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Effect of Adrenal Cortex Extract on the Course of Certain Human Infections.

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(Introduced by Ivan E. Wallin.)

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Much experimental evidence indicates that the adrenals possess a detoxicating function. Lewis¹ showed that double adrenalectomy increased the sensitiveness of rats to cobra venom, adrenalin and diphtheria toxin. Scott² demonstrated the greatly reduced resistance of adrenalectomized animals to doses of killed streptococci and staphylococci. Belding and Wyman³ confirmed Lewis' work that adrenalectomy lowers the resistance of animals to diphtheria toxin. Recently several investigators have found increased resistance to bacterial intoxication is conferred by a cortical adrenal extract.⁴ Scott and Bradford⁵ found that the extract seemed to decrease slightly the susceptibility of adrenalectomized rats to killed typhoid bacilli. Hartman and Scott⁶ later demonstrated that the resistance of adrenalectomized rats to bacterial intoxication was significantly increased by adrenal cortex extract.

These findings prompted us to use injections of cortical adrenal extract in patients with bacterial intoxication in the Colorado General Hospital. A preparation was made according to the technic of Swingle and Piffner and contained the equivalent of 50 gm. gland per cc. Injections were usually given intramuscularly. The first case treated was a typical typhoid fever. The diagnosis was confirmed by blood culture, urine culture and Widal reaction. Two cc. of the extract were given on the eleventh day after the first prodromal symptoms. The temperature became normal on the second day following injection and remained so during the 14 days in the hospital.

The second case was one of undulant fever of 6 weeks' duration. Diagnosis was confirmed by blood culture and agglutination tests.

¹ Lewis, *Am. J. Physiol.*, 1923, **64**, 506.

² Scott, *J. Exp. Med.*, 1924, **39**, 457.

³ Belding and Wyman, *Am. J. Physiol.*, 1926, **78**, 50.

⁴ Swingle and Piffner, *Science*, 1930, **72**, 321.

⁵ Scott and Bradford, *Proc. Soc. Exp. Biol. and Med.*, 1931, **28**, 428.

⁶ Hartman and Scott, *Proc. Soc. Exp. Biol. and Med.*, 1931, **28**, 478.

Two days following the injection of 2 cc. cortical extract the patient's temperature returned to normal and remained so for one week, when it showed an afternoon rise which promptly subsided following a second similar injection. The temperature remained practically normal during the rest of his stay in the hospital (9 days), only rising on 2 occasions to 99.2°F.

The third case was postoperative erysipelas with a positive blood culture which showed marked improvement after intramuscular injection of 2 cc. cortical extract. The organisms disappeared from the blood stream but later a relapse set in. The blood culture became positive and the patient died during an acute asthmatic attack before a second injection of cortical extract could be given.

The fourth case was one of lymphangitis of the hand and arm which had improved under incision and drainage but later developed a high fever. A blood culture taken at this time was positive, showing *Micrococcus aureus*. The temperature promptly returned to normal and remained so after one injection of cortical hormone.

The fifth case, a girl of 19, complained of chills, cough, nausea and vomiting, 12-11-1931. Physical examination was essentially negative. The temperature ranged between 102° and 106°F. Her condition did not improve and on December 23rd, 4 cc. of cortical adrenal extract were given hypodermically and the same dose repeated the following day. On December 25th she was much improved and no extract was given. On December 26th her fever was again high and 4 cc. of adrenal extract were administered. This dose was repeated on December 27th. Two cc. of cortical extract were given daily for the next 4 days. She improved rapidly following this and was discharged on January 16th. The diagnosis was a virulent ethmoid sinus infection, peribronchial adenitis with possible mesenteric adenitis.

While definite conclusions cannot be drawn from such a short series of cases, in our opinion the results are suggestive and tend to confirm our assumption that cortical adrenal extract might have some action in increasing the resistance of the human body to bacterial intoxication. Additional studies now in progress, should more definitely prove or disprove this thesis.

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