

Clinical scenario

- A 46 Y/O Male with HX :
 - 1.Hypertension
 - 2.Gouty arthritis episode
- For suicide attempt, swallowed Paraquat, but vomited immediately.



- The actual amount of swallowed Paraquat ??
- He was sent to ER at once

- S/S: discomfort taste within mouth
sore throat, N/V
decreased urine amount since the
day
- fever(-), dyspnea(-), cough(-),
sputum(-), abdominal pain(-)
) ,diarrhea(-)

At ER:

- Initial Vital Signs: Stable.
- Chest X-Ray: No active CardiPulmonary Lesion
- Lab Data: Paraquat(3+) in urine,
other abnormalities
- Patient Refused hemoperfusion

At MICU (after 2 days)

- Hemo-Perfusion (6hr/d) was arranged
Total 6 courses of hemoperfusion was performed
- Steroid (Oradexon 5mg Q6H/IV) for 6 d
Cyclophosphamide 1g/d for 2 d
- deferoxamine, N-acetylcysteine, Vitamin C and E

- Urine Paraquat became negative 3 d after swallowing that poison. Follow-up CXR and ABG did not find evidence of lung fibrosis. Respiratory or renal failure did not developed.
- The patient survived and was discharged 19 days after admission

Background questions

Q: What's the paraquat?

A: Paraquat (1,1-dimethyl-4,4'-bipyridylium chloride), available as a liquid concentrate (29 %) is the most important member of the bipyridyl herbicides

Q: What's the penetrated ways of paraquat into human body?

A: Patients are principally exposed to paraquat via the skin, lungs, and gastrointestinal tract

Q: How to detect the paraquat intoxication?

A:

- 1) A qualitative urine test for paraquat, which detects concentrations of 1 mg/mL or above (1 ppm), can be made by adding 2 mL of a 1 percent solution of sodium dithionite in 1 N sodium hydroxide to 10 mL of urine; a blue color indicates the presence of paraquat.
- 2) Gas chromatography and high pressure liquid chromatography can detect levels of 1 to 2 ug/mL with some accuracy.
- 3) Radioimmunoassay can detect and measure levels well below 0.1 ug/mL.

Q: Which organs will be damaged by paraquat?

A: Direct local toxicity

- 1) Skin: skin rashes
- 2) GI tract: Ulceration of the lips, tongue, pharynx and Esophagus
- 3) Lungs: local toxic effects on bronchi, possibly resulting in hemoptysis.
- 4) Eyes: Corneal ulceration and scarring

Systemic toxicity:

- 1) Major organ failure, frequently resulting in death, may occur with massive ingestion (greater than 30 mL of concentrate).
- 2) These include cardiac failure, renal failure, hepatic failure, pulmonary edema, and/or central nervous system involvement (resulting in convulsions).

Q: How to treat paraquat intoxication?

A:

1) Prevention of gastrointestinal
absorption

Nasogastric tube lavage should be performed using diatomaceous clays in the lavage solution, although there is doubt concerning the efficacy of gastrointestinal decontamination

2) Removal from blood —

- Forced diuresis to remove paraquat is ineffective.

Peritoneal dialysis is inefficient.

- Hemodialysis or hemoperfusion is associated with successful outcomes, usually when the paraquat level or ingested dose is moderate to low (4 to 30 mL of concentrated paraquat).

However, redistribution from tissue or continued absorption from the gastrointestinal tract may cause a rebound in plasma concentration in the postdialysis period.

3) Corticosteroids have not been proven effective.

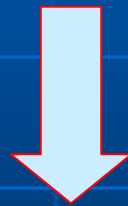
Azathioprine, beclomethasone, bleomycin, fluorouracil, and fibrinolytic agents (potassium aminobenzoate) have been used without benefit.

There are conflicting evidence and/or opinions concerning the effectiveness and use of cyclophosphamide combined with corticosteroids.

4) Low-inspired oxygen therapy should be given until it becomes impractical in the face of hypoxemia.

