

Single-car road deaths—disguised suicides?

If many single-car, single-occupant road deaths are suicides, as is often claimed,¹ the epidemiological implications would be serious because most of these deaths are recorded as accidents and are consequently excluded from the suicide rate. We therefore examined the likelihood of such deaths being intentional and the effect on the reported suicide rate if they were suicides.

Hypothesis, methods, and results

If a substantial proportion of these deaths are deliberate (1) their seasonal variation and their age distribution would be similar to those of suicides; (2) they would occur independently of road conditions, while other single-car fatalities would be more likely to occur when road conditions are adverse. Information about single-car accidents for the two years 1969 and 1970 was obtained from the Transport and Road Research Laboratory, which provided details of the age and sex of the driver, the number of occupants, the road conditions, and the month of occurrence. The seasonal variation and age distributions of the road deaths and of suicides were compared, as were the incidences of single-car, single-occupant deaths and single-car, multiple-occupant deaths occurring in different road conditions.

A total of 528 single-car, single-occupant road deaths occurred in Great Britain in 1969 and 1970 (table). Both single-car, single-occupant deaths and suicides had a significant seasonal variation, but while the peak for suicide was in April that for the road deaths was in November. When the suicide distribution and that of road deaths were compared they differed significantly ($\chi^2=58.32$; $df=11$; $p<0.001$). The age distribution of single-car road deaths when the driver was alone and when passengers were present did not differ and were highest in the young age groups (15-24 and 25-34). In contrast, suicides increased with age. The age distributions of single-car, single-occupant road deaths and suicides differ significantly ($\chi^2=693.98$; $df=4$; $p<0.001$). Similar proportions of both categories of road deaths occurred when road conditions were dry, wet, or snow- or ice-covered. The distributions did not differ significantly ($\chi^2=1.89$; $df=2$; $p=0.39$). Adverse road conditions therefore affected both types of accident to a similar extent.

Comment

Single-car, single-occupant road deaths differed from suicides on the three characteristics examined. While undoubtedly a few were intentional deaths we concluded that the proportion was not large enough to affect the reported suicide rate. Even if all single-car, single-occupant deaths were added to the suicide figures the suicide rate in 1970 would be increased by only 7% (0.6 per 100 000). Moreover, since the decline in our national suicide rate between 1963 and 1970 represents some 1800 fewer deaths a year their addition would reduce the size of the fall by only 16%.

Much of the published work on this subject imputing a suicidal motive relies on very small samples, anecdotal evidence, or speculative argument. For example, Phillips³ has shown a significant rise in both motor vehicle accidents and suicides in California after newspaper reports of suicides, and infers that the reports stimulate "an imitative wave of suicides, some of which are disguised as accidents." Our conclusions, however, agree with those of Schmidt *et al.*⁴ who, after extensively investigating 300 single-vehicle fatalities in Baltimore (a six months' sample), found that only 2.7% were suicides. Our conclusions also agree with the finding of Tabachnick *et al.*⁵ that the psychological state of drivers involved in road accidents was "close to normal." Only

20% of them were similar to suicidal subjects in just one characteristic—recent increased alcohol intake.

We thank the Road and Transport Authority for information about single-car accidents. The investigation was first carried out as part of a study of suicide trends in Europe commissioned by the World Health Organisation (Regional Office for Europe).

¹ Pratt P. The lonely way to go. *Drive Magazine* 1977;Nov/Dec:26-32.

² Hewitt D, Milner J, Csima A, Pakula A. On Edwards' criterion of seasonality and a non-parametric alternative. *Br J Prev Soc Med* 1971;25:174-6.

³ Phillips DP. Suicide, motor-vehicle fatalities and the mass media: evidence towards a theory of suggestion. *AJS* 1979;84:1150-74.

⁴ Schmidt CW, Shaffer JW, Zlotowitz HI, Fisher RS. Suicide by vehicular crash. *Am J Psychiatry* 1977;134:175-8.

⁵ Tabachnick N, Gussen J, Litman R, Peck M, Tiber N, Wold C. *Accident or suicide?* Springfield, Ill: Thomas, 1973.

