

teers responded to the glucose challenge with the typical nondiabetic glucose curve. The insulin and C-peptide curves were similar and parallel to the glucose curve until 2 hours, when the C-peptide values remained elevated and insulin concentrations decreased. Both insulin and C-peptide levels seemed to lag 15 minutes behind the glucose curve. As in Kraft's¹ study, 30 percent of our responders demonstrated an insulin peak in 30 minutes. In addition, we found that 100 percent of these early insulin peakers showed a glucose peak in 15 minutes and a C-peptide peak in 30 minutes. There appeared to be a parallel and a relatively consistent relationship between the insulin and C-peptide data in the first and second hours of the OGTT. C-peptide levels began to decrease during the third hour of the test. Because the precision of two RIA procedures was not identical, meaningful response ratios could not be calculated.

1. Kraft, J.R.: Glucose insulin tolerance: A routine clinical laboratory tool enhancing

diabetic detection. In *Radioassay: Clinical concepts*, proceedings from a symposium on radioimmunoassay held in Washington, D.C., Jan 28-29, 1974. Professional Education Department, Searle Laboratories, Skokie, Ill., 1974, pp. 91-106.

Age-related changes in human cranial sutures

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The patency of human parieto-parietal and parietotemporal cranial sutures has been established in 17 autopsy specimens from persons ranging in age from 7 to 78 years. There is no evidence of sutural closure by ossification in any of these cases. Morphologic changes in both the cranial bones and the sutures appear to be age related. The cranial

bones in young human beings appear as flat plates consisting of external cortical bone with limited central diploe. In the older specimens the cavities in the diploe had increased in size and number, while the cortical plate had decreased in thickness. Myeloid activity was evident in all cranial bones of the older specimens. As is evident in other primates, the ends of the cranial bones are bound together by collagenous, elastic, and reticular connective tissue. This is the basic structure of the suture at all ages. The most evident age-related structural change in the suture is a reduction in the total number of collagenous fiber bundles. Nerve fibers are evident in the sutures of all specimens studied. Some of these nerve fibers accompany the bundles of collagenous fibers throughout the sutures and some extend into the cranial bones along with the Sharpey's fibers. In addition, there are nerve fibers which course along with the sutural blood vessels. The absence of ossification in all specimens supports the belief that movement of the cranial bones

is possible in human beings of all ages. This movement may be induced by manipulative procedures, as the result of normal physiologic processes, such as respiratory and cardiac activity, or by alterations of cerebrospinal fluid pressure. It is suggested that the nerve fibers and their receptors are responsible for functional alterations induced by cranial bone movement.

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Effects of branched-chain amino acids on antibiotic sensitivity and lipid composition of *Pseudomonas aeruginosa*

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Strains of *Pseudomonas aeruginosa* were grown on branched-chain amino acids and their acyl derivatives as sole carbon source. Growth rates were calculated and compared. Growth on the acyl derivatives increased cellular sensitivity to polymyxin B and colistin. Growth on branched-chain amino acids had similar effects, although not as pronounced. Acyl derivatives had a sensitizing effect even when incorporated into a carbon source that was nonsensitizing. The effects on sensitivity to gentamicin and carbenicillin were mixed. Analysis of the readily extractable lipids revealed that both quantitative and qualitative changes resulted from these growth conditions. The effects of the branched-chain amino acids were similar in spite of their diverse catabolic pathways. These effects were even more pronounced with the acyl derivatives from the branched-chain amino acids. The primary changes observed were concerned with odd-chain fatty acids, unsaturated fatty acids, and cyclopropane derivatives. The readily extractable

lipid fraction of *P. aeruginosa* was found to vary as a function of time as well as of carbon source.

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Biomechanic analysis of symmetric and asymmetric cervical function

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Cervical muscle activity and head motion are essential elements of neck function and dysfunction. Normally, patterns of muscle activity and head motion are balanced. For various movements, sequences and