

# Illicit intravenous drug use in Johannesburg — medical complications and prevalence of HIV infection

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*Objective.* To describe the magnitude of the problem of abuse by self-injection of dipipanone HCl/cyclizine HCl (Wellconal) and to document the associated morbidity, mortality and prevalence of HIV infection.

*Design.* We conducted a retrospective analysis of 121 admissions of 86 patients who were current intravenous Wellconal abusers and presented to Johannesburg and J G Strijdom Hospitals over an 18-month period. Case records were analysed in respect of age, sex, median hospital stay, complications, HIV antibody status and eventual outcome.

*Main outcome measures.* Age, sex, median hospital stay, complications, HIV antibody status and eventual outcome.

*Results.* Complications of Wellconal abuse occurred in young adults (median age 24 years) with an approximately equal gender distribution. Opiate overdose was the most frequent presenting diagnosis (32%), followed by right-sided endocarditis (20%) and deep-vein thrombosis (12%). A wide variety of complications accounted for the remaining 36%. A 2% HIV antibody positivity rate was found, which is substantially lower than that encountered in intravenous drug abusers in other parts of the world. Seventy-eight per cent of patients completed therapy successfully, but 19% left hospital prematurely against medical advice. There was a mortality rate of 3%.

*Conclusions.* While the prevalence of Wellconal abuse in the broader South African community is unknown, our study draws attention to the extent of the problem in Johannesburg.

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Illicit intravenous self-injection of proprietary drugs and other substances is a common problem worldwide. In the USA there are an estimated 1.1 - 1.8 million illicit drug injectors.<sup>1</sup> A recent review documented the changing patterns of abuse and complications in the USA.<sup>2</sup> Levels of HIV seropositivity exceeding 30 - 40% and the attendant increased mortality rate are also well shown.<sup>3,4</sup> Local patterns of abuse, complications and HIV seropositivity,<sup>5</sup> which appear to differ

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from those seen in the USA, Europe and south-east Asia, prompted this study.

## Methods

We conducted a retrospective analysis of patients presenting to Johannesburg and JG Strijdom hospitals over an 18-month period from July 1991 to December 1992. The patient register of the medical admissions ward was screened for one or more of the following diagnostic categories: drug overdose or abuse, drug withdrawal, bacteraemia, endocarditis, pyrexial illness, deep venous thrombosis, pulmonary embolism and pneumothorax. All medical histories documenting current illicit intravenous drug use leading to admission were analysed with regard to presenting diagnosis, age, sex, complications, type of drug used, infecting organism, HIV serology and eventual outcome. We included only patients in whom illicit use was predominantly intravenous. Case records were scrutinised and blood results obtained from the South African Institute for Medical Research. We defined drug abuse as 'illicit use of a drug on a frequent basis'. Withdrawal was recorded if a patient experienced or reported dysphoria or drug craving or had physical signs of drug withdrawal, including tachycardia, labile blood pressure, diaphoresis, mood lability or irritability. Bacteraemia was defined as isolation of an organism of known pathogenicity by Bactec blood culture technique. A diagnosis of endocarditis was recorded in patients who had evidence of valvular vegetation on transthoracic echocardiography. All cases of suspected deep-vein thrombosis were confirmed with Doppler sonography and by venography where indicated. Cases of suspected pulmonary embolism underwent isotope ventilation perfusion scanning. All patients presenting with possible pneumothorax underwent standard chest radiography.

## Results

Over the period July 1991 - December 1992 there were 121 admissions involving 86 patients as a direct consequence of illicit intravenous drug use. The only drug abused was Wellconal (dipipanone HCl and cyclizine HCl); 1 patient occasionally used heroin as well. Men comprised 46 (53%) and women 40 (47%) of the 86 patients. The median age was 24 years, with a range of 18 - 46 years. The median number of days in hospital was 6, with a range of 1 - 67; 82 of the 86 patients were Caucasian (95%), 2 men were Indian, and 2 women were of mixed race.

## Immediate complications

We defined these as complications that occurred acutely as a direct consequence of intravenous drug abuse. Opiate overdose was the commonest consequence, responsible for 39 of 121 admissions (32%). In most instances this appeared to be accidental and without suicidal intent. Opiate withdrawal, on the other hand, was responsible for only 6 admissions (5%). Traumatic pneumothorax occurred in 4 cases (3%) and in 2 instances was bilateral. All pneumothoraces resulted from attempted subclavian vein puncture and in all 4 instances required intercostal drainage.

## Remote complications

Infective and thrombotic complications accounted for the second- and third-largest groups of patients, respectively. Twenty-four of 121 admissions (20%) were for tricuspid valve endocarditis documented by transthoracic echocardiography with positive blood cultures in 21 patients (88%). There were no cases of left-sided endocarditis. Methicillin-sensitive *Staphylococcus aureus* was isolated in 18 patients (86%) with valvular vegetation. One culture yielded methicillin-resistant *S. aureus* in a patient who had recently been hospitalised; it may therefore have been nosocomially acquired. Two of the isolates yielded penicillin-sensitive streptococci. Three patients with valvular vegetation were culture-negative.

Deep-vein thrombosis occurred in 15 of 121 admissions (12%), and was invariably associated with repeated femoral vein venepuncture. Pulmonary embolism was subsequently documented by isotope perfusion scan in 2 patients (2%).

## Other infective complications

Three patients presented with bacteraemia and blood cultures positive for methicillin-sensitive *S. aureus*. The source of infection was presumed to be infected venepuncture site in all three instances. Cellulitis at venepuncture site without positive blood culture was found in 9 patients (7%). Pneumonia was diagnosed on admission in 5 patients and pelvic inflammatory disease was present in 3 patients.

