Papers

Co-proxamol and suicide: a study of national mortality statistics and local non-fatal self poisonings

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Abstract

Objectives To examine the incidence of suicides due to co-proxamol compared with tricyclic antidepressants and paracetamol, and to compare fatality rates for self poisonings with these drugs.
Design Analysis of routinely collected national and local data on suicides and self poisonings.
Setting Records of suicides in England and Wales 1997-9; non-fatal self poisonings in Oxford District 1997-9.
Data sources Office for National Statistics and Oxford monitoring system for attempted suicide.
Main outcome measures Incidence of suicides with co-proxamol or tricyclic antidepressants or paracetamol. Ratios of fatal to non-fatal self poisonings.
Results Co-proxamol alone accounted for 5% of all suicides. Of 4162 drug related suicides, 18% (766) involved co-proxamol alone, 22% (927) tricyclic antidepressants alone, and 9% (368) paracetamol alone. A higher proportion of suicides in the 10-24 year age group were due to co-proxamol than in the other age groups. The odds of dying after overdose with co-proxamol was 2.3 times (95% confidence interval 2.1 to 2.5) that for tricyclic antidepressants and 28.1 times (24.9 to 32.9) that for paracetamol.
Conclusions Self poisoning with co-proxamol is particularly dangerous and contributes substantially to drug related suicides. Restricting availability of co-proxamol could have an important role in suicide prevention.

Introduction

Restriction of availability of means for suicide is a key strategy for prevention of suicide.[1 2] This approach has been shown to be effective by the reduction in deaths after recent UK legislation that reduced pack sizes of analgesics[3] and previous restriction of prescribing toxic sedatives.[4]

Co-proxamol is a prescription only analgesic that combines paracetamol and dextropropoxyphene. Respiratory depression and consequent death may occur with overdose due to ingestion of excessive dextropropoxyphene.[5 6] Concern about the number of such deaths was expressed in the *BMJ* as long ago as 1980.[7]

We compared the numbers of suicides from poisoning with co-proxamol, paracetamol, and tricyclic antidepressants (these being relatively common methods in poisoning suicides) in England and Wales. We also compared fatal and non-fatal self poisonings to estimate the relative fatality of overdoses with these three drugs.

Methods

Mortality data—We obtained data from the Office for National Statistics on deaths in people aged 10 years and over in England and Wales for 1997-9. We considered those deaths that involved drugs and medicines in which a verdict of suicide (international classification of diseases, ninth revision, codes E950.0-E959.5) or undetermined cause (codes E980.0-E989.5) was recorded. Deaths involving co-proxamol, paracetamol, or tricyclic antidepressants were identified by searching for all variants of description of these drugs in the textual fields for cause of death.

Non-fatal self poisonings—Non-fatal self poisonings with co-proxamol, paracetamol or tricyclic antidepressants alone for 1997-9 were identified through the Oxford monitoring system for attempted suicide.[8] This records all presentations to the general hospital in Oxford of deliberate self harm. The comprehensiveness and reliability of the data has previously been shown.[9] The pattern of drugs used for self poisoning in the Oxford area is similar to that seen elsewhere.[10]

Statistical analyses—We used Poisson regression to compute estimates, confidence intervals, and comparison of death rates and presentation rates according to drug, age, and sex. Odds ratios for the relative lethality of different drugs were calculated by computing ratios of relative death rates to relative non-fatal presentation rates. Confidence intervals for relative lethality were calculated with Monte Carlo methods. We used Stata release 7.0 (StataCorp, College Station, TX, USA) for the analyses.

Results

In England and Wales in 1997-9, 15 299 deaths were recorded as suicides or open verdicts. Of these, 4162 (27%) were drug related (such as self poisoning). There were more drug related deaths in men than in women, although a higher proportion of women who killed themselves did so by self poisoning (1835/3762 (49%) *v* 2327/11 537 (20%) in men).

