Department of Epidemiology and Biostatistics

Final Exam 1982

1. EARLY DISCHARGE OF PRETERM INFANTS

EarlyDischarge at 2000g.

SUMMARY

A study was conducted to see if the mean discharge weight of preterm infants born at <2000g could be safely reduced. A study group* (21 infants) was discharged "early" at a mean weight of 2010g (1890-2190g) When 5 preset criteria were met: no medical problem; adequate weight gain; stable temperature control in room air; all feedings by nipple; mother ready to have the baby home. A control group[+] (l7 infants) was discharged at a mean weight of 2261g (2200-2400g). The duration of hospitalization for the "early" group was reduced by 11.6 days. At expected date of delivery, the weight was similar for both groups (3095 + 403g vs. 3146 + 453g) as well as length, head circumference and hemoglobin concentration. Follow up until expected date of delivery, showed no morbidity or mortality in either group.. Early discharge did not affect mothering confidence. This demonstrates that discharge to an adequate home environment of low, birth weight infants at 2000 + l00g is safe provided appropriate criteria are met and adequate follow up is available.

Reported Data
mean ± 1 SD
(range)

	"Early Discharge" Group	"Control" Group
Neonatal Data		
n	21	17
🔔, 🕮	10, 11	8, 9
birthweight (g)	1655 ± 214 (1000 – 1960)	1533 ± 293 (900 – 1940)
gestation (weeks)	32.1 ± 2 (27 –36)	31.2 ± 2 (28 - 34)
Discharge Data		
Weight (g)	2010 ± 84 (1890 – 2190)	2261 ± 59 (2200 – 2400)
Length of stay (days)	26.3 ± 15.2 (8 – 74)	37.9 ± 14.5 (15 – 61)
Data at Expected Date of Delivery (i.e. at 40 wks. Gestation)		
Weight	3095 ± 403 (2440 – 3910)	3146 ± 453 (2440 – 4195)

* born on odd days
[+] born on even days at L'Hôpital Sainte-Justine between October 1979 and June1980

1. Comment on the method of forming the two groups. Would a strict randomization (eg. By a coin toss) be expected to produce greater comparability in terms of neonatal data?

2. The authors performed a statistical test on the discharge weights, and found a significant difference between the two groups ($p < 0.001$). What was the purpose of doing this test?

3. What statistical tests, if any, is most suitable for comparing the lengths of hospital stay? What summary statistic would you use to describe the reduction?

4. What test is suitable for comparing weights at the expected date of delivery?

5. The follow-up until the expected date of delivery showed no morbidity or mortality in either group. Do you take this as adequate statistical evidence that early discharge is as "safe" as the more conservative discharge policy? If not, why not?

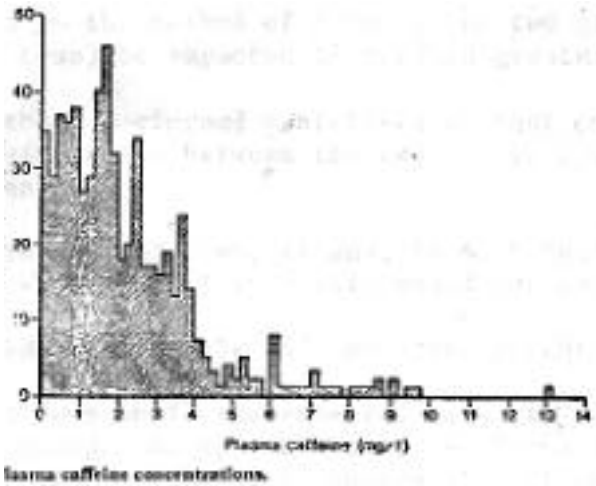
2. PLASMA CAFFEINE CONCENTRATIONS IN OUTPATIENTS

Sir, - Concern has been expressed over the possible role of excessive caffeine ingestion in the development of various diseases, including cancers of the urinary tract[1,2] and coronary heart disease arising from hyperlidaemia.[3] Excessive caffeine intake can also result in "caffeinism", a syndrome manifesting as an anxiety state with symptoms of irritability, headache, agitation, and nervousness.[4-6] Caffeine withdrawal is associated with headaches, irritability and drowsiness.[5,7,8] Both conditions may be misdiagnosed.

Caffeine is consumed largely in coffee, tea, and cola drinks but also in non-prescription analgesics, chocolate and "tonic" preparations, including "Lucozade".

