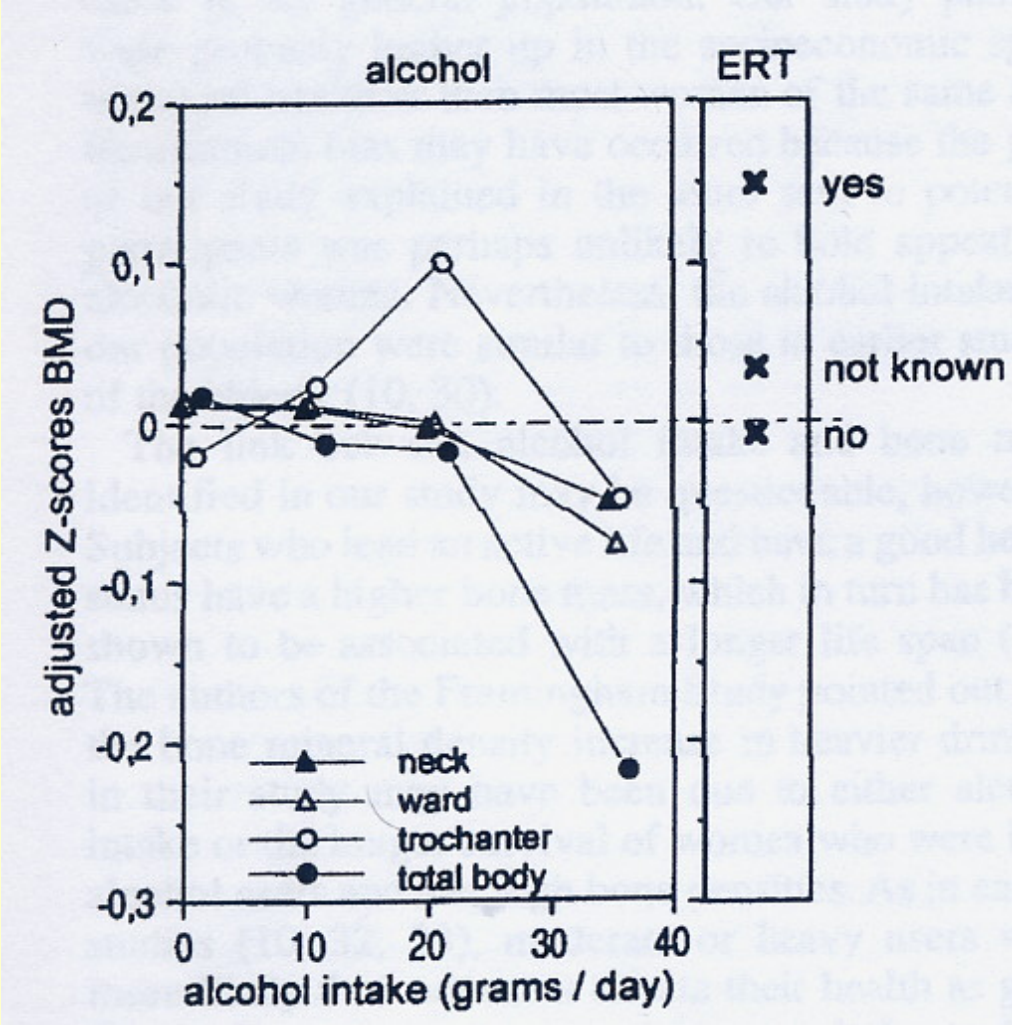
Arch Intern Med. 2001;161:983-988.

Table 5. Adjusted Odds Ratios (ORs) and 95% Confidence Intervals (CIs) Regarding Alcoholic Beverage Consumption 1 Year Before Interview and Hip Fracture Risk

Alcoholic Beverage Consumption	No. of Cases/Controls	Age-Adjusted OR (95% CI)	Multivariate OR (95% CI)*
Nondrinkers	665/1427	1.00	1.00
Drinkers	451/1297	0.80 (0.69-0.93)	0.70 (0.60-0.82)
<3 g/d	196/568	0.78 (0.64-0.95)	0.72 (0.59-0.88)
3-6 g/d	153/443	0.80 (0.65-0.99)	0.70 (0.56-0.87)
>6 g/d	102/286	0.84 (0.66-1.08)	0.69 (0.53-0.90)
P for trend		.02	<.001
Type of alcoholic beverage			
Light beer			
No	885/2080	1.00	1.00
Yes	231/644	0.91 (0.76-1.08)	0.85 (0.71-1.03)
Strong beer			
No	1095/2617	1.00	1.00
Yes	217/107	0.55 (0.34-0.88)	0.52 (0.31-0.85)
Wine			
No	774/1668	1.00	1.00
Yes	342/1356	0.75 (0.64-0.87)	0.67 (0.57-0.79)
Fortified wine			
No	959/2266	1.00	1.00
Yes	157/458	0.84 (0.69-1.02)	0.81 (0.66-1.00)
Spirits			
No	928/2214	1.00	1.00
Yes	118/510	0.92 (0.76-1.10)	0.80 (0.66-0.98)

**Adjusted for age, use of hormone replacement therapy (never, former, and current), body mass index (quintiles), and cigarette smoking (never, former, and current).*

EPIDOS study Am J Epidemiol 2000; 151:773-780



Moderate alcohol consumption is not harmful to bone health in women and may even be beneficial”

Ann Rheum Dis, 2005; 64:309-310

Informaciones aparentemente contradictorias

- Asian Osteoporosis study (Riesgo de fractura de cadera) (J Bone Miner Res. 2001; 16:572-580) Beber diariamente confiere un RR de 2.9 en mujeres (1-8.6) y de 1.9 en hombres (1.1-3.2)

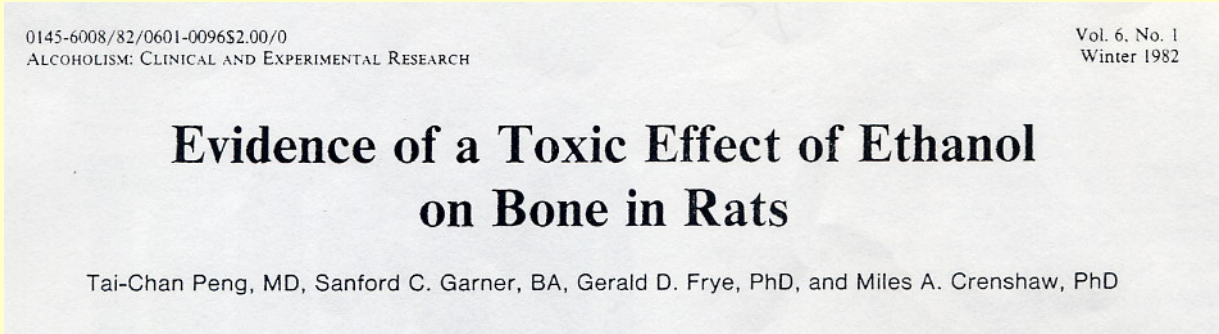
- Estudio OFELY (Bone 2003; 32:78-85) El alcohol no es ni factor de riesgo ni protector

- McInnis et al, (J Bone Miner Res 2003; 18:1650-56): (en gemelas) La cuantía total de alcohol a lo largo de la vida no guarda relación con la densidad mineral ósea.

- En pacientes con fractura de cadera el consumo reciente de alcohol era frecuente (Alcohol & Alcoholism, 2006; 41:345-348).

- ¿El alcohol provoca osteoporosis?
- ¿A qué obedece? ¿defectuosa síntesis o reabsorción incrementada?
- ¿Qué otros factores influyen en la osteoporosis del alcohólico?

