

65 (1812)

Testicular changes in acute alcoholism in man and their relationship to blastophthoria.By **CARL VERNON WELLER.**

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The blastophthoric effect of acute and chronic intoxications has been studied in the past chiefly by means of breeding experiments, in the course of which it has been shown that such agents as alcohol and lead can produce a definite blastophthoria without histologically demonstrable lesions in the germinal epithelium. By the same and other workers, it has been shown, however, that if the intoxication with these agents be increased, or if the subject be peculiarly susceptible, the germinal epithelium (male) may be made to exhibit degenerative changes, shown by atypical spermatogenesis or even by marked vacuolar degeneration and complete aspermatogenesis. It must be assumed as a working hypothesis that with any agent producing such demonstrable changes in the spermatogenetic process there is an earlier period in which spermatozoa showing less morphological deviation from the normal and capable of fertilizing are produced. Of great importance in this connection is the work of Widakowich¹ who has shown that the semen of syphilitics often contains increased numbers of atypical spermatozoa showing two, three or four heads; two, three or four tails, or combinations of such failures to divide. He notes also the occurrence of microcephalic and macrocephalic types.

In human material it is almost impossible to determine the relative effects of chronic and of acute alcoholism; so that, while the earlier literature specifies in almost all cases that the changes found are those of chronic alcoholism, the more acute degenerative changes and disturbances in spermatogenesis that have been described may be chiefly due to the acute exacerbations.

In investigation of this point five coroner's autopsies were selected having in common the facts that death occurred in, or

¹Widakowich, *La Semana Médica*, 1920, No. 46, Buenos Aires.

immediately after a period of severe alcoholic intoxication and that the testes did not show interstitial or vascular fibroid changes such as might be expected if a severe intoxication of any sort had been long operative. The testes of these five cases all showed abnormal spermatogenesis. Vacuolar degeneration of the germinal epithelium, often showing a zonal distribution in the tubules; hyperchromatic spermatogonia, atypical division figures with hyperchromatic nuclei; retardation of spermatogenesis with relative increase in the number of spermatids and the formation of multinuclear forms attached to the wall or free in the tubular lumina, were noted in varying degrees in the different cases. These changes are not specific for alcohol but resemