

신경외과 환자 치료 중 발생한 Dialysis Disequilibrium Syndrome*

- 증례 보고 -

가
우희경 · 유도성 · 김달수 · 허필우 · 조정석 · 강준기

= Abstract =

Dialysis Disequilibrium Syndrome in Neurosurgical Patient - Case Report -

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Neurological symptoms may develop when the blood urea nitrogen is lowered too rapidly by hemodialysis. It is known that these symptoms, known as dialysis disequilibrium are associated with cerebral edema. However, the pathogenesis of brain swelling and neurological deterioration after rapid hemodialysis is controversial. The reverse urea hypothesis suggests that hemodialysis removes urea more slowly from the brain than from the plasma, creating an osmotic gradient that results in cerebral edema. The idiogenic osmole hypothesis proposes that an osmotic gradient between brain and plasma develops during rapid dialysis because of newly formed brain osmoles. Authors report a such case and discuss the possible mechanism and preventive methods.

KEY WORDS : Dialysis disequilibrium syndrome · Hemodialysis · Brain edema.

		증례	
가	가	65	가
가	Dialysis disequilibrium syndrome(DDS)	3 × 4 × 3cm	가 (Fig. 1).
가	urea dialysis disequilibrium syndrome	(gliomablastoma) BUN/Cr	22.4/0.6
		BUN/Cr	가 164/1.63

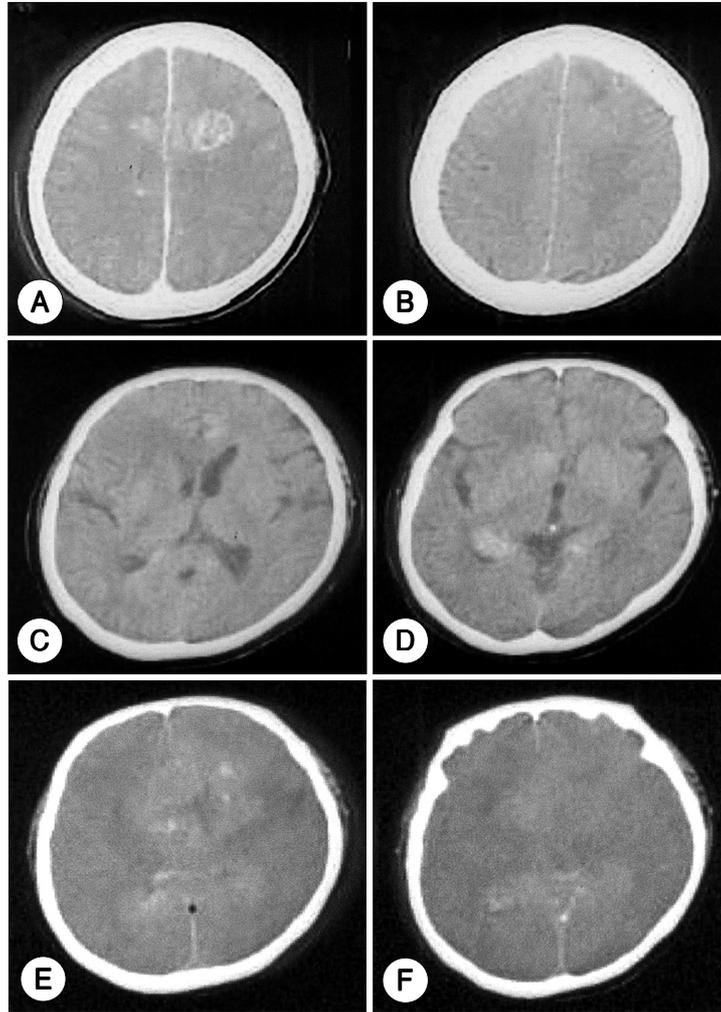


Fig. 1. Serial brain CT films according to the clinical course. A and B : Initial brain CT shows a round mass at the left frontal area. C and D : Brain CT before the dialysis disequilibrium syndrome was developed, shows no sulci or cisternal effacement. E and F : Brain CT after the dialysis disequilibrium syndrome was developed, shows obliteration of the sulci and cisternal structures.

3
 Glasgow Coma Scale : 7~8
 가
 2
 (GCS : 3)가
 cortical sulci가 ef-
 face cistern 가
 (Fig. 1).
 BUN/Cr 106.2/4.14
 42.7/2.55 , 367 301

Table 1. Laboratory findings during the hemodialysis*

Date		FBS	BUN	Na ⁺	K ⁺	Osm
2 days after operation	Pre-HD	165	164	131	7.1	337
	Post-HD	158	102.3	127	5.2	322
7 days after operation	Pre-HD	171	101.8	139	5.2	334
	Post-HD	175	59.2	148	4.4	315
14 days after operation	Pre-HD	144	110.4	133	5.5	324
	Post-HD	112	52.6	133	4.5	300
21 days after operation	Pre-HD	156	90.6	142	6.2	337
	Post-HD	108	46	140	4.9	312
28 days after operation	Pre-HD	214	106.2	154	4.7	367
	Post-HD	262	42.7	132	3.9	301

*FBS=fasting blood sugar(mg/dl), BUN=blood urea nitrogen(mg/dl), Na+=Sodium (mEq/L), K+=potassium (mEq/L), Osm= osmolarity (mosm/Kg)
 HD=hemodialysis

(Table 1).

고 찰

Dialysis disequilibrium syndrome(DDS)¹⁾²⁾⁴⁾
 Blood - brain - barrier

Urea
 reverse urea effect

idiogenic os-
 mole

Reverse urea effect urea가 blood - brain - barrier urea
 가 urea

가 urea

가 urea

가 urea

1).

Arieff³⁾⁶⁾
 urea dialysis disequilibrium
 syndrome

urea 가 , urea 가

pH가 ,
 organic acid가

dialysis disequilibrium syndrome

Silver⁴⁾⁵⁾
 urea가 blood - br-
 ain - barrier ,
 organic osmolytes
 dialysis disequilib-
 rium syndrome idiogenic osmole

reverse urea effect

, BUN

40~60mg/dl
 20~30mosm/Kg
 dialysis disequilibrium syndrome
 BUN
 64mg/dl, 66mosm/Kg
 가 BUN

reverse urea effect

가

5).

dialysis dise-
 quilibrium syndrome
 solute
 , di-
 sodium bath

quilibrium syndrome

, mannitol
 alystate glucose

2).

- : 2000 7 4
- : 2000 11 30

- :
 480 - 130 65 - 1
 가
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