El hueso de la rata alcohólica se fractura con mayor facilidad



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ALCOHOLISM: CLINICAL AND EXPERIMENTAL RESEARCH

Vol. 6, No. 1
Winter 1982

Evidence of a Toxic Effect of Ethanol on Bone in Rats

Tai-Chan Peng, MD, Sanford C. Garner, BA, Gerald D. Frye, PhD, and Miles A. Crenshaw, PhD

Diamond et al., Am J Med 1989; 86:282-288

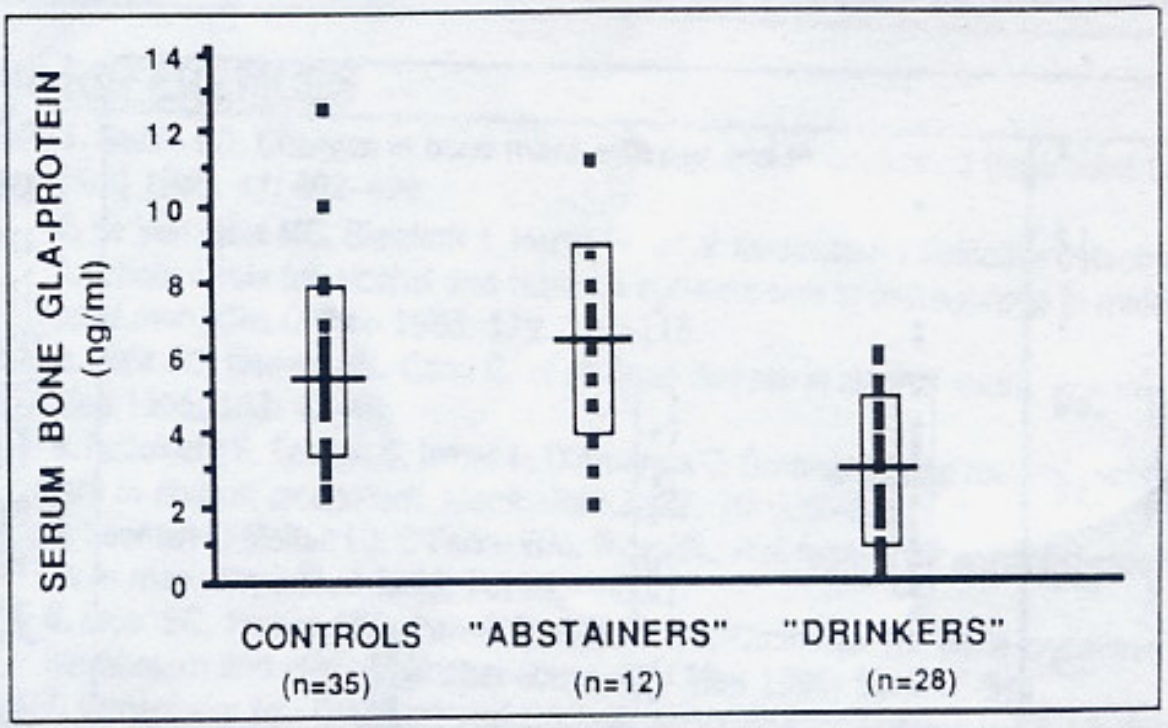
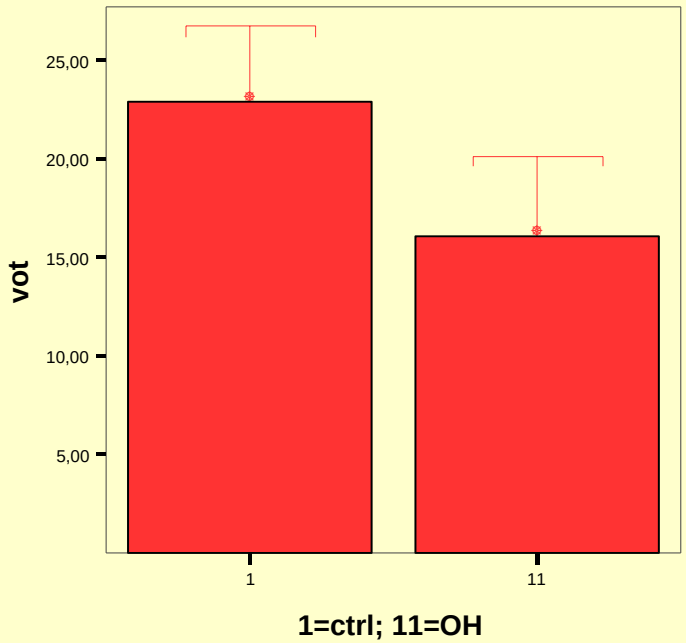


Figure 1. Serum bone Gla-protein concentrations in controls, abstainers, and drinkers. **Bars** represent mean values, whereas **boxes** represent 1 SD on either side of the mean. p values: controls versus drinkers = $p < 0.001$; abstainers versus drinkers = $p < 0.001$.

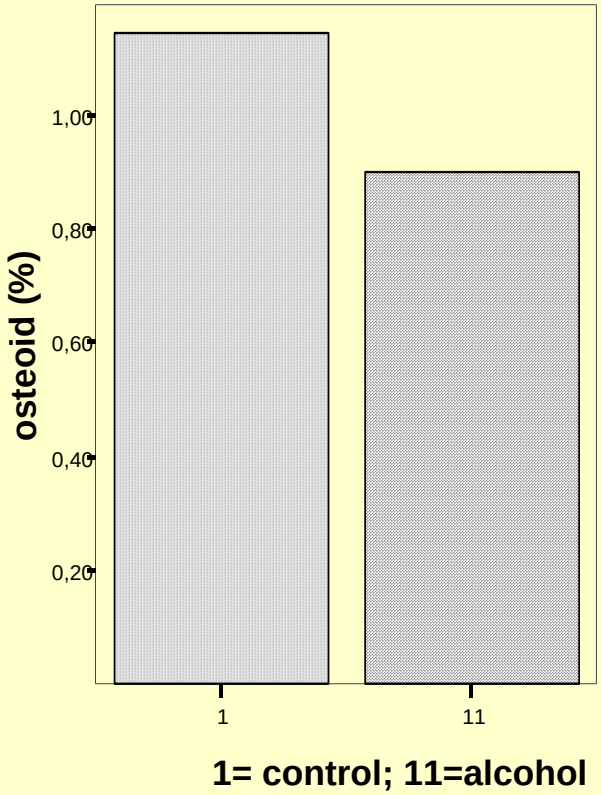
Las ratas alcohólicas muestran osteopenia