Most data on the harmful effects of caffeine have involved surveys of the consumption of caffeine-containing beverages in which the number of cups drunk per day is the measure of caffeine intake. Gilbert[9,10] has questioned this approach since there are large differences in the caffeine content of beverages according to the method of preparation. Ground coffee beans produce a drink generally containing more caffeine than the drink prepared from instant coffee and tea. Published estimates of the caffeine content of cups of tea and coffee reveal marked differences from study to study.[9] Absorption rates of caffeine from different beverages also vary and peak plasma caffeine levels achieved after ingestion of a given amount of caffeine depend on the type of drink.[11] Some, though by no means all, of the clinical effects of caffeine are related to its concentration in the blood. It is therefore surprising that plasma levels of caffeine have not been extensively studied as an index of caffeine status.

1. Cole P. Coffee-drinking and cancer of the lower urinary tract. Lancet 1971;ii:1335-37.
2. Dunham LJ, Rabson AS, Stewart HL, Frank AS, Young JL. Rates, interview and pathology study of cancer of the urinary bladder in New Orleans, Louisiana. J Natl Cancer Inst 1968;41:683-709.
3. Little JA, Shanoff HM, Csima A, Yano R. Coffee and serum lipids in coronary heart disease. Lancet 1966;i:732-34.
4. Editorial. Coffee, should we stop drinking it? Lancet1981;I:256.
5. Greden JF. Anxiety or caffeinism : a diagnostic dilemma. Am J Psychiatry 1974; 131:1089-92.
6. Greden JF, Fontain P, Lubetsky M, Chamberlain K. Anxiety and depression associated with caffeinism among psychiatric patients. Am J Psychiatry 1978; 135:963-66.
7. Dreisbach RH, Pfeiffer C. Caffeine-withdrawal headache. J Lab Clin Med 1943; 20:212-19.
8. Goldstein A, Kaizer S, Whitby O. Psychotropic effects of caffeine in man IV: Quantitative and qualitative differences associated with habituation to coffee. Clin Pharmacol Ther 1969;10:489-97.
9. Gilbert RM, Marsham JA, Shweider M, Berg R. Caffeine content of beverages as consumed. Can Med Assoc J 1976; 114:205-08.
10. Gilbert RM. Caffeine as a drug of abuse. Res Ado Alcoholism Drug Problems 1976;3:49-176.
11. Marks V, Kelly JF. Absorption of caffeine from tea, coffee and coca-cola.



lasma caffeine concentrations.

Lancet 1973; i:827.

We have measured random plasma caffeine concentration in 600 adults (300 men and 300 women) who presented to this department for biochemical investigations as outpatients. The patients were not fasting and no restriction had been placed on their caffeine intake. Caffeine was measured by radioimmunoassay[12] with [8-^{3}H]-caffeine tracer and an antiserum kindly donated by Dr. C. E. Cook. The inter-batch coefficient of variation was 5.5%. Results are shown in the figure.

Values for plasma caffeine ranged from less than 0-2 mg to 13-1 mg/l. The mean concentration was 2-12 mg/l and there was no significant difference between men and women. In 21 men and 147 women (i.e., 5-8% of the sample), the plasma caffeine concentration was less than 0-2 mg/l, and 95% of the population was less than 5-6 mg/l. The mean peak plasma caffeine level one hour after consumption of two cups of strong coffee is about 5-3mg/l.[11] In the patients reported here, 18 men and 16 women, (5-7% of the sample), had values in excess of this, suggesting a high daily intake of caffeine.

We believe that these findings will be of interest to workers involved in epidemiological and clinical studies of caffeine.

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Plasma Concentration in Outpatients

1. What kind of sample is this? What kind of sample would you have selected? (Answer in terms of person, place and time)

2. What do the authors mean when they say the "interbatch coefficient of variation was 5.5%"?

3. Is the mean [of 2.12 mg/_] a good descriptor of the findings? Why/Why not? Give a one-sentence summary of your own (using guessed-at summary statistics if not available in text).

4. What statistical test would you use to compare concentrations in men and women?

5. Do you agree with the statement that 5.7% of the sample probably has a high daily intake of caffeine?

6. Do you find it surprising that plasma levels of caffeine have not been more extensively studied as an index of caffeine status? Do you see any advantage / disadvantage to this index