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Deaths due to self poisoning with co-proxamol

There were 766 deaths due to poisoning with co-proxamol alone during the three year period (255 per year, 95% confidence interval 238 to 274). These comprised 18% of all drug related deaths (table 1) and 5% of all suicides. After tricyclic antidepressants co-proxamol was the second most common prescribed drug used for suicide. More co-proxamol poisoning deaths occurred in men than in women (P=0.01). Although the total numbers of deaths increased with age, the proportion due to co-proxamol poisoning was significantly higher (24%) in 10-24 year-olds (P=0.01). In addition, there were 171 deaths in which co-proxamol was used with another drug.

Comparison with deaths due to tricyclic antidepressants and paracetamol

There were an average 309 (289 to 330) deaths per year due to tricyclic antidepressants alone. These deaths comprised 22% of all drug related suicides, significantly more than for co-proxamol alone ($P < 0.001$). Compared with men, women were more likely to use tricyclics than co-proxamol (P=0.02). Use of tricyclics was similar across age groups (P=0.07). In 270 deaths tricyclics were taken with other drugs.

An average 123 (110 to 136) deaths per year were due to paracetamol alone, and this comprised 9% of all drug related deaths (table 1). Compared with men, women were more likely to use paracetamol that co-proxamol (P=0.02), and its use increased more clearly with age ($P < 0.001$). In 128 deaths paracetamol was taken with other drugs.

Fatal and non-fatal self poisonings

Table 2 gives details of annual numbers of non-fatal self poisonings. Non-fatal tricyclic antidepressant and paracetamol overdoses presented 2.7 (2.1 to 3.6) times and 13.5 (10.7 to 17.0) times more frequently than non-fatal co-proxamol overdoses, respectively.

Comparison of ratios of death and non-fatal presentations suggests that the odds that an overdose will be fatal with co-proxamol is 2.3 (2.1 to 2.5) times higher than for tricyclic overdoses and 28.1 (24.9 to 32.9) times higher than for paracetamol overdoses.

Table 1 Details of suicides by co-proxamol, tricyclic antidepressants, and paracetamol, England and Wales, 1997-9. Figures are numbers of suicides (percentage of all drug related suicides in age group), unless stated otherwise

	Drugs used for self poisoning			All drug related suicides plus open verdicts
	Co-proxamol alone	Tricyclic antidepressants alone	Paracetamol alone	
Male				
Age (years):				
10-24	55 (23.8)	53 (22.9)	8 (3.5)	231
25-34	112 (19.2)	115 (19.8)	29 (5.0)	582
35-54	155 (15.8)	221 (22.6)	77 (7.9)	978
≥55	97 (18.1)	63 (11.8)	59 (11.0)	536
Total	419 (18.0)	452 (19.4)	173 (7.4)	2327
Female				
Age (years):				
10-24	42 (25.3)	51 (30.7)	13 (7.8)	166
25-34	45 (14.6)	72 (23.4)	29 (9.4)	308
35-54	118 (17.2)	176 (25.6)	75 (10.9)	688
≥55	142 (21.1)	176 (26.2)	78 (11.6)	673
Total	347 (18.9)	475 (25.9)	195 (10.6)	1835
Total				
Age (years):				
10-24	97 (24.4)	104 (26.2)	21 (5.3)	397
25-34	157 (17.6)	187 (21.0)	58 (6.5)	890
35-54	273 (16.4)	397 (23.8)	152 (9.1)	1666
≥55	239 (19.8)	239 (19.8)	137 (11.3)	1209
Total	766 (18.4)	927 (22.3)	368 (8.8)	4162

Discussion

In England and Wales co-proxamol is the second most common prescribed drug that people use to commit suicide and is used as the sole method in 18% of all drug related suicides for 1997-9 and 5% of all total suicides. Comparison with non-fatal poisonings indicates that overdoses of co-proxamol are more likely to result in death than overdoses with tricyclic antidepressant or paracetamol. Death can result from an overdose with relatively few tablets, especially when alcohol is also taken.[5 6] Given earlier concerns about deaths from poisoning with to co-proxamol[5 7] the absence of specific initiatives to try to reduce them is surprising and should now be addressed.[1]