Volumen óseo trabecular

t=2.87; p=0.013

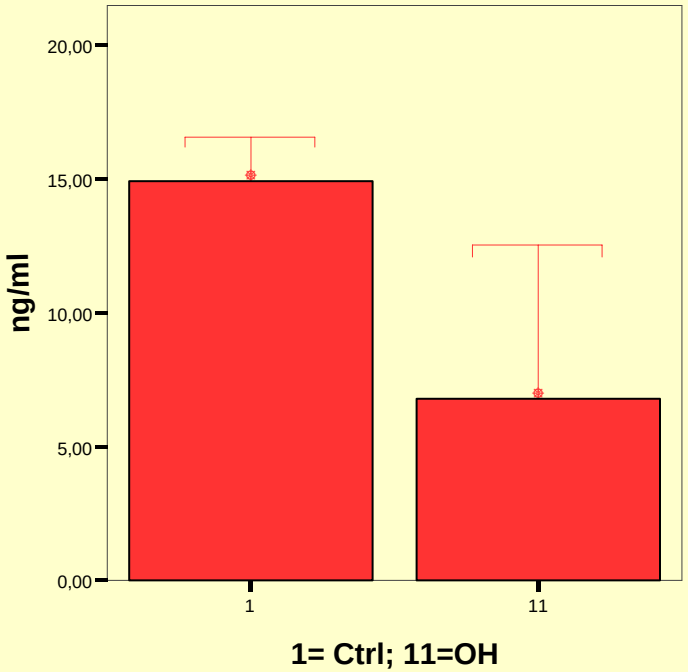


Síntesis disminuida en ratas



IGF-1

t=4.21; p<0.001

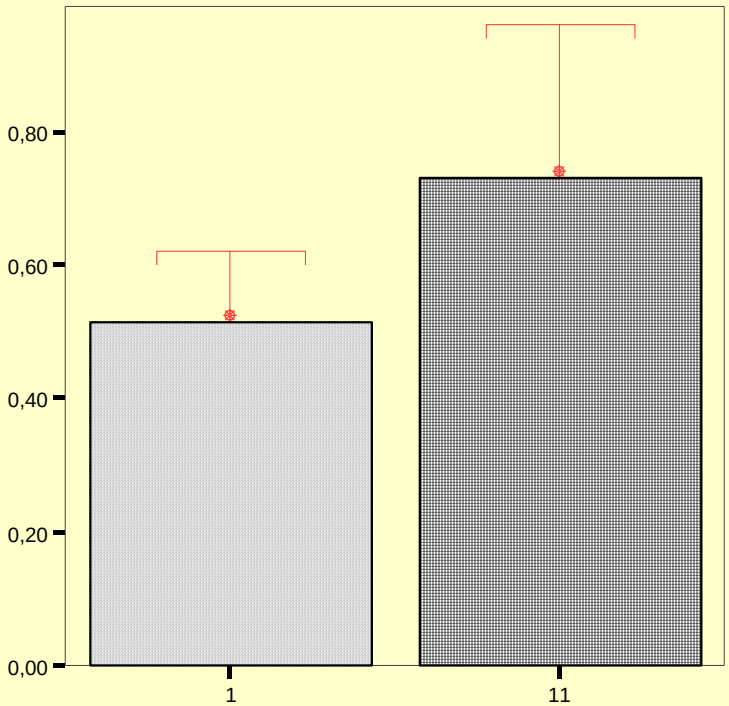


Caption

Reabsorción ósea

Excreción de hidroxiprolina/creatinina

t=2.14, p=0.06



1=ctrl; 11=OH

El alcohol retrasa el crecimiento de la rata

Saville and Lieber, J Nutr, 1965; 87:477-484

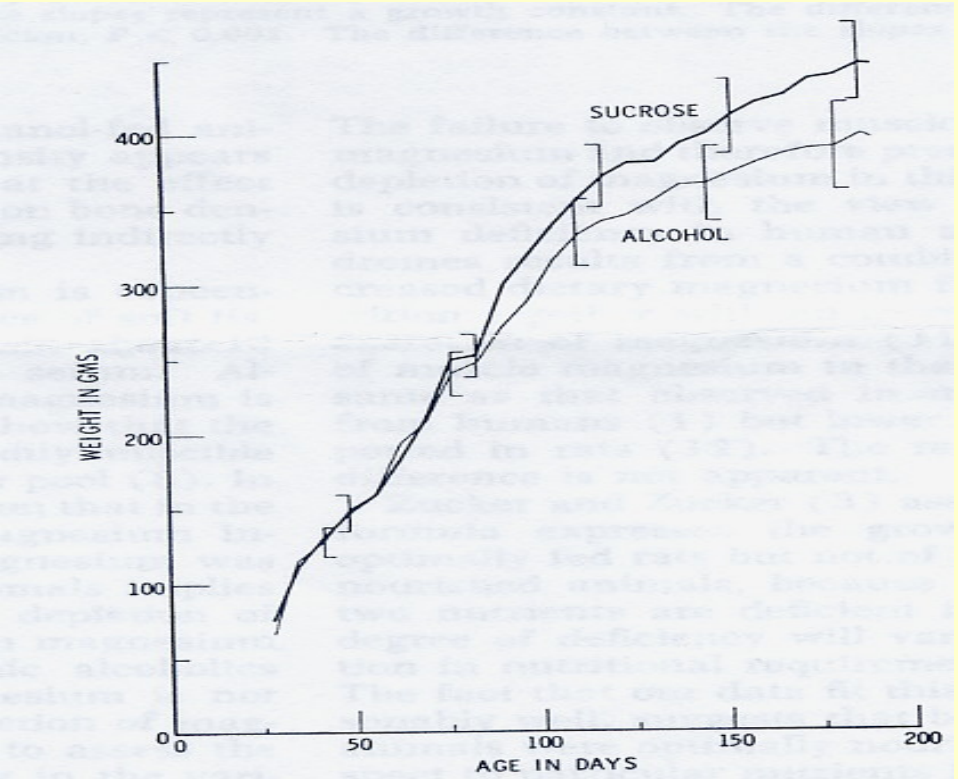
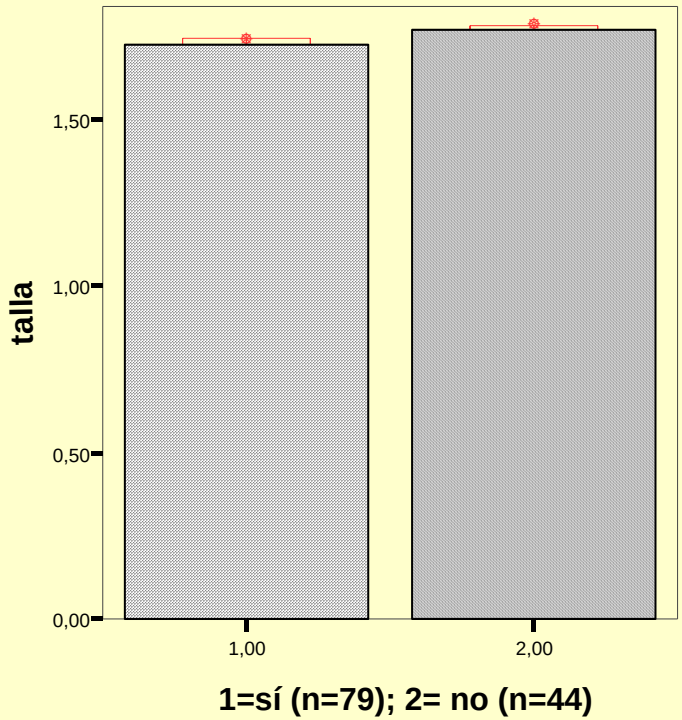


Fig. 6 The average weights of the sucrose-fed and alcohol-fed animals were plotted together against the age of the animals in days. The vertical bars represent plus or minus one standard error.

Estatura en varones que bebieron alcohol durante el desarrollo

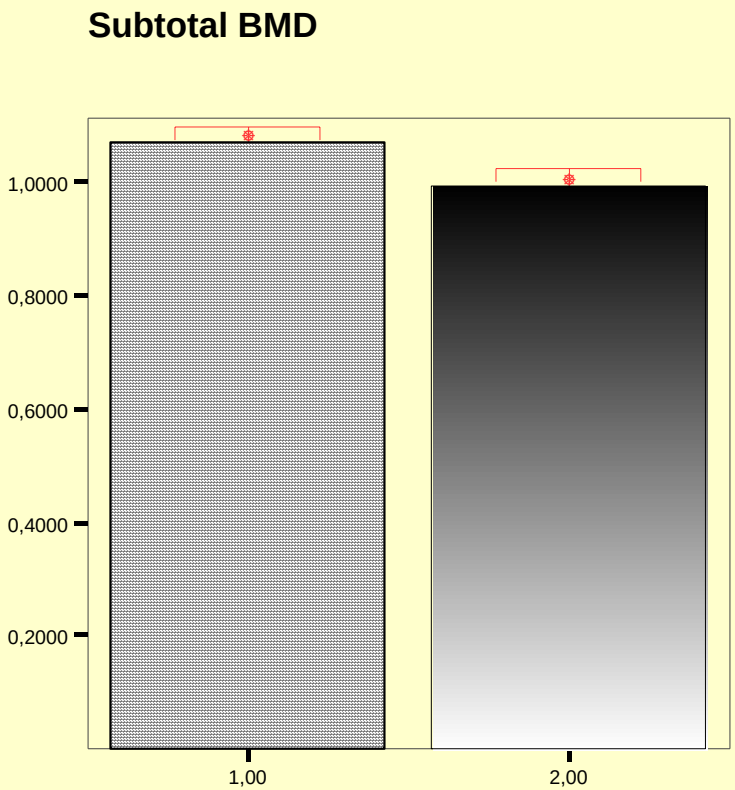
Estatura

t=3.41; p=0.001



Densidad mineral ósea (por DEXA) en alcohólicos y controles.

