

Norton Children's and the University of Louisville School of Medicine Louisville, Kentucky

BACKGROUND

Seizures are a common chief complaint in the pediatric emergency department (PED), comprising 1% of visits.

Work up is largely clinician dependent and varies significantly by provider and location. However, indiscriminate lab ordering may lead to erroneous results, patient pain and distress, and derangement in laboratory workflow.

The aim of this study was to evaluate frequency of lab ordering in pediatric patients who present to the ED with a chief complaint of seizure and to determine if those labs contributed to patient management.

METHODS

Retrospective chart review of patients aged 2 months to 18 years of age who presented to the PED at a large academic children's hospital with seizure from July 1, 2021, to June 30, 2022.

Transfers from outside facilities were excluded.

We identified demographic data, labs ordered, reasons for ordering labs, diagnosis and treatments provided, length of ED stay (LOS), and disposition.

We compared LOS and disposition for patients with/without labs via standard descriptive statistics.

RESULTS

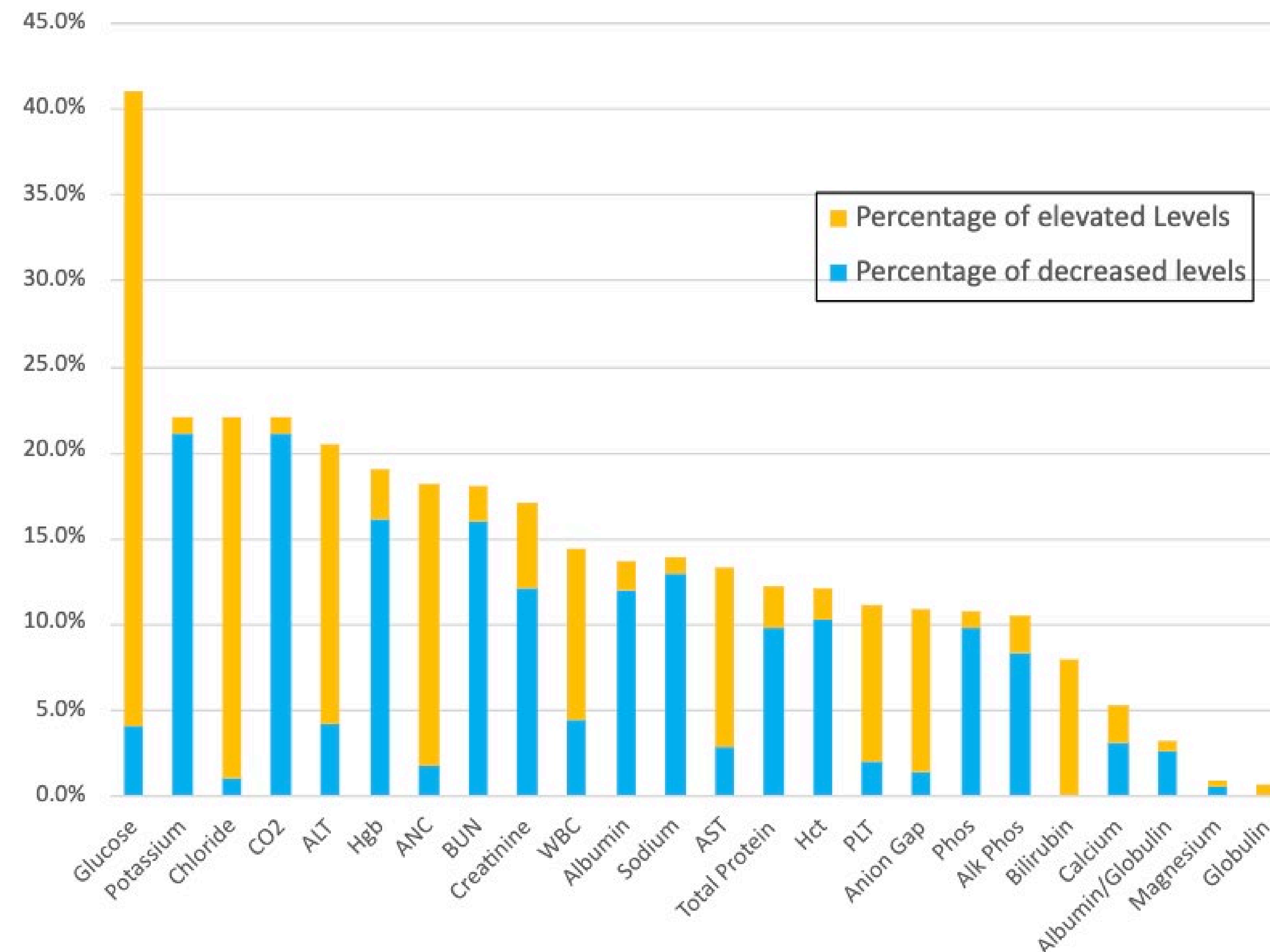


Figure 1: Bar graph depicting the total percentages of individual lab derangements

Table 1: Length of Stay analysis between subjects with labs and without labs. Subjects who had labs drawn had statistically significant longer length of stay (P<0.001)

LOS	No labs	labs
mean	239 min	356 min
SD	174	240

Independent samples 2-tailed t test; p<.001, indicating significance

Table 2: Logistic regression with disposition as dependent variable and age, sex, and labs as independent variables

		Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B) Lower Upper	
Step 1 ^a	Sex(1)	-.045	.127	.123	1	.725	.956	.746	1.227
	Age	-.039	.011	11.722	1	<.001	.962	.940	.983
	Were labs done?(1)	2.219	.131	288.097	1	<.001	9.195	7.117	11.880
	Constant	-.752	.127	35.236	1	<.001	.471		
Step 2 ^a	Age	-.039	.011	11.614	1	<.001	.962	.940	.984
	Were labs done?(1)	2.218	.131	288.069	1	<.001	9.191	7.114	11.875
	Constant	-.779	.102	58.627	1	<.001	.459		

a. Variable(s) entered on step 1: Sex, Age, Were labs done?.

1,564 total subjects reviewed -> 233 excluded (transfers from outside facilities). 597/1331 (44.9%) of included patients had labs collected: CMP, CBC, or both.

Most frequently documented reasons for labs included:

- None (43.05%)
- Neurology Requested (23.28%)
- Severe seizure/critical patient presentation (12.56%)
- Sepsis concern (9.21%)
- Metabolic concern (7.04%)

Lab derangements were noted in 564 subjects. Of those, the most common were

- Hyperglycemia (37%)
- Hypokalemia (21%)
- Hyperchloremia (21%)
- Low CO2 (21%)
- Neutrophilia (16.4%)

Lab derangements impacted medical decision making in 26 subjects:

- 16 subjects received antibiotics
- 5 subjects received IV dextrose
- 3 subjects received IV calcium replacement
- 1 subject required further imaging

Of those requiring intervention, males were 2.6 times more likely to require intervention than females (p=0.04)

Mean ED LOS for subjects with labs collected was significantly longer (356 minutes) than those without labs collected (239 minutes) (p<0.001).

CONCLUSIONS

In pediatric patients presenting with seizures, routine lab testing rarely demonstrated significant abnormalities and led to a significantly longer ED LOS. Additionally, subjects who had labs drawn were more likely to be admitted to the hospital than those without labs.

Work up for pediatric patients who present with seizure should be guided by the history and physical exam findings. Patients with known metabolic disorders warrant laboratory evaluation and electrolyte replacement as needed