Factors to be considered in tackling this problem are that co-proxamol is a prescription only drug, patients with pain already have an increased risk of suicide,[11 12] the risk of self poisoning is not restricted to the person for whom the drug is prescribed,[13] and, as with paracetamol,[14] availability within a household may be an influential factor, especially in impulsive overdoses. Also, while co-proxamol is regarded as an important analgesic,[15 16] a systematic review has shown that it is no more effective than paracetamol for short term relief of pain.[17]

Reducing the availability of drugs used for suicide can result in a reductions in deaths,[3 4] and availability of co-proxamol should be restricted. Clinicians must be informed about the risks of overdose of co-proxamol, both for their patients and others in the household, and large quantities should not be prescribed without good reason. Patients should be instructed to dispose of unwanted supplies. Finally, clinicians should consider whether there are other equally effective but less dangerous methods of pain relief, such as combining a safer analgesic with an opiate while maximal relief is required.

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Table 2 Comparison of numbers (95% confidence intervals) of drug related suicides and undetermined deaths in England and Wales with non-fatal self poisoning in Oxford, 1997-9, for co-proxamol, paracetamol, and tricyclic antidepressants (used alone). Odds ratios shown with 95% confidence intervals

	Co-proxamol	Tricyclic antidepressants	Paracetamol
Deaths in England and Wales/year	255 (238 to 274)	309 (289 to 330)	123 (110 to 136)
Non-fatal self poisonings in Oxford/year	26 (21 to 33)	73 (64 to 83)	356 (335 to 378)
Odds ratio for relative lethality compared with paracetamol	28.1 (24.9 to 32.9)	12.3 (11.5 to 13.2)	1.0
Odds ratio for relative lethality compared with tricyclics	2.3 (2.1 to 2.5)	1.0	0.08 (0.08 to 0.09)

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What is already known on this topic

Co-proxamol is dangerous in overdose

Restricting availability of specific means of suicide can reduce deaths

What this study adds

Fatal overdoses due to co-proxamol are the second most frequent means of suicide with prescribed drugs in England and Wales

The risk of death associated with co-proxamol overdose seems to be higher than for either tricyclic antidepressants or paracetamol

Contributors: KH initiated the study, SS coordinated the data collection, and JD conducted the statistical analyses. All authors contributed to the study design, interpretation of the results, and preparation of the report. KH is guarantor for the study.

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Competing interests: None declared.

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ELPS

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Association between antidepressant prescribing and suicide in Australia, 1991-2000: trend analysis

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Abstract

Objective To examine the association between trends in antidepressant prescribing and suicide rates in Australia for 1991-2000.

Design Analysis of databases of suicide and rates of antidepressant prescribing according to age and sex.

Setting Australian Bureau of Statistics data, sales data from the Australian pharmaceutical industry, prescribing data in general practice.

Subjects Men and women aged 15 years and over in 10 year age groups.

Main outcome measures Trends in suicide rates and trends in antidepressant prescribing. Association measured by Spearman's rank correlations.

Results While overall national rates of suicide did not fall significantly, incidence decreased in older men and women and increased in younger adults. In both men ($r_s = -0.91$; $P < 0.01$) and women ($r_s = -0.76$; $P < 0.05$) the higher the exposure to antidepressants the larger the decline in rate of suicide.

Conclusions Changes in suicide rates and exposure to antidepressants in Australia for 1991-2000 are significantly associated. This effect is most apparent in older age groups, in which rates of suicide decreased substantially in association with exposure to antidepressants. The increase in antidepressant prescribing may be a proxy marker for improved overall management of depression. If so, increased prescribing of selective serotonin reuptake inhibitors in general practice may have produced a quantifiable benefit in population mental health.

Introduction

In many developed countries the number of prescriptions for antidepressants increased steeply during the 1990s, after the introduction of selective serotonin reuptake inhibitors (SSRIs).[1–4] In some countries, such as Sweden and Hungary, the increased rate of prescribing coincided with fall in the suicide rate.[2–4]

We examined the association between antidepressant prescribing in Australia and changes in rates of suicide for 1991-2000. We analysed differences in suicide trends between men and women in different age groups to assess whether age and sex rates in suicide were related to exposure to antidepressant medication, or to a change in that exposure over time.

Methods

We used a quasi-experimental approach to analyse associations using prospectively collected data sets.[5] We

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