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Plasma exchange in herpes gestationis

Herpes gestationis (HG) is a severely itching, vesiculobullous skin affection during pregnancy and the puerperium. It is relatively rare (1:4000 pregnancies), usually starts during the second trimester of pregnancy, and becomes exacerbated shortly after parturition. It may relapse when menstruation returns or on taking oral contraceptives.¹ Diagnosis is facilitated by finding deposits of C3 along the basement membrane of the affected skin and also a specific HG factor in the serum, identified as IgG, which can bind complement in the dermo-epidermal transition area of normal skin.² In an attempt to prove the pathogenetic role of this factor Carruthers and Ewins³ performed plasma exchange in a patient who had flare-ups of herpes gestationis at the return of menstruation after childbirth. This prompted us to perform plasma exchange during pregnancy as a therapeutic measure in a patient with severe herpes gestationis.

Case report

The patient, a 40-year-old woman, developed herpes gestationis, preceded by and associated with severe pruritus, in the 20th week of her fifth pregnancy. The lesions, which included some large bullae, were mostly on the legs and abdomen. She had had no skin affection during her previous pregnancies. This fifth pregnancy was also complicated by hypertension. The clinical picture of herpes gestationis was confirmed by histological findings. Immunofluorescent examination of biopsy specimens taken from peribullous areas showed C3c and IgG deposits along the basement membrane. The HG factor was demonstrated in the serum by incubating a skin biopsy specimen from a healthy donor with the patient's serum, followed by

Monthly incidences of suicides and single-car, single-occupant road deaths for Great Britain, 1969 and 1970

	January	February	March	April	May	June	July	August	September	October	November	December	Total
<i>A: Single-car, single-occupant road deaths 1969 and 1970</i>													
No of deaths	40	44	29	37	38	29	44	37	47	55	70	58	528
Rank	6	7.5	1.5	3.5	5	1.5	7.5	3.5	9	10	12	11	
Maximum sum of ranks of 6 months (September-February) = 55.5, $p<0.05^*$													
<i>B: Suicides 1969 and 1970</i>													
No of suicides	752	662	820	873	850	779	790	714	700	687	731	610	8788
Rank	7	2	10	12	11	8	9	5	4	3	6	1	
Maximum sum of ranks of 6 months (March-August) = 55, $p<0.05^*$													

*Hewitt *et al.*²

Difference between A and B: $\chi^2=58.32$, $df=11$, $p<0.001$.

immunofluorescent examination. The factor was identified as IgG and was able to activate C3 *in vitro*.

Symptomatic treatment with antihistamines and pyridoxine was ineffective, and systemic treatment with corticosteroids was inadvisable in view of the hypertension. Plasma exchange was therefore carried out. In three exchanges during the 26th week of pregnancy a total of 81 plasma were replaced with human albumin solution and Haemaccel. Within 24 hours of the first exchange the pruritus subsided significantly and no new lesions developed. After three exchanges the lesions had virtually disappeared and C3c and IgG were no longer present in a skin biopsy specimen. Pruritus recurred and new skin lesions developed during the 37th week of pregnancy, when the patient gave birth to a healthy boy weighing 2880 g. A very severe exacerbation occurred within 48 hours of parturition, and the HG factor was again found in the maternal serum as well as in venous umbilical cord blood. The infant had no skin lesions. After another plasma exchange the pruritus, skin lesions, and HG factor rapidly disappeared. Four exchanges were made within a week and 12 l of plasma were replaced. A flare-up three weeks post-partum necessitated two more exchanges.

Comment

As has been shown in Goodpasture's syndrome and in myasthenia gravis, conditions based on the presence of autoantibodies responded well to plasma exchange.⁴ In herpes gestationis a plasma factor (IgG) seems to be important in the pathogenesis of the pruritus and the skin lesions. Corticosteroids are given reluctantly in pregnancy, particularly in the presence of hypertension or toxæmia. Our case shows that the pruritus and skin lesions of herpes gestationis respond rapidly to plasma exchange and C3c and IgG deposits are no longer present in the skin. Plasma exchange is a safe and simple procedure, even in pregnancy.