Foreground questions

Redistribution from tissue or continued absorption from the gastrointestinal tract may cause a rebound in plasma concentration in the post-dialysis period



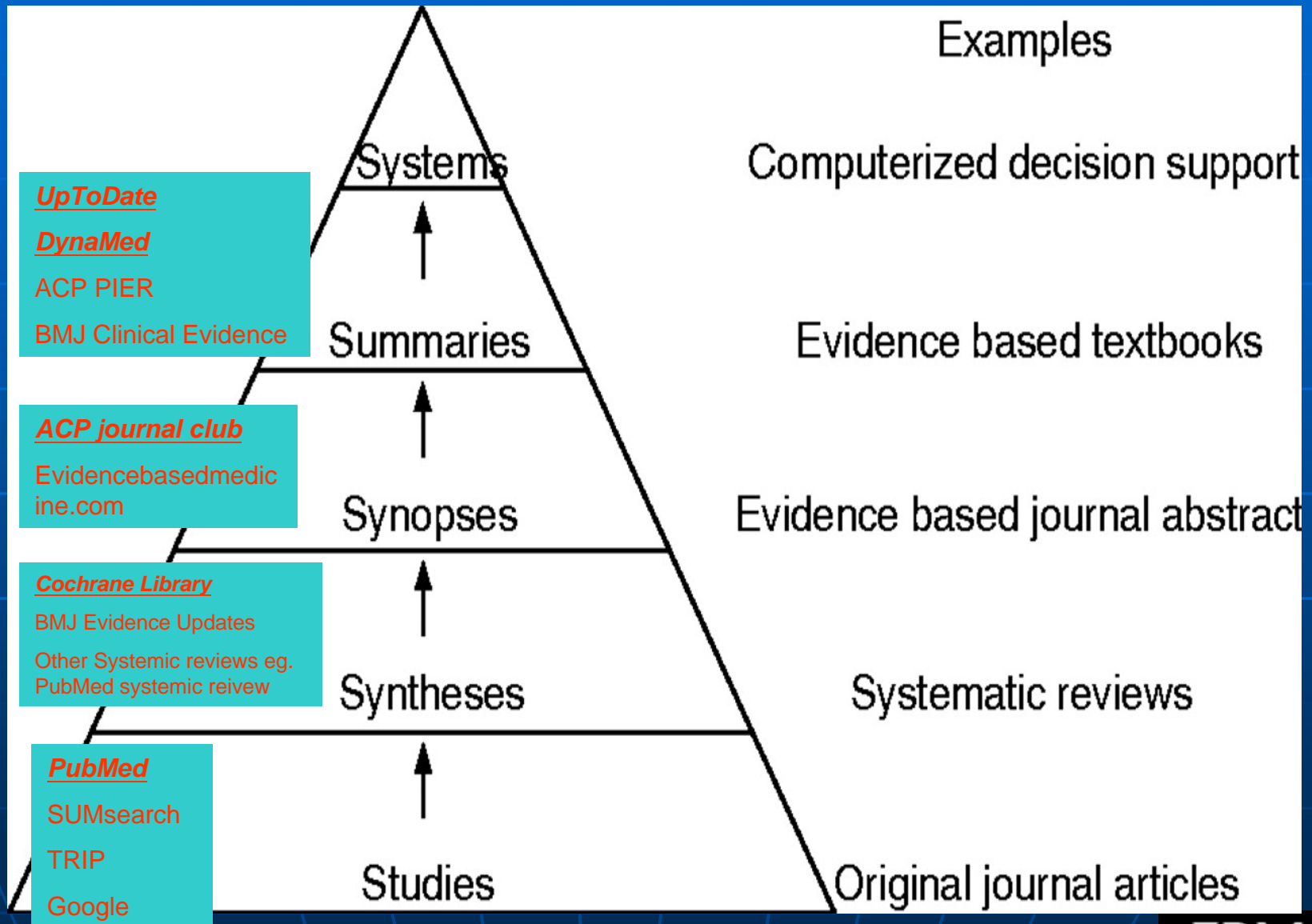
The benefit of continuous venovenous hemofiltration in treatment of paraquat intoxication?