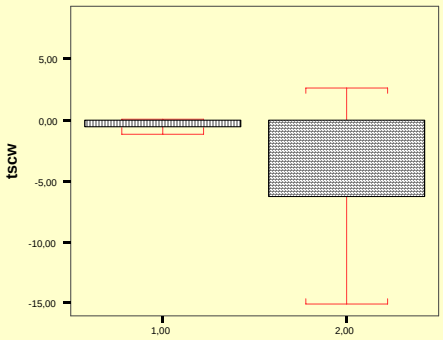
T=3.53, p<0.001



1= controles; 2=pacientes

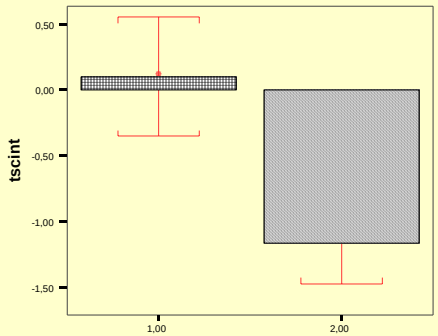
Diferencias entre alcohólicos y controles

T-score Ward. T=0.80; NS



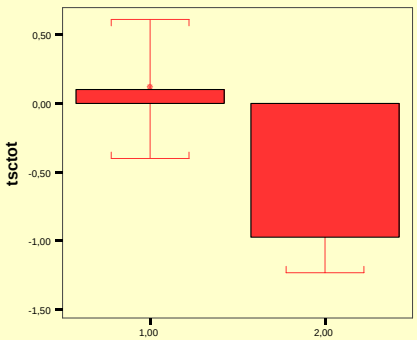
1= controles; 2=pacientes

t-score intertrocantéreo t=4.45; p<0.001



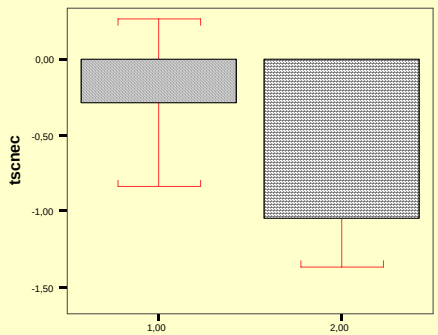
1= controles; 2=pacientes

T-score total. t=4.18, p<0.001



1= controles; 2=pacientes

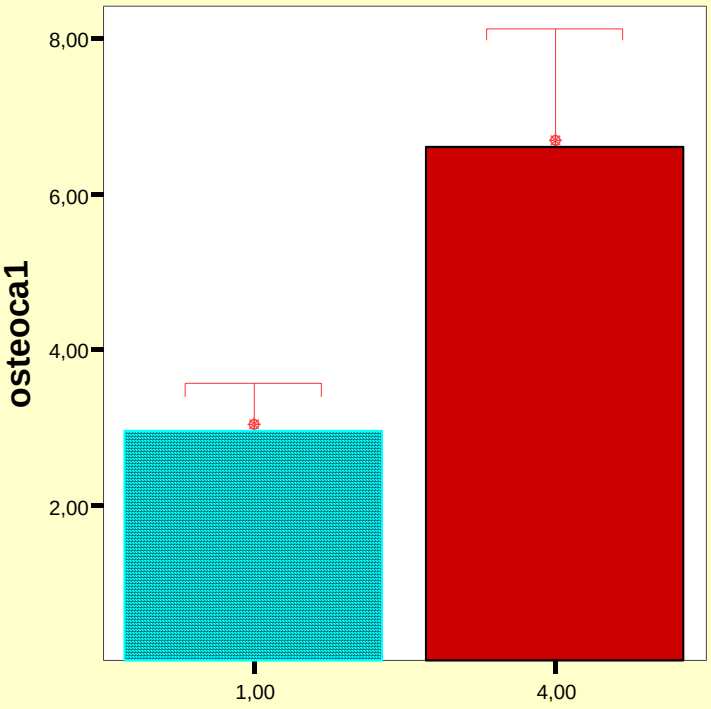
T-score en cuello t=2.51; p=0.014



1= controles; 2=pacientes

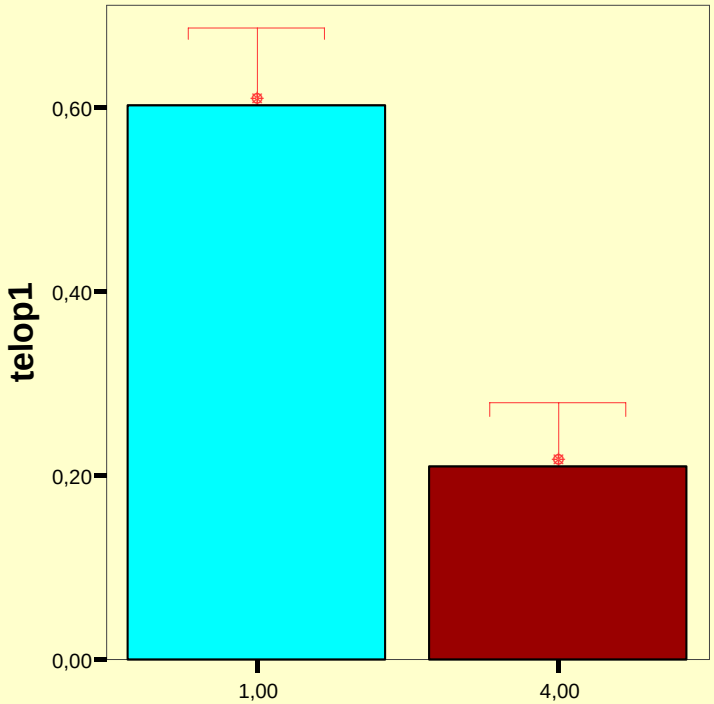
En este descenso de la masa ósea influyen tanto defectuosa síntesis como reabsorción incrementada