## Other complications (Table 1)

Various other complications occurred that were directly attributable to intravenous drug injection. The most frequent of these was rhabdomyolysis, which occurred in 6 patients. Arterial embolism was suspected to be the cause of digital gangrene in 2 patients and cerebral infarction in 1 patient. One patient developed an anterior spinal artery syndrome following a period of hypotension as a result of accidental overdose of Wellconal.

Table 1. Other complications of intravenous drug abuse

Rhabdomyolysis	6	(5%)
Digital gangrene	2	(2%)
Seizures	1	(1%)
Haematuria	1	(1%)
Anterior spinal artery syndrome	1	(1%)
Cerebrovascular accident	1	(1%)
Drug nephritis	1	(1%)

## HIV status

The HIV status was determined in 72 of 86 patients (84%). Seventy were found to be negative by enzyme-linked immunosorbent assay. In 2 cases (2%) an initial screen positivity was confirmed by Western blot assay. Fourteen patients were not tested.

## Outcome

In 94 instances the patients were fully treated and formally discharged, but 23 patients (19%) left hospital against medical advice before completion of therapy. Four patients died (3%). Acute renal failure associated with rhabdomyolysis was the cause of death in 2 patients; bacterial endocarditis and *S. aureus* septicaemia both accounted for 1 death each.

## Discussion

Wellconal is an opioid analgesic used in patients with terminal illness.<sup>6</sup> It is not licensed for use in the USA. Abuse by intravenous injection has been reported in the UK.<sup>7</sup> It appears that in Johannesburg, Wellconal is the favoured intravenous drug of abuse in patients requiring hospital admission. Our study also serves to highlight some of the differences between the local population of addicts and those encountered abroad. In Johannesburg, the major intravenous drug of abuse is Wellconal, and only 1 patient admitted to concomitant use of heroin. This is in contrast to the American experience, where addicts are seldom drug purist,<sup>1</sup> abusing drugs from both the opiate and non-opiate classes. This difference is probably the result of easy access to Wellconal locally, as well as the apparent low cost of the drug. Interviews with patients yielded a remarkably uniform 'street price' of R20 per tablet (the tablets are dissolved in tap water and then injected intravenously). It is clear that if measures are to be taken to combat this illicit use, further studies of the sources and routes of supply are needed.

A further significant difference in the local population is the low prevalence of HIV seropositivity. Our study detected only 2 HIV-positive patients out of a total of 72 tested. This is in stark contrast to the prevalence of 30 - 40% in North America, Europe and south-east Asia.<sup>3</sup> In these regions, intravenous substance abuse occurs in a setting of communal needle and syringe usage, with early transmission of hepatitis and HIV.<sup>2</sup> From personal interviews with local users this appears not to be the case in Johannesburg. Drug usage appears to occur in a communal setting with no apparent sharing of equipment. This aspect of the local drug subculture may explain the low HIV seropositivity and may point to possible avenues of ensuring the continued low prevalence of the virus by means of risk reduction programmes, e.g. needle and syringe exchanges. Such programmes have been shown to decrease hepatitis B transmission in Amsterdam and the USA and there is also some evidence for decreased HIV transmission.<sup>1</sup> Thus the low prevalence of HIV seropositivity appears not to have increased substantially in this group of at-risk patients, despite an earlier report.<sup>5</sup> While fears of rapid spread in these patients<sup>5</sup> appear not to have materialised, this may change.

Organisms were isolated in 21 of the 24 patients who had echocardiographically detectable valvular vegetation: in 18 cases it was methicillin-sensitive *S. aureus*. We found no patients with Gram-negative, anaerobic or fungal organisms. Our study highlights the favourable response to medical therapy in patients with right-sided endocarditis. This also serves to affirm the role of therapy with penicillinase-resistant penicillin.<sup>9</sup> The single patient infected with methicillin-resistant

*S. aureus* may have acquired the infection nosocomially. Deep-vein thrombosis is a frequent complication of repeated femoral venepuncture, the route favoured by most addicts. More frequent was pulmonary sepsis occurring secondary to embolic spread from infected injection sites, as suggested by multifocal discrete areas of consolidation on chest radiograph. Compliance with inpatient therapy may be enhanced by prevention of opiate withdrawal symptoms by ensuring that adequate doses of the opiate agonist, methadone, are administered. Consideration should be given to limiting therapy to 2 weeks of combination therapy, which has been shown to be effective.<sup>9</sup>

Rhabdomyolysis was documented in 6 patients and was associated with a less favourable outcome (mortality rate of 33%) because it caused acute renal failure requiring dialysis. Rhabdomyolysis complicating illicit drug use is well documented.<sup>2</sup> It had initially been attributed to a 'crush syndrome' caused by comatose patients lying immobile for prolonged periods of time with consequent muscle ischaemia.<sup>10</sup> Subsequent reports have documented rhabdomyolysis that was not attributable to localised muscle injury but rather to a diffuse muscle injury occurring as a direct consequence of substance abuse via a number of routes of administration.<sup>11,12</sup> As yet unidentified adulterants causing a toxic myositis are a postulated cause.<sup>11</sup> In our series, the high mortality rate among patients who developed acute renal failure may possibly be related to the degree of rhabdomyolysis and the attendant serious metabolic abnormalities.

We have highlighted the problem of Wellconal abuse with a study of those patients who seek medical attention for acute illness. Despite the generally pessimistic attitude of hospital caregivers toward these patients, they have a good prognosis in respect of presenting illness and favourable responses to medical therapy, as well as a low prevalence of HIV seropositivity. Given the uniqueness of the local population, conventional wisdom gained from studies of overseas patients may not apply. Further studies are needed to define the full extent of the problem in the broader community.

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