THE NORMAL SERUM-AMYLASE LEVEL IN AFRICANS

H. H. LAWSON, F.R.C.S. (Eng.), Department of Surgery, Baragwanath Hospital and the University of the

Witwatersrand, Johannesburg,* and

W. M. POLITZER, M.D., Department of Biochemistry, South African Institute for Medical Research, Johannesburg

In 1956 Street and Close¹ published their method of estimating serum-amylase levels, and gave as their normal a value of 9-35 units, the mean being 19.08 units. These figures were the result of amylase estimations in 101 hospital patients in Manchester.

No normal range of values has been established for an urban African population where the condition of pancreatitis is very common,² and it is for this reason that the present investigation has been carried out.

SUBJECTS AND METHODS

The identical technique to that described by Street and Close has been used to establish the serum-amylase level in 100 patients who were admitted to the same surgical unit between September 1961 and January 1962. Using this technique the results obtained from control series were uniform.

In none of these patients were there any grounds for suspecting pancreatitis and, in particular, no patient had evidence of an intra-abdominal lesion. The majority were admitted because of injury, and in no case was the amylase estimation carried out earlier than 48 hours after admission.

RESULTS

Table I gives the diagnosis in those cases where the amylase was below 35 units, and in Table III the individual

TABLE I. DIAGNOSIS OF PATIENTS WITH A SERUM-AMYLASE LEVEL BELOW 35 UNITS

Fractures:							
Upper limb				2.00	200		4
Lower limb			44				17
Pelvis	* *						4
Vertebra	1 M 1 M 1						4
Head injury	* *		1000	*.*			11
Stab chest	* **			***	* *		10
Stab neck						* *	7
Infections and	absce	ss (lim	os, peri	ineum,	bone)		13
Burns	2/2/				**		3
Paraplegia							1
Varicose veins		**			**	**	2
Т.,	-1						76
Total				* *			70

^{*} Present address: Department of Surgery, Johannesburg General Hospital, Johannesburg.

diagnosis is given in each case where the amylase was 35 units or more.

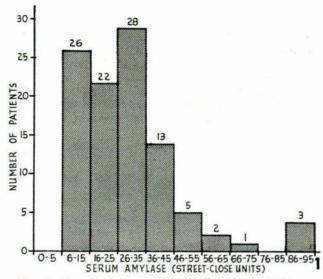


Fig. 1. Normal serum-amylase levels among Africans.

From Fig. 1 it can be seen that 76% of the values lie between 6 and 35 units, while the remaining 24% are 36 units or more; a fact which contrasts markedly with the figures given by Street and Close (Table II).

TABLE II. COMPARISON OF SERUM-AMYLASE LEVELS

		Street-Close series	African series
Less than 9 units		2%	1%
Less than 10 units		9%	1%
Over 30 units	2.0	8%	37%
Over 35 units		2%	24%
Mean		19.08 units	28 · 37 units

The mean of the African patients is about 10 units above that of the European group. Street and Close accepted a normal value of 9-35 units, and found only 2% of their cases to have values over 35 units.

The large number of patients who have a serum-amylase level of over 35 units is of special interest, and the details

of diagnosis and level of serum amylase are given in Table III.

TABLE III. PATIENTS WHOSE SERUM-AMYLASE LEVEL WAS OVER 35
UNITS

Diagn	osis			No. of patients	Amylase (Street-Close units)
Stab chest				6	36, 40, 47, 52, 64, 9
Fractures:					I NAMED TO SEE THE PROPERTY OF
Tibia and fibula			25.5	4	36, 40, 87, 88
Pelvis		* *		2	36, 36
Concussion				4 2 3 2	36, 39, 46
Amputations (leg)				2	36, 37
Infections:					
Of buttock				1	47
Of finger				1	39
Ulcer of foot				1	72
Urethral stricture				1	46
Cut tendons				1	41
Carcinoma of oesophagus				1	56
Pulmonary emboli	sm			1	38
-					
Total	• •	* *		24	

DISCUSSION

The one factor that was common to the majority of these patients was some type of injury. It could be argued that many may have taken alcohol, and the relation of this to pancreatitis has been well established. However, in no case was the estimation done sooner than 48 hours after admission. The technique was identical to that described by Street and Close, and although many of the African

patients were admitted because of trauma, in no case was there reason to suggest a pancreatic lesion or a lesion of the salivary glands.

The average serum-amylase level was 28·37 units, nearly 10 units higher than the mean of Street and Close. While 76% of these patients fell within the range of 6-35 units, 24% had values which were 36 units or over. In the series of Street and Close only 2% had values over 35 units. Since 94% of the Africans had a serum-amylase level between 6 and 55 Street-Close units, it is suggested that this should be regarded as the normal range for Africans.

SUMMARY AND CONCLUSION

The serum-amylase level has been recorded in 100 hospital patients in whom there were no clinical grounds for suspecting a pancreatic lesion. The mean is 28·37 Street-Close units. Although the majority have a serum-amylase level below 35 units, a significant number have values greatly in excess of this, contrasting markedly with the series of Street and Close in White subjects.

It is suggested that a range of 6-55 units be regarded as within normal limits for African patients.

We thank Dr. I. Frack, Medical Superintendent of Baragwanath Hospital, for his permission to carry out this investigation, and the Director of the South African Institute for Medical Research for facilities provided. We are grateful to Dr. H. C. Seftel for his constructive criticism.

REFERENCES

Street, H. V. and Close, J. R. (1956): Clin. chim. Acta, 1, 256.
 Lawson, H. H. (1962): S.Afr. Med. J., 36, 542.