Osteocalcina t=4.76; p<0.001



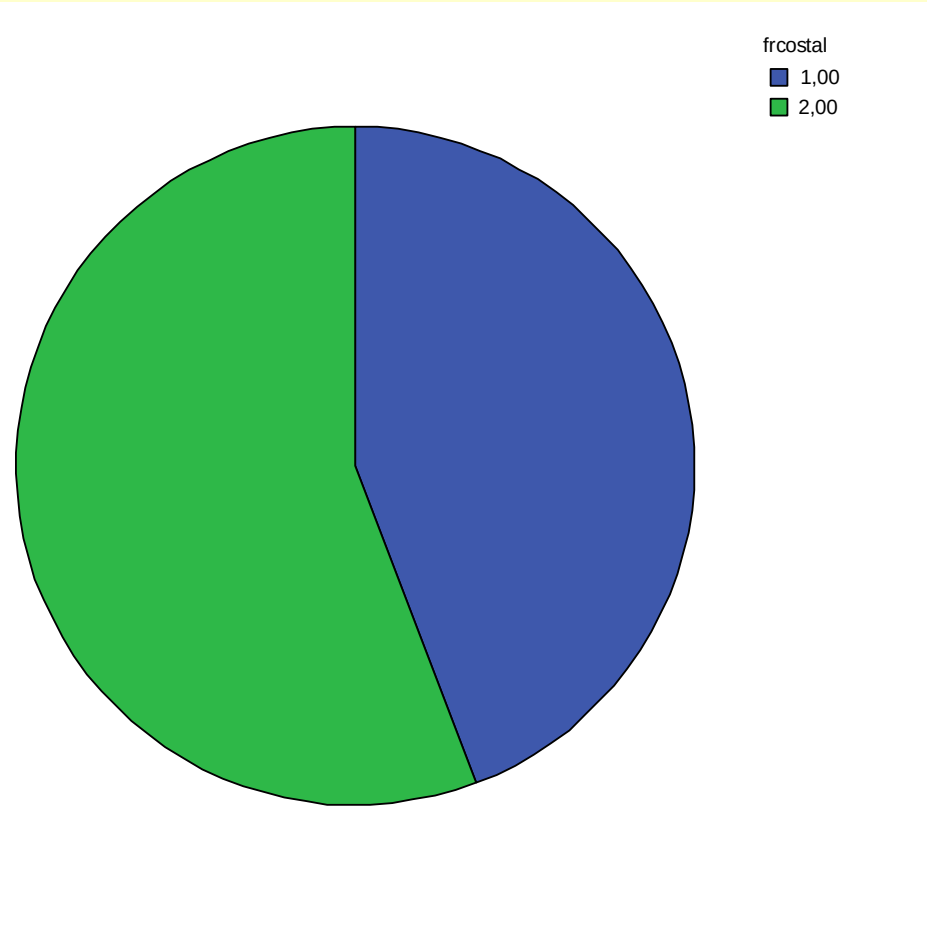
1= alcohólicos; 4= controles

Telopéptido N terminal, t=3.72; p<0.001



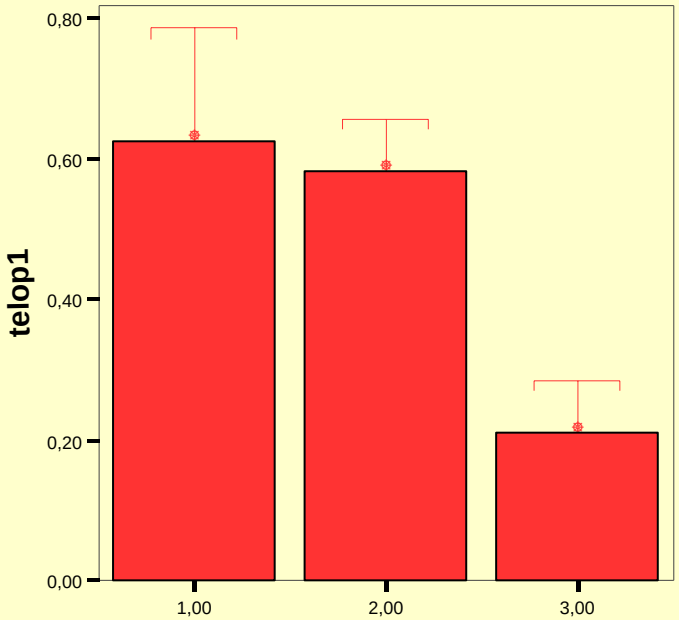
1= alcohólicos; 4=controles

Fractura costal presente en el 42% de alcohólicos

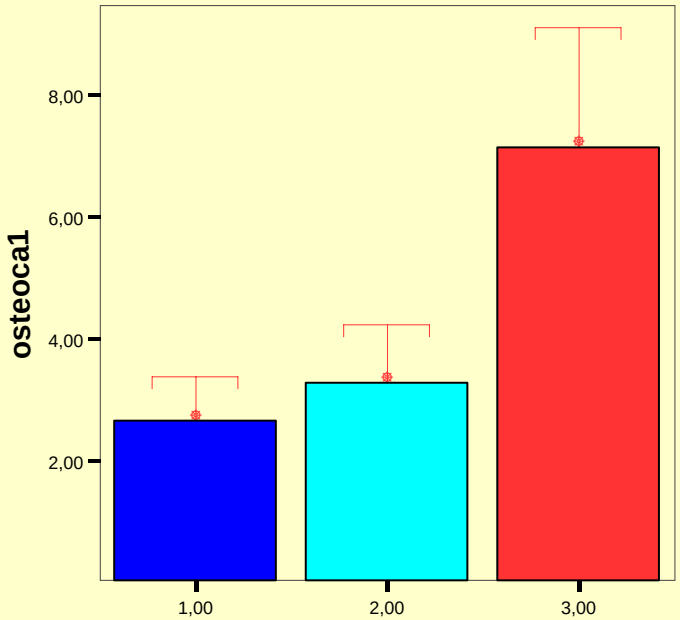


Los pacientes con fractura costal tienen tendencia a una mayor reabsorción ósea y menor síntesis