PICOT

P	A 46 Y/O Male committed a suicide by swallowing unknown amount of paraquat. He survived without ARF and respiratory failure after treatment with HP.
I	CVVH
C	Hemoperfusion
O	Mortality & morbidity (ARF, resp. failure)
T	Not defined

search strategy:5S model

Search strategy: 5S model



Brian Haynes, R Evid Based Med 2006;11:162-164

EBM
ONLINE

Secondary data base research

Summary search results

- Database



- Keyword: paraquat, Continuous venovenous hemofiltration (CVVH); hemoperfusion
- Article title: Paraquat poisoning

Article content

- Introduction: 介紹paraquat成份及用途
- Toxicity And Metabolism: 介紹paraquat對身體組織之傷害與機轉
- Clinical Exposure: paraquat侵入途徑
- Laboratory Detection: 分析paraquat 的方法
- Association With Prognosis : 致死劑量
- Treatment : 以前嘗試治療方法與成果

- Article conclusion:

A patient who has ingested greater than 4 mL of paraquat concentrate should be aggressively managed with the administration of intestinal decontaminants and daily four to six hour hemoperfusion (or high efficiency hemodialysis) sessions.

Daily hemoperfusion or hemodialysis treatment may be required for up to two to three weeks. Dialysis should be continued until paraquat is no longer detectable in blood.

ACP Journal Club®

The Best New Evidence for Patient Care

ACP ONLINE
ACP Products & Services

Current Table of Contents	Past Issues	Search	Subscribe
■ About ACP Journal Club	■ Contact Us	Site Map/Help	Classifieds

ACP Journal Club - Search Results

Search for:

Phrases must be in "quotes"

- Article type:
- All
 - Therapeutics
 - Diagnosis
 - Clinical Prediction Guide
 - Prognosis

Don't use synonyms

[Search Help](#)

Found 1 matches. Showing 1 - 1.

1. OAN: 2006 - Repeated pulse of methylprednisolone and cyclophosphamide with continuous dexamethasone therapy for patients with severe paraquat poisoning.

< Prev 1 Next >

Copyright ©2009 American College of Physicians. The information contained herein should never be used as a substitute for good clinical judgment.



The Cochrane Library

Evidence for healthcare decision-making



WSE

Cochrane Reviews: [By Topic](#) | [New Reviews](#) | [Updated Reviews](#) | [A-Z](#) | [By Review Group](#)
Other Resources: [Other Reviews](#) | [Clinical Trials](#) | [Methods Studies](#) | [Technology Assessments](#) | [Economic Evaluations](#)

More Info

SEARCH

Enter search term Title, Abstract or Keywords

[Advanced Search](#) | [MeSH Search](#) | [Search History](#) | [Saved Searches](#)

There are 2 results out of 1004 records for: paraquat in Title, Abstract or Keywords in Database of Abstracts of Reviews of Effects

Save Search

Edit Search

View: 1-2

Export All Results

Record Information

Sort by: [Record Title](#) | [Match %](#) | [Year](#)

- Prospects for treatment of paraquat-induced lung fibrosis with immunosuppressive drugs and the need for better prediction of outcome: a systematic review (Provisional abstract)**
Centre for Reviews and Dissemination
Original Author(s): M Eddleston, M F Wilks, N A Buckley
Year: 2003
[Record](#)
- Immunosuppressive therapy in lung injury due to paraquat poisoning: a meta-analysis (Provisional abstract)**
Centre for Reviews and Dissemination
Original Author(s): R Agarwal, R Srinivas, A N Aggarwal, D Gupta
Year: 2007
[Record](#)

Select All (to export citations)

Export Selected Citations

Export All Results

View: 1-2



Find: paraquat

Search

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

[Browse by Category](#)

Result List: Found 1 Documents

[Charcoal, Activated](#) [Rx](#)



[EBSCO Support Site](#)

[Privacy Policy](#) | [Terms of Use](#) | [Copyright](#) | [Contact Us](#)

© 2009 EBSCO Industries, Inc. All rights reserved.

