The incidence and characteristics of adrenal insufficiency among patients with suspicious symptoms in general hospital in Korea

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Background

Adrenal insufficiency is the clinical manifestation of deficient production, or action, of glucocorticoids, with or without mineralocorticoids deficiency and adrenal androgens. The mortality of untreated adrenal insufficiency reaches up to 80% in 2 years. Moreover, the symptoms are non-specific, such as malaise or dizziness. Therefore, history taking, prompt diagnosis and management are more important. The diagnostic investigation, although well established, can be challenging, especially in patients with secondary or tertiary adrenal insufficiency. However, information about the prevalence and characteristics of adrenal insufficiency in Korea is lacking. Therefore, we reviewed the characteristic of patients ~~of~~ with adrenal insufficiency.

Method

We reviewed medical records of patients who visited Keimying University Dongsan Medical Center for 4 months and conducted a test such as rapid ACTH stimulation test and insulin tolerance test.

Results

In 267 participants enrolled, the most common reason (38.9%) to conduct a test was that patients complained of suspicious symptoms related with adrenal insufficiency and the second reason (29.6%) was to diagnose the cause of hyponatremia. Among them, 37.4% of patients were diagnosed as (with?) adrenal insufficiency. 70% were female and the mean age was 65.23 years old. Basal cortisol level was 3.93 ± 3.81 and it was significantly lower than normal patients (p=0.000). Common symptoms are anorexia, nausea, dehydration and arthralgia. 67% patients had a history of steroid medication and 53% of patients took steroids within 3 months.

	Normal (126)		AI (100)		P value
Age(years)	67.33	14.138	65.23	14.271	0.243
SBP (mm/Hg)	123.5	21.794	124.77	19.011	0.632
DBP (mm/Hg)	73.76	14.935	74.48	13.052	0.688
HR	88.76	16.818	86.26	19.716	0.826
WBC (*/u)	9937.27	6204.427	8659.25	4210.726	0.098
Hb (g/dL)	11.253	1.8587	11.230	2.1082	0.929
Hct (%)	33.079	5.4985	33.191	5.7323	0.883
PLT (*10^3/u)	253.81	104.984	223.03	107.845	0.035
Na (mmol/L)	129.86	9.736	134.64	7.347	0.000
K (mmol/L)	3.950	0.707	3.957	0.612	0.934
BUN (mg/dL)	23.39	19.989	21.46	19.864	0.475
Cr (mg/dL)	1.4233	2.51664	1.1287	1.60846	0.329
Glucose (mg/dl)	140.49	65.025	134.7	80.435	0.545
ACTH (pg/mL)	8.34	23.764	11.83	31.736	0.347
Cortisol (ug/dL)	17.8269	12.85771	3.9277	3.80691	0.000

Figure 1. Characteristics

	All		Normal		AI diagnosised	
	n	%	n	%	n	%
Suspicious symtom	104		86	51.8	24	24
Steroid history	29		8	4.8	22	22
Hyponatremia	79		60	36.1	19	19
After adrenalectomy	7		2	1.2	5	5
Pituitary disease	6		0	0	6	6
ETC	34		9	5.4	24	24

Table 2. The reasons to do the Rapid ACTH stimulation test

	Normal(166)		AI(100)		P(<0.05)
Sex (M:F)	73:93	44:56 %	30:70	30:70	0.023
Anorexia	64	38.6	31	31	0.236
Weight loss	6	3.6	2	2	0.714
Nausea	27	16.3	12	12	0.376
Abdominal pain	10	6	6	6	1.000
Arthralgia	16	9.6	14	14	0.319
Dizziness	16	9.6	10	10	1.000
Desire to take salt	0	0	0	0	
Dry skin	4	2.4	2	2	1.000
Decreased libido	0	0	1	1	0.376
Hyperpigmentation	0	0	3	3	0.052
Fever	64	38.6	16	16	0.000
Dehydration	46	27.7	14	14	0.015
Hair loss	0	0	0	0	

Table 3. Presenting Symptoms

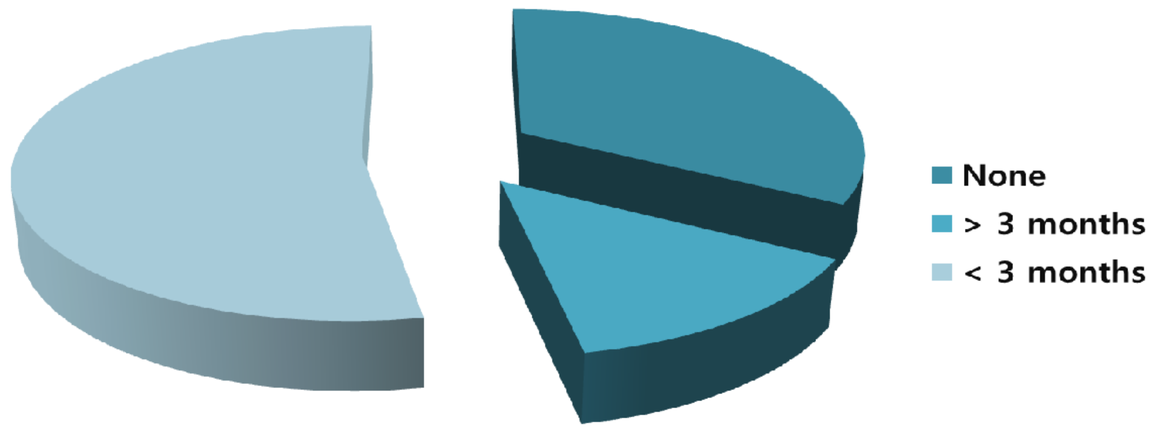

Figure 1. History of steroids

Conclusion

A lot of patients who are diagnosed with adrenal insufficiency are related with steroid medication. History taking about long term use of steroid is necessary for early detection. Basal cortisol level could not be the diagnosis but provided a useful clue for diagnosis of adrenal insufficiency. In addition, when we use steroid, we are more cautious about development adrenal insufficiency. We need further study to evaluate the prevalence and characteristics in a large population.

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