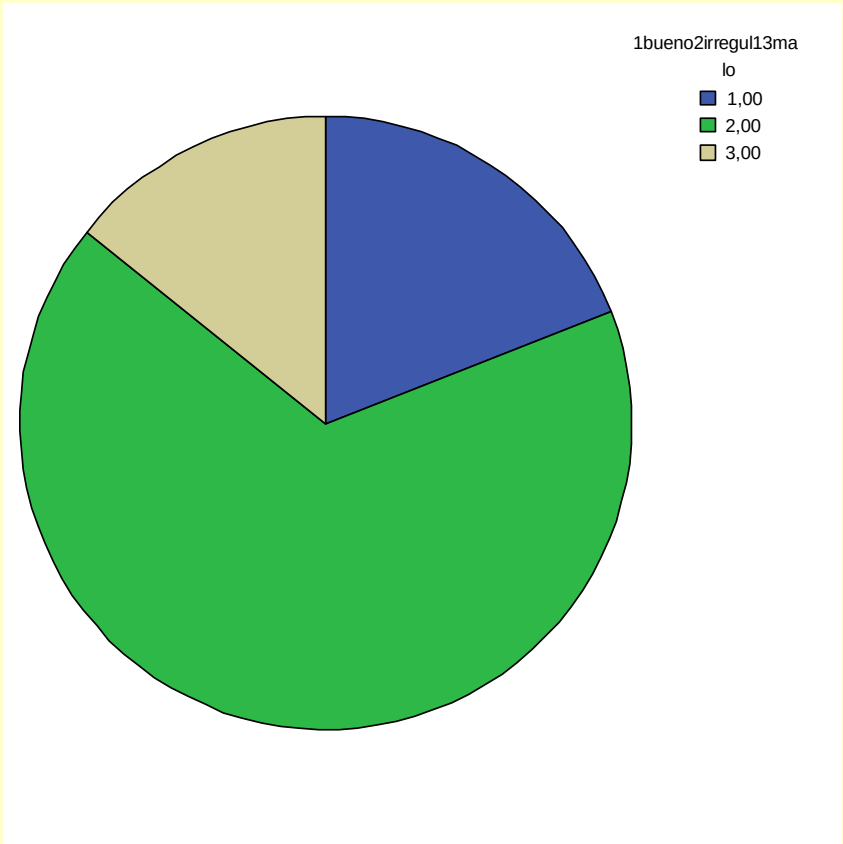
Telopéptido

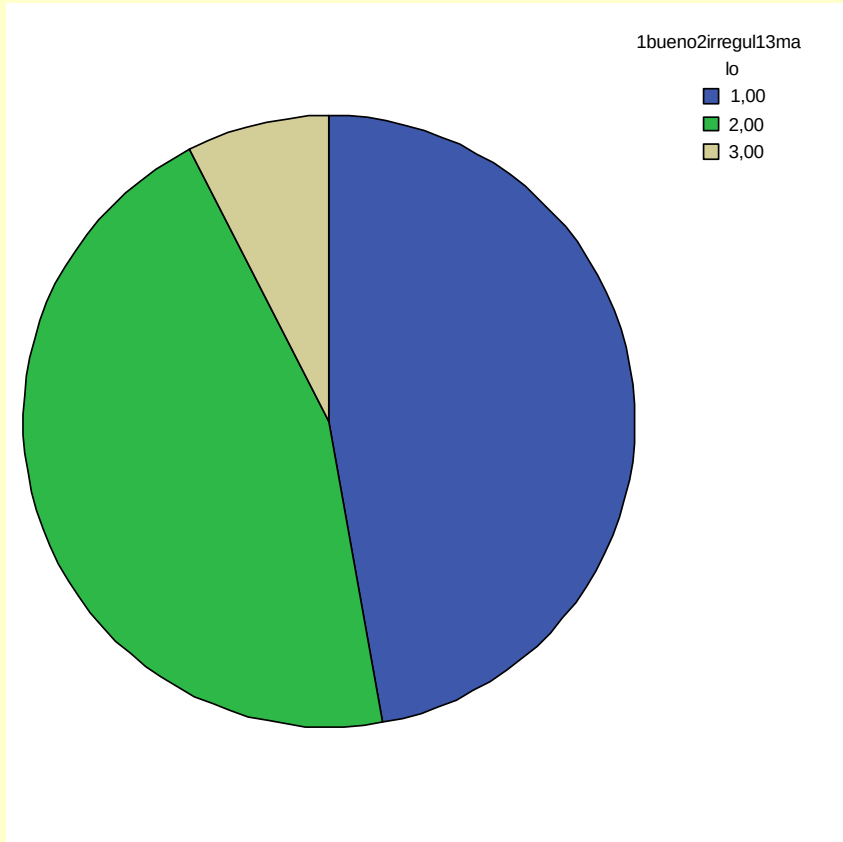


Osteocalcina

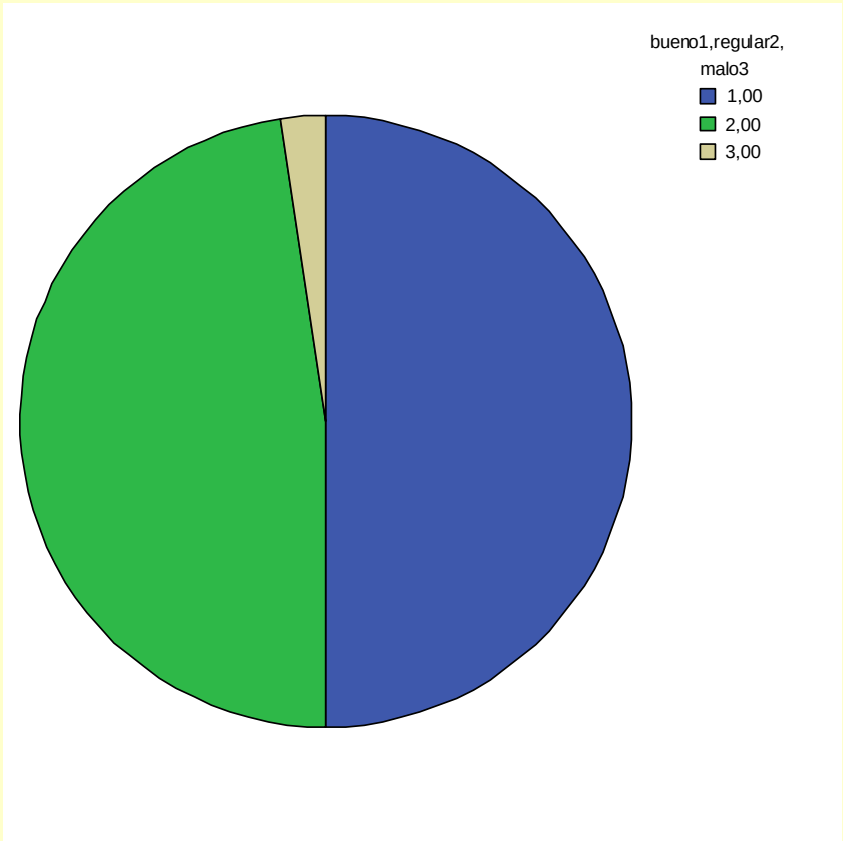


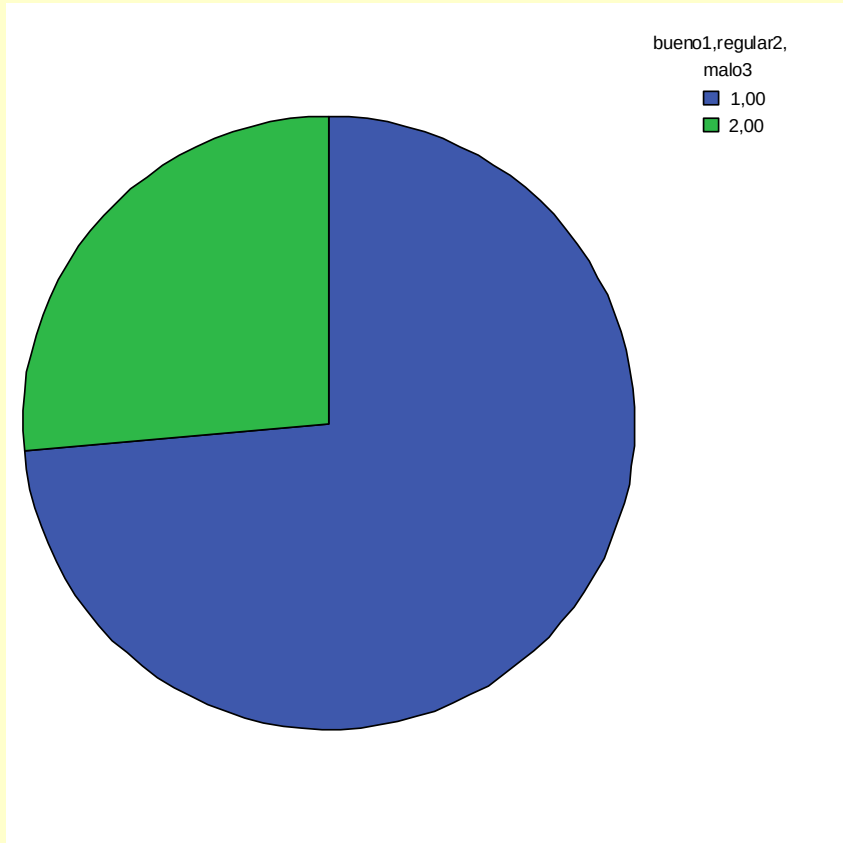
Fractura costal/hábito alimentación
X2=7.15; p=0.007



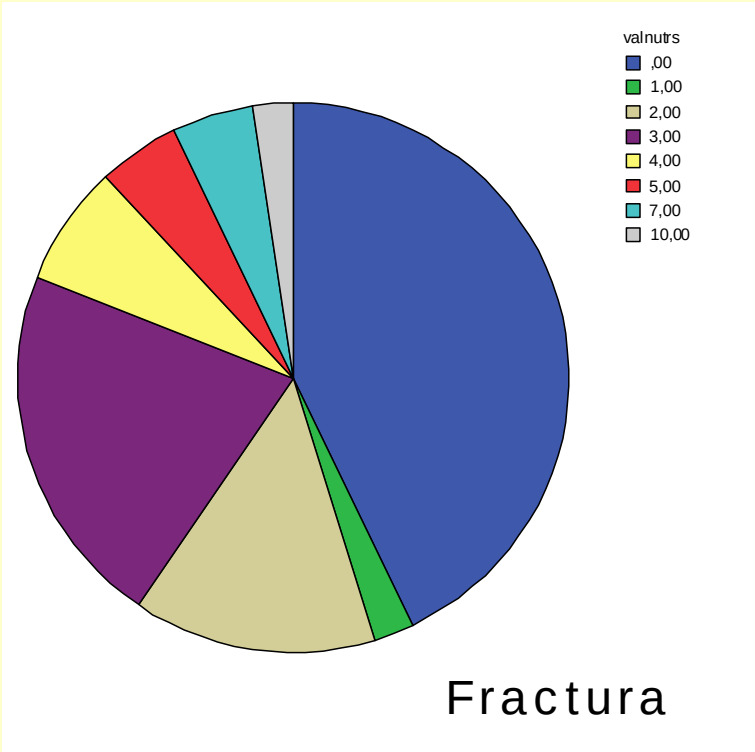


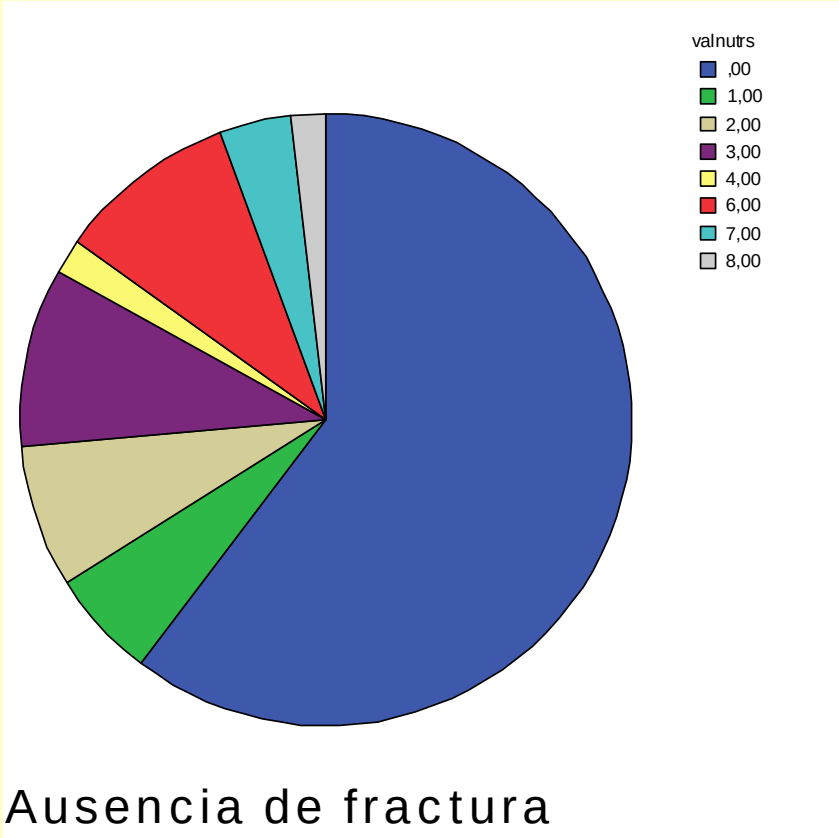
Fractura costal/entorno social
X2=6.1; p=0.014





Fractura costal/ Nutrición (p<0.001)