- t DynaMed
- to Use DynaMed
- ntly Updated
- ap Evidence-based odology
- Med Content es
- rial Policies for ors & Reviewers
- ming an Author or 3wer
- rial Team
- of Reviewers & ors
- Comment to Editor

- No other available articles were found in systems, synopses, synthesis data base when researched by key words” paraquat”

Primary data base research



PubMed Clinical Queries

All Databases

PubMed

Nucleotide

Protein

Genome

Structure

OMIM

PMC

Journals

Books

About Entrez

Text Version

Entrez PubMed

Overview

Help

FAQ

Tutorials

New/Noteworthy

E-Utilities

PubMed Services

Journals Database

MeSH Database

Single Citation Matcher

Batch Citation Matcher

Clinical Queries

Special Queries

LinkOut

My NCBI

Related Resources

Order Documents

NLM Mobile

NLM Gateway

TOXNET

Consumer Health

Clinical Alerts

This page provides the following specialized PubMed searches for clinicians:

- [Search by Clinical Study Category](#)
- [Find Systematic Reviews](#)
- [Medical Genetics Searches](#)

After running one of these searches, you may further refine your results using PubMed's [Limits](#) feature.

Results of searches on these pages are limited to specific clinical research areas. For comprehensive searches, use [PubMed](#) directly.

Search by Clinical Study Category

This search finds citations that correspond to a specific clinical study category. The search may be either broad and sensitive or narrow and specific. The search filters are based on the work of [Haynes RB et al.](#) See the [filter table](#) for details.

Search

Category

- etiology
- diagnosis
- therapy
- prognosis
- clinical prediction guides

Scope

- narrow, specific search
- broad, sensitive search

All: 5 Review: 1

One page.

Items 1 - 5 of 5

- 1: [The effectiveness of combined treatment with methylprednisolone and cyclophosphamide in oral paraquat poisoning.](#)
Afzali S, Gholyaf M.
Arch Iran Med. 2008 Jul;11(4):387-91.
PMID: 18588370 [PubMed - indexed for MEDLINE]
[Related Articles](#) [Free article at journal site](#)
- 2: [Repeated pulse of methylprednisolone and cyclophosphamide with continuous dexamethasone therapy for patients with severe paraquat poisoning.](#)
Lin JL, Lin-Tan DT, Chen KH, Huang WH.
Crit Care Med. 2006 Feb;34(2):368-73.
PMID: 16424716 [PubMed - indexed for MEDLINE]
[Related Articles](#)
- 3: [Prospects for treatment of paraquat-induced lung fibrosis with immunosuppressive drugs and the need for better prediction of outcome: a systematic review.](#)
Eddleston M, Wilks MF, Buckley NA.
QJM. 2003 Nov;96(11):809-24. Review.
PMID: 14566036 [PubMed - indexed for MEDLINE]
[Related Articles](#) [Free article in PMC | at journal site](#)
- 4: [Failure of continuous venovenous hemofiltration to prevent death in paraquat poisoning.](#)
Koo JR, Kim JC, Yoon JW, Kim GH, Jeon RW, Kim HJ, Chae DW, Noh JW.
Am J Kidney Dis. 2002 Jan;39(1):55-9.
PMID: 11774102 [PubMed - indexed for MEDLINE]
[Related Articles](#)
- 5: [A prospective clinical trial of pulse therapy with glucocorticoid and cyclophosphamide in moderate to severe paraquat-poisoned patients.](#)
Lin JL, Lei ML, Liu YC, Chen GH.

Recent Activity

Turn Off Clear

- 🔍 (PARAQUAT) AND (randomize... (5)
- 🔍 (((Continuous venovenous... (0)
- 🔍 (((Continuous venovenous... (0)
- 🔍 ((Continuous venovenous h... (0)
- 📄 Hemofiltration

» See more...

1: Am J Kidney Dis. 2002 Jan;39(1):55-9.

ELSEVIER FULL-TEXT ARTICLE Links

Failure of continuous venovenous hemofiltration to prevent death in paraquat poisoning.

Koo JR, Kim JC, Yoon JW, Kim GH, Jeon RW, Kim HJ, Chae DW, Noh JW.

Division of Nephrology, College of Medicine, Hallym University, Chunchon, Kangwon Do, Seoul, Korea. kjr@hallym.or.kr

Paraquat poisoning is characterized by multiorgan failure and pulmonary fibrosis with respiratory failure. Multiorgan failure with circulatory collapse is a major cause of early death within 3 days of paraquat ingestion. Recent studies suggested that continuous venovenous hemofiltration (CVVH) had a role in the treatment of multiorgan failure by promoting hemodynamic stability. We therefore evaluated the effect of prophylactic CVVH in 80 patients with paraquat poisoning (August 1996 to February 1999). The amount ingested was 2.1 +/- 1.0 mouthfuls (as 20% concentrate). All patients were treated with hemoperfusion (HP; duration, 6.4 +/- 3.0 hours) within 24 hours of ingestion and then randomly assigned to the HP-alone or HP-CVVH group. Forty-four patients underwent HP only, and 36 patients underwent CVVH (duration, 57.4 +/- 31.3 hours; ultrafiltration volume, 40.2 +/- 4.8 L/d) after HP. Although time to death after ingestion was significantly longer in the HP-CVVH than HP group (5.0 +/- 5.0 versus 2.5 +/- 2.1 days; P < 0.05), there was no difference in mortality rates between the two groups (66.7% versus 63.6%; P = 0.82). In the HP group, early circulatory collapse was a major cause of death compared with the HP-CVVH group, in which late respiratory failure was a major cause of death. In conclusion, prophylactic CVVH after HP prevented early death caused by circulatory collapse and prolonged survival time. However, it could not prevent late death caused by respiratory failure and did not provide a survival benefit in acute paraquat poisoning. Copyright 2002 by the National Kidney Foundation, Inc.

PMID: 11774102 [PubMed - indexed for MEDLINE]

Related articles

- Sequential hemoperfusion and continuous venovenous hemofiltration in treatment of severe tetramine poisoning. [Blood Purif. 2006]
- Repeated hemoperfusion and continuous arteriovenous hemofiltration in a paraquat poisoned patient. [J Toxicol Clin Toxicol. 1987]
- Efficacy of charcoal hemoperfusion in paraquat poisoning. [Artif Organs. 1982]
- Review Failure of haemoperfusion and haemodialysis to prevent death in paraquat poisoning. A retrospective review. [Med Toxicol Adverse Drug Exp. 1988]
- Review Continuous venovenous hemofiltration with citrate-based replacement fluid: efficacy, safety, and impact on nutrition. [Am J Kidney Dis. 2005]

» See reviews... | » See all...

compare: 比;比較;比擬;較;相比;形

[Failure of continuous venovenous hemofiltration to prevent death in paraquat poisoning.](#)

Koo JR, Kim JC, Yoon JW, Kim GH, Jeon RW, Kim HJ, Chae DW, Noh JW.

Am J Kidney Dis. 2002 Jan;39(1):55-9.

PMID: 11774102 [PubMed - indexed for MEDLINE]

[Related Articles](#)

[Nitric oxide inhalation for paraquat-induced lung injury.](#)

Eisenman A, Armali Z, Raikhlin-Eisenkraft B, Bentur L, Bentur Y, Guralnik L, Enat R.

J Toxicol Clin Toxicol. 1998;36(6):575-84.

PMID: 9776960 [PubMed - indexed for MEDLINE]

[Related Articles](#)

[Repeated hemoperfusion and continuous arteriovenous hemofiltration in a paraquat poisoned patient.](#)

Pond SM, Johnston SC, Schoof DD, Hampson EC, Bowles M, Wright DM, Petrie JJ.

J Toxicol Clin Toxicol. 1987;25(4):305-16.

PMID: 3669116 [PubMed - indexed for MEDLINE]

[Related Articles](#)

Recent Activity Turn Off Clear

paraquat AND Continuous v... (3)

» See more...

[Write to the Help Desk](#)
[NCBI](#) | [NLM](#) | [NIH](#)
[Department of Health & Human Services](#)

Study search results

- Database: PubMed
- Keyword: paraquat, Continuous venovenous hemofiltration (CVVH); hemoperfusion
- Article title: Failure of Continuous Venovenous Hemofiltration to Prevent Death in Paraquat Poisoning
American Journal of Kidney Disease 39, 55-59, 2002

- Article abstract:

Paraquat poisoning is characterized by multiorgan failure and pulmonary fibrosis with respiratory failure. Multiorgan failure with circulatory collapse is a major cause of early death within 3 days of paraquat ingestion. Recent studies suggested that continuous venovenous hemofiltration (CVVH) had a role in the treatment of multiorgan failure by promoting hemodynamic stability. We therefore evaluated the effect of prophylactic CVVH in 80 patients with paraquat poisoning (August 1996 to February 1999). The amount ingested was 2.1 ± 1.0 mouthfuls (as 20% concentrate).

