Complications at site of injection of depot neuroleptics

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Although depot preparations are used extensively in psychiatry, few published reports mention the occurrence of complications at the site of injection. There are occasional reports of subcutaneous lumps and indurations; muscle granulomas; medication oozing from, and fibrosis at, the injection site; abscess formation; and the accumulation of oil after repeated large volume injections.[1] Such local complications can affect quality of life and adversely influence compliance. They are potentially dangerous and may alter the bioavailability. If severe they can prevent further injections.

The results of a number of recent studies suggest that the incidence of these local complications has been underestimated.[2] I therefore undertook this prospective study to estimate the prevalence and type of injection complications and, if possible, to determine which variables were associated with local reactions.

Patients, methods, and results

Complications were divided into acute and chronic types. Acute problems occurred as discrete episodes; chronic problems were recurrent indurations or nodules, or both, that were present for most of the observation period.

I selected 224 patients receiving depot drugs in a variety of community settings at random (131 men, 93 women). The relation between complications and variables was examined using a χ^2 test. The 171 injections (7·3%) containing a mixture of concentrated and standard preparations were included with the concentrated depot preparations.

Patients were aged between 21 and 72 years (mean=47·8); 177 (79%) had a case note diagnosis of chronic schizophrenia. Patients were monitored for a mean of 21·8 weeks (range 2-38). Over 95% of injections were given with a needle of 3·75 cm and 21 gauge into the upper outer buttocks, with a mean dose of 328 mg chlorpromazine equivalents/day (Lundbeck formula[3]; range 12·5-1600), a mean frequency of 2 weeks (1-9), and a mean volume of 1·2 ml (0·4-3).

The table gives details of the number of acute and chronic complications occurring with each depot preparation. Forty two patients (19·3%) experienced local problems during the 5072 patient weeks monitored, while 18 (8·3%) patients had chronic complications. A total of 84 acute problems occurred after 69 injections. There were 31 episodes of unusual pain, 21 of bleeding or haematoma, 19 of clinically important leakage of drug from the injection site, 11 of acute inflammatory indurations, and two of formation of transient nodules.

Patients receiving concentrated depot preparations developed significantly more acute and chronic complications than those receiving standard preparations (23/115 patients receiving concentrated preparations *v* 7/102 patients receiving standard preparations developed acute reactions; (χ^2=8·26; df=1; P=0·005); 17 patients *v* 1 patient respectively had chronic reactions (χ^2=13·39; df=1; P<0·001)). Patients taking higher doses (expressed as chlorpromazine equivalents) experienced more complications, as did those receiving weekly injections (χ^2=9·18; df=1; P=0·002), those prescribed haloperidol or zuclopenthixol decanoate (χ^2=8·15, df=1; P=0·004), those receiving injection volumes greater than 1 ml (χ^2=4·89; df=1; P=0·03), and those who had been treated for more than five years (χ^2=8·9; df=1; P=0·003). Patients aged over 50 had significantly more chronic reactions (χ^2=4; df=1; P=0·05).

Comment

This study suggests that problems at the site of injection of depot preparations occur more often than has previously been documented. The distribution of complications implicates the effects of repeated injections of high doses over many years and the irritant properties of the drug (not the solution in which it is dissolved) in the development of these problems. Higher concentration is likely to be one of the factors responsible for local reactions.[4]

With increasing community care, clinicians need to take active steps to improve compliance. As complications were dose related, this study supports the need to monitor patients closely and ensure that they are taking the minimum effective dose to maintain their mental state.[5] Belanger-Annable showed the benefit of a meticulous injections technique.[1] Patients who have developed problems may be helped by less frequent injections and perhaps by avoiding haloperidol or zuclopenthixol concentrates. Changes in practice should be subject to close audit review.

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Conflict of interest: None.

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Details of complications occurring with each depot preparation

	Haloperidol decanoate (100 mg/ml)	Zuclopenthixol decanoate (500 mg/ml)	Fluphenazine decanoate (100 mg/ml)	Flupenthixol decanoate (100 mg/ml)	Flupenthixol decanoate (20 mg/ml)	Fluphenazine decanoate (25 mg/ml)	Zuclopenthixol decanoate (200 mg/ml)	Other depot preparations*
No of patients (n=217)	8	29	39	39	43	38	13	8
No of injections (n=2354)	90	391	543	511	347	291	118	63
No of patients with:								
Complications (n=42)	4	13	8	8	5	3	1	0
Acute complications (n=30)	3	9	3	8	4	2	1	0
Chronic complications (n=18)	3	8	5	1	1	0	0	0
Median chlorpromazine (mg/day) (95% confidence interval)	261 (235 to 287)	364 (344 to 383)	666 (631 to 701)	315 (300 to 330)	91 (85 to 98)	91 (83 to 98)	144 (133 to 155)	—

*Haloperidol decanoate (50 mg/ml), pipothiazine palmitate (50 mg/ml), fluspirilene (2 mg/ml).