Nutrición y osteopenia en el alcohólico

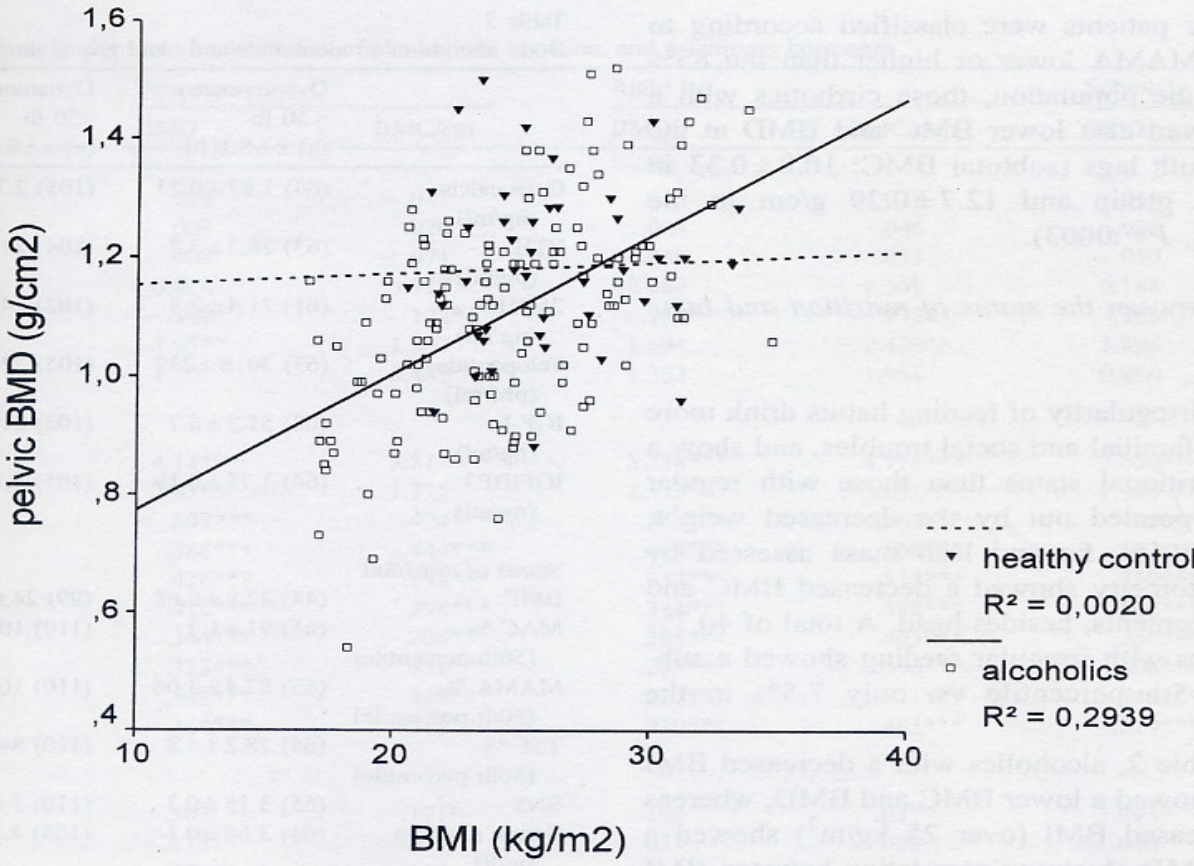
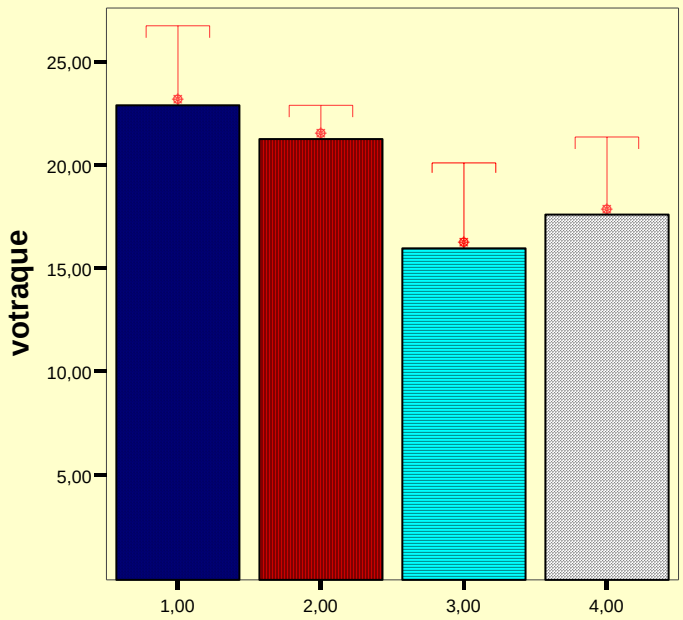


Fig. 1. Correlation between bone density and weight. Loss of weight is associated with more intense bone loss in alcoholics that in controls ($P = .004$).

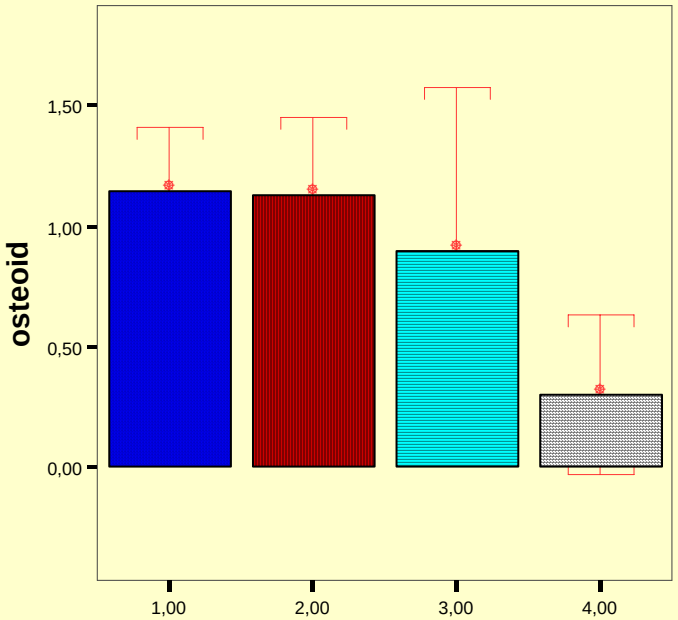
Papel de la malnutrición

masa ósea. F=4.69, p=0.002



1=control; 2=H;ipoproteico; 3=OH; 4=OH+hipoproteico

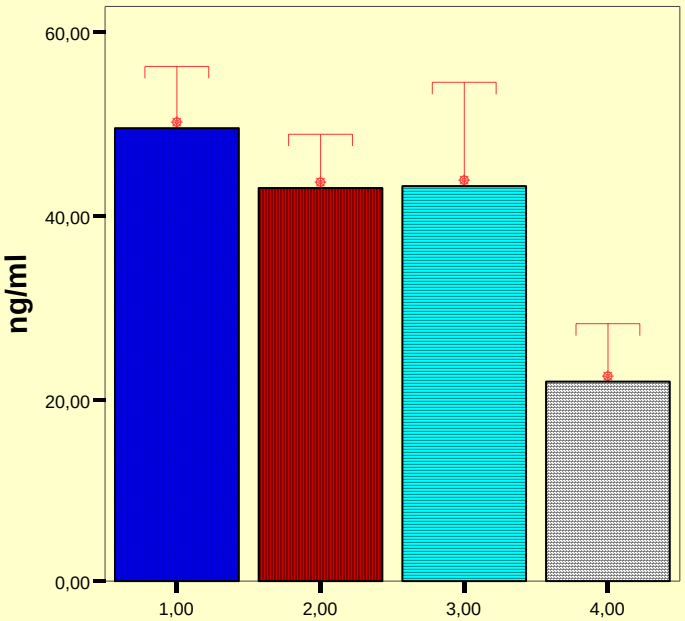
Osteoide. F=6.62, p=0.002



1=control; 2=Hipoproteico; 3=OH; 4=OH+hipoproteico

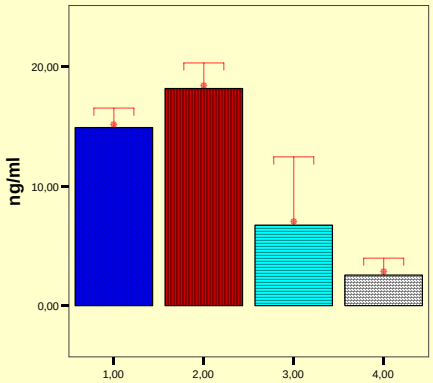
El efecto de la malnutrición es sobre todo porque disminuye la síntesis ósea