All patients were treated with hemoperfusion (HP; duration, 6.4 ± 3.0 hours) within 24 hours of ingestion and then randomly assigned to the HP-alone or HP-CVVH group. Forty-four patients underwent HP only, and 36 patients underwent CVVH (duration, 57.4 ± 31.3 hours; ultrafiltration volume, 40.2 ± 4.8 L/d) after HP.

Although time to death after ingestion was significantly longer in the HP-CVVH than HP group (5.0 ± 5.0 versus 2.5 ± 2.1 days; $P < 0.05$), there was no difference in mortality rates between the two groups (66.7% versus 63.6%; $P = 0.82$). In the HP group, early circulatory collapse was a major cause of death compared with the HP-CVVH group, in which late respiratory failure was a major cause of death.

P

80 patients with paraquat poisoning within 24 h,
collected from Aug. 1996 to Feb.

Hallym University Chunchon Sacred Heart Hospital



gastric lavage with activated charcoal or Fuller's
earth added to 20% mannitol & then one or two
courses of 6 h of charcoal HP therapy

+

IV dexamethasone (10 mg q 6h for 3 d) and IV
vitamin C (3 g/d for 5 to 7 d)

I & C

randomly assigned to the HP-CVVH group (36 pts) or HP (44 pts) by the block randomization method

O & T

- All surviving patients were followed up for 3 months after ingestion.
- In fatal cases, causes of death were determined

Results

Table 1. Clinical Characteristics of Patients

No. of patients	80
Age (y)	45.2 ± 16.6
Men (%)	60
Amount of paraquat ingested (mouthful)	2.2 ± 1.0
Urine dithionite test (%)	
Negative (n = 2)	2.5
Mild to moderate (n = 45)	56.2
Severe (n = 33)	41.3
Acute renal failure* (%)	58.8
Time to HP after ingestion (h)	6.1 ± 3.1
Time to death after ingestion (d)	3.6 ± 3.9
Mortality (%)	65

NOTE. Values are expressed as mean ± SD unless otherwise noted.

*Serum creatinine level of 1.5 mg/dL or greater or urine output less than 30 mL/h.

Table 2. Comparisons Between the HP and HP-CVVH Groups

Variables	HP	HP-CVVH	<i>P</i>
No. of patients	44	36	
Age (y)	47 ± 16	43 ± 17	0.25
Male sex (%)	61.4	58.3	0.82
Initial serum creatinine (mg/dL)	1.44 ± 1.37	1.40 ± 1.00	0.89
Peak serum creatinine* (mg/dL)	2.82 ± 2.44	2.54 ± 2.38	0.64
Initial Pao ₂ (mm Hg)	102 ± 41	94 ± 27	0.33
Amount of paraquat ingested (mouthful)	2.3 ± 0.9	2.0 ± 0.9	0.25
Urine dithionite test (%)			0.70
Negative	2.3	2.8	
Mild to moderate	52.3	61.1	
Severe	45.4	36.1	
Time to HP after ingestion (h)	6.4 ± 3.4	5.7 ± 2.9	0.33
Duration of HP (h)	7.2 ± 3.5	5.5 ± 1.7	<0.01
Time to death after ingestion (d)	2.5 ± 2.1	5.0 ± 5.0	<0.05
Mortality (%)	63.6	66.7	0.82
Cause of death (%)			<0.05
Circulatory collapse	67.9	37.5	
Respiratory failure	32.1	62.5	

NOTE. Values expressed as mean ± SD.