- 1 Carruthers JA, Black MM, Ramnarain N. Immunopathological studies in herpes gestationis. *Br J Dermatol* 1977;**96**:35.
- 2 Provost TT, Tomasi TB. Evidence for complement activation via the alternate pathway in skin disease. Herpes gestationis, systemic lupus erythematosus and bullous pemphigoid. *J Clin Invest* 1973;**52**:1179.
- 3 Carruthers JA, Ewins AR. Herpes gestationis: studies on the binding characteristics, activity and pathogenetic significance of the complement-fixing factor. *Clin Exp Immunol* 1978;**31**:38-44.
- 4 Lockwood CM. An overview. *Plasma Ther* 1979;**1**:1-12.

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Accuracy of computed tomography in diagnosis of fatty liver

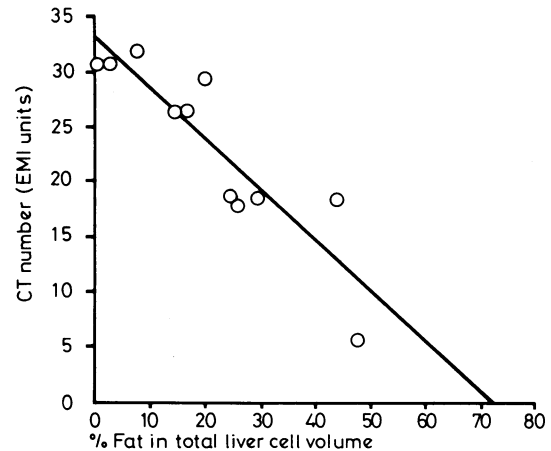
Fatty infiltration of the liver can be diagnosed with computed tomography (CT) because of a general decrease in the radiological density of the liver. This change can be quantified by measuring the CT number of the liver, and studies in rabbits¹ and cadavers² have shown a decrease in CT number with increasing fat content of the liver. To assess the accuracy of CT in the diagnosis of fatty infiltration in clinical practice, liver CT numbers were compared with histological and biochemical estimates of liver fat concentration obtained from biopsy samples.

Patients, methods, and results

Eleven patients (nine men, two women; mean age 43.8) with suspected fatty liver were studied. Percutaneous liver biopsies were performed using Menghini needles, and samples were examined histologically by two experienced observers working independently. The relative volume of fat vacuoles as a percentage of total liver-cell volume was estimated using a point-count technique (242 counts per sample). Liver triglyceride concentration was measured chemically in 10 of the 11 biopsy specimens according to the method of Cramp and Robinson.

Within 24-48 hours of biopsy an EMI CT5005 whole-body scanner was used at 140 kVp to obtain an artefact-free scan of the liver, and the CT

number of a region of interest on the lateral aspect of the right lobe of the liver was measured in EMI units. Histological, biochemical, and radiological assessments were performed independently. Two patients with alcoholic hepatitis and one with cirrhosis showed evidence of non-uniform fat deposition. In two cases the right lobe was 4-5 EMI units lower than the left and in the other case irregular fat deposition was seen within the posterior aspect of the right lobe. There was a strong inverse correlation between liver CT number and fatty change as observed histologically (figure; $r = -0.9$, $p < 0.001$). A significant inverse correlation was also observed between CT number and liver triglyceride concentration ($r = -0.57$; $p < 0.05$).



Liver CT number at 140 kVp and percentage of fat in total liver cell volume in 11 patients with suspected fatty liver.

Comment

CT may provide a non-invasive technique for estimating liver fat content with an accuracy comparable to histological and biochemical techniques. It may be particularly valuable in patients with severe fatty liver in whom liver biopsy is prevented by a coagulation disorder. Follow-up CT scans may also be helpful in monitoring fat clearance from the liver during treatment.

Non-uniform fat deposition as seen in three of our patients has been described⁵ and is a potential source of error. CT numbers are also subject to errors caused by changes in the frequency of x-rays as they traverse the patient and changes in other factors, but with attention to detail these can be minimised.

The technique is brief, requiring only a single 20-second scan and no oral contrast medium or muscle relaxant, and may prove a useful alternative to liver biopsy.

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- 4 Cramp DG, Robertson G. The fluorimetric assay of triglycerides by a semiautomated method. *Anal Biochem* 1968;**25**:246-51.
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