Osteocalcina. F=17.24, p<0.001



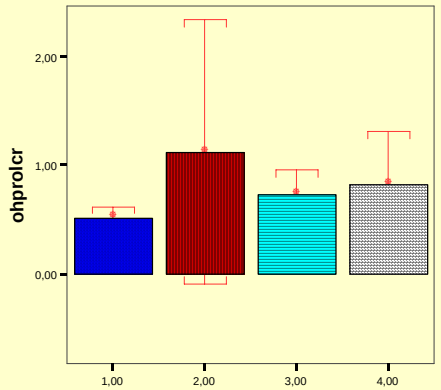
1=control; 2=Hipoproteico; 3=OH; 4=OH+hipoproteico

IGF-1; F=48.6; p<0.001



1=control; 2=Hipoproteico; 3=OH; 4=OH+hipoproteico

Excreción de hidroxiprolina; F=0.66; NS



1=control; 2=Hipoproteico; 3=OH; 4=OH+hipoproteico

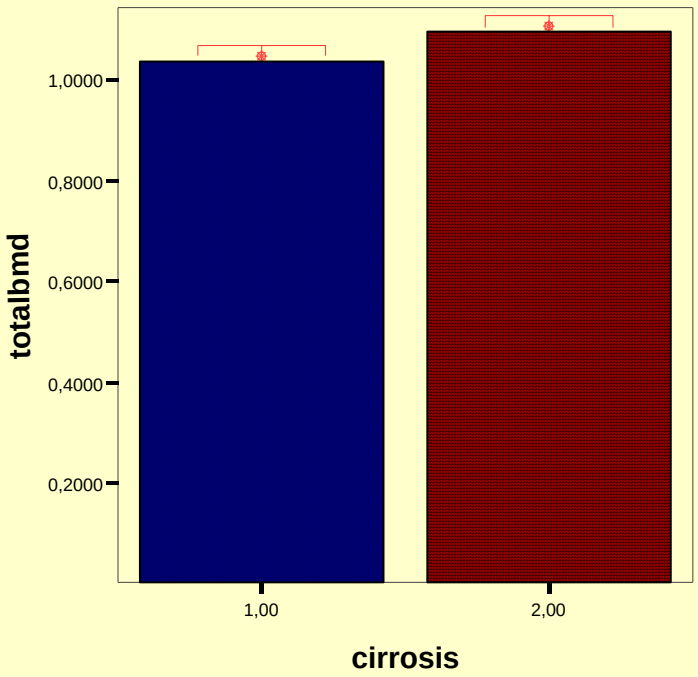
Malnutrición y osteoporosis

- Bourrin et al. Dietary protein restriction lowers plasma insulin-like growth factor 1 (IGF-1), impairs cortical bone formation, and induces osteoblastic resistance to IGF-1 in adult female rats. Endocrinology, 2000; 141: 3149-55

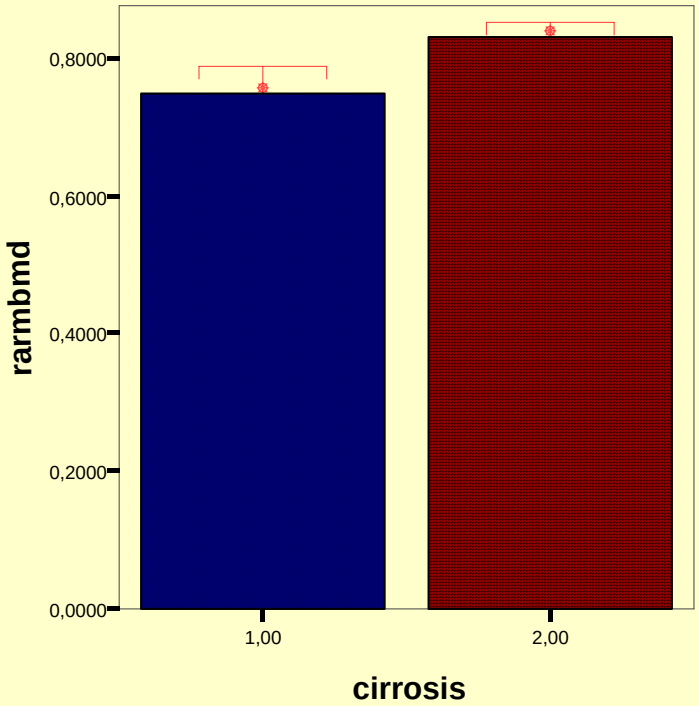
In cortical bone, dietary protein restriction impairs periosteal bone formation drifts whereas in cancellous bone, bone formation activity remains unchanged.Concurrently, plasma IGF-I and osteocalcin drop. In addition, dietary protein restriction induces an osteoblastic resistance to IGF-I in both envelopes. This may suggest that low plasma IGF-I and/or osteoblast resistance to IGF-I in response to low protein intake could play an important role in the impairment of periosteal osteoblasts. Moreover, these results suggest that therapeutic administration of IGF-I to subjects with a dietary protein deficiency may be ineffective on various organs, including bone.

La Cirrosis también influye

Total BMD, t=2.77; p=0.007

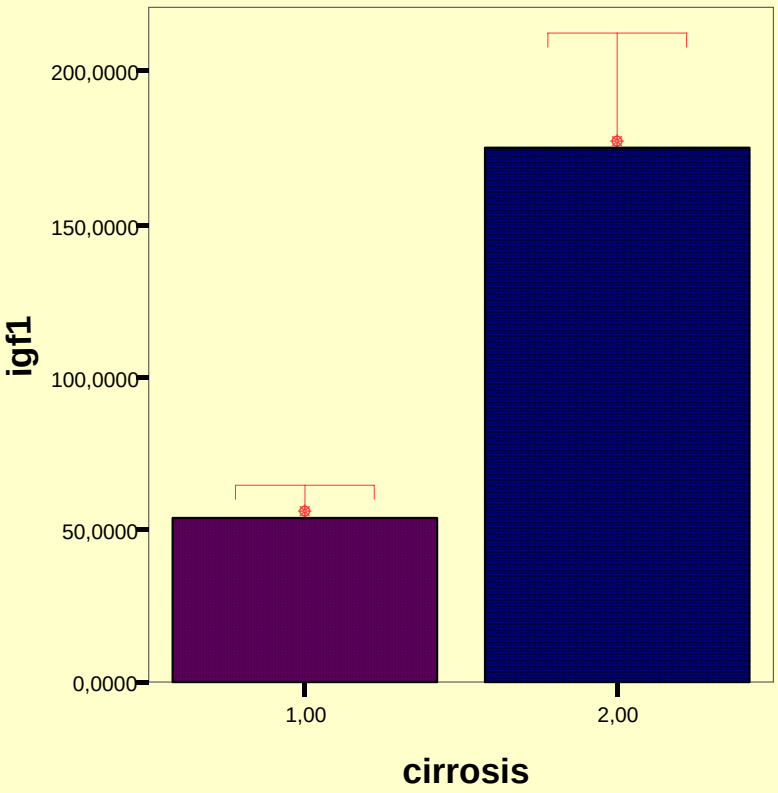


BMD brazo derecho; t=3.90; p<0.001

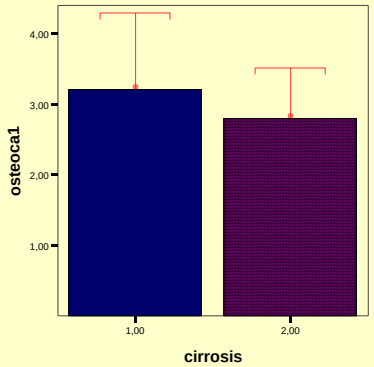


Síntesis defectuosa

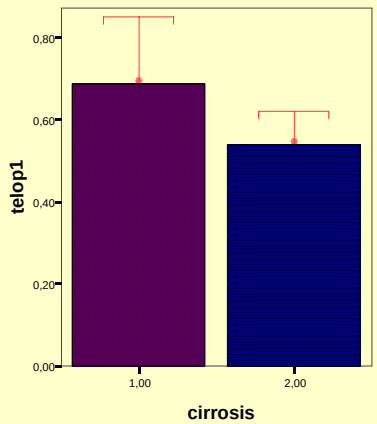
IGF-1 (ng/ml) ; p<0.001



Osteocalcina; NS



Telopéptido; t=1.74; NS



CONCLUSIÓN

- Por lo tanto, en el alcohólico sí hay una osteopatía; fundamentalmente osteoporosis, que obedece, al menos, a un efecto directo del alcohol, a la malnutrición acompañante, y a la concomitancia de otros procesos como la cirrosis.

TRATAMIENTO

- Nada específico
- Abstinencia

EFECTO DE LA ABSTINENCIA