*N = 60

Table 3. Mortality According to Amount of Paraquat Ingested and Urine Dithionite Test Results

	Total	HP	HP-CVVH	<i>P</i>
Amount of paraquat ingested (mouthful)				
<1 (n = 5)	0	0 (0/2)	0 (0/3)	—
1 (n = 15)	53	57 (4/7)	50 (4/8)	0.78
2 (n = 17)	65	63 (5/8)	67 (6/9)	0.86
>3 (n = 33)	82	80 (16/20)	85 (11/13)	0.74
Unknown (n = 10)	60	43 (3/7)	100 (3/3)	0.09
Urine dithionite test				
Negative (n = 2)	0	0 (0/1)	0 (0/1)	—
Mild to moderate (n = 45)	44	35 (8/23)	55 (12/22)	0.24
Severe (n = 33)	97	100 (20/20)	92 (12/13)	0.39

NOTE. Values expressed as percent (number of total).

Article conclusion

- Prophylactic CVVH after HP prevented early death caused by circulatory collapse and prolonged survival time.
- However, it could not prevent late death caused by respiratory failure and did not provide a survival benefit in acute paraquat poisoning.

Appraisal

Level of evidence

Oxford Centre for Evidence-based Medicine Levels of Evidence (May 2001)

Level	Therapy/Prevention, Aetiology/Harm	Prognosis	Diagnosis	Differential diagnosis/symptom prevalence study	Economic and decision analyses
1a	SR (with <u>homogeneity*</u>) of RCTs	SR (with <u>homogeneity*</u>) of inception cohort studies; <u>CDR†</u> validated in different populations	SR (with homogeneity*) of Level 1 diagnostic studies; <u>CDR†</u> with 1b studies from different clinical centres	SR (with homogeneity*) of prospective cohort studies	SR (with homogeneity*) of Level 1 economic studies
1b	Individual RCT (with narrow <u>Confidence Interval‡</u>)	Individual inception cohort study with ≥ 80% follow-up; <u>CDR†</u> validated in a single population	Validating** cohort study with good††† reference standards; or <u>CDR†</u> tested within one clinical centre	Prospective cohort study with good follow-up****	Analysis based on clinically sensible costs or alternatives; systematic review(s) of the evidence; and including multi-way sensitivity analyses
1c	All or none§	All or none case-series	Absolute SpPins and SnNouts††	All or none case-series	Absolute better-value or worse-value analyses ††††
2a	SR (with <u>homogeneity*</u>) of cohort studies	SR (with <u>homogeneity*</u>) of either retrospective cohort studies or untreated control groups in RCTs	SR (with homogeneity*) of Level >2 diagnostic studies	SR (with homogeneity*) of 2b and better studies	SR (with homogeneity*) of Level >2 economic studies
2b	Individual cohort study (including low quality RCT; e.g., <80% follow-up)	Retrospective cohort study or follow-up of untreated control patients in an RCT; Derivation of <u>CDR†</u> or validated on split-sample§§§ only	Exploratory** cohort study with good††† reference standards; <u>CDR†</u> after derivation, or validated only on split-sample§§§ or databases	Retrospective cohort study, or poor follow-up	Analysis based on clinically sensible costs or alternatives; limited review(s) of the evidence, or single studies; and including multi-way sensitivity analyses
2c	"Outcomes" Research; Ecological studies	"Outcomes" Research		Ecological studies	Audit or outcomes research
3a	SR (with <u>homogeneity*</u>) of case control studies		SR (with homogeneity*) of 3b and better studies	SR (with homogeneity*) of 3b and better studies	SR (with homogeneity*) of 3b and better studies
3b	Individual Case-Control Study		Non-consecutive study; or without consistently applied reference standards	Non-consecutive cohort study, or very limited population	Analysis based on limited alternatives or costs, poor quality estimates of data, but including sensitivity analyses incorporating clinically sensible variations.
4	Case-series (and <u>poor quality cohort and case-control studies§§</u>)	Case-series (and <u>poor quality prognostic cohort studies***</u>)	Case-control study, poor or non-independent reference standard	Case-series or superseded reference standards	Analysis with no sensitivity analysis
5	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"	Expert opinion without explicit critical appraisal, or based on economic theory or "first principles"

Grades of Recommendation

A	consistent level 1 studies
B	consistent level 2 or 3 studies <i>or</i> extrapolations from level 1 studies
C	level 4 studies <i>or</i> extrapolations from level 2 or 3 studies
D	level 5 evidence <i>or</i> troublingly inconsistent or inconclusive studies of any level

Answer	Does this paper answer your question?	yes
Author	Is the author an expert of the field? Is there any conflict of interest?	I guess so! not mentioned
Method	RCT, cohort, case-control, case series, case report, expert opinion?	case-control
Patient	Randomization? Representative?	No yes
Intervention	是否有清楚的描述(Ascertain)	yes
Comparasion	是否實際可行	yes
Outcome	Double blind? Objective measurement? 是否有統計學或臨床上的意義?	no yes no
Time	是否清楚描述研究取樣、操作、結果測量的時間點，追蹤時間是否夠長?	yes

- Critical appraisal by Work Sheet

Therapy Worksheet

Are the results of this single preventive or therapeutic trial valid?

Was the assignment of patients to treatments randomised?
-and was the randomisation list concealed?

No

Not sure

Were all patients who entered the trial accounted for at its conclusion? -and were they analysed in the groups to which they were randomised?

No,

*85 patients were initially enrolled the trial, but five patients who held paraquat in their mouths, but did not swallow it, were excluded.

*Because 4 patients refused CVVH, 44 patients underwent HP alone, and 36 patients underwent CVVH

Were patients and clinicians kept “blind” to which treatment was being received?

No

Aside from the experimental treatment, were the groups treated equally?

Not sure

Were the groups similar at the start of the trial?

Not sure

Effect of therapy

	dead	survived
HP-CVVH	24	12
HP alone	28	16

		Relative Risk Reduction RRR	Absolute Risk Reduction ARR	Number Needed to Treat NNT
CER	EER	$\frac{CER - EER}{CER}$	CER - EER	1/ARR
63.6 %	66.7 %	-4.6%	-3.1%	32.3

Evidence Based Calculator

File Pre-Test Probability Report Help

最小化

Sample Size:

80

Target Disorder or Outcome

present

absent

1 yrs

Rx control;

16

28

CER : .3636

TP

a

b

FP

Rx experimental;

12

24

EER : .3333

FN

c

d

TN

RR : 91.67 %

Rx **RRR :** 8.33% **95% C.I** -49.3 to 65.96 %
ARR : 3.03% -17.93 to 23.99 %
NNT : 33 4 to Inf..
NNH : ~ 6 6 to Inf..

Dx **Sensitivity:** **LR+ :**
Specificity: **LR - :**
PosPred Val: **OR :**
NegPred Val: **Pre-Odds:**
Prevalence: **Post-Prob:**

Harm **RR:** **OR:**
NNH: **95% C.I**
to

- Cohort Study
- Case Control

Chi-Square: .0799201

Clear



Calculate

Can you apply this valid, important evidence about a treatment in caring for your patient?

Do these results apply to your patient?	Yes
Is your patient so different from those in the trial that its results can't help you?	No
How great would the potential benefit of therapy actually be for your individual patient?	No obvious benefit
Method I: f	Risk of the outcome in your patient, relative to patients in the trial. expressed as a decimal: _____ $NNT/F = \frac{\quad}{\quad} = \quad$ (NNT for patients like yours)
Method II: 1 / (PEER x RRR)	Your patient's expected event rate if they received the control treatment: PEER: _____ $1 / (PEER \times RRR) = 1 / \quad = \quad$ (NNT for patients like yours)
Are your patient's values and preferences satisfied by the regimen and its consequences?	
Do your patient and you have a clear assessment of their values and preferences?	
Are they met by this regimen and its consequences?	

Apply

總結與討論

	This study	My patient
P	80 pt, ~45 y/o, 60% M, unknown underlying d'z variable vol, HP within 6.1 ± 3.1 h Adjuvant Tx	46 y/o, M, HTN, unknown amount paraquat, HP about 2 d after event, adjuvant Tx
I	HP-CVVH	CVVH
C	HP alone	HP
O	Mortality (short term & overall)	Mortality & morbidity

將Studies的結果應用到病人身上

- 對於paraquat中毒有效療法,仍未確定,相較於HP alone, CVVH-HP 雖使病人平均多活1.7天, ($7.2 \pm 3.5d$ VS. $5.5 \pm 1.7d$),但最後總死亡率並無差別
- 以此篇文章之結果,現今醫療成本,及病人意願而言paraquat中毒用HP加其他藥物救治即可,當然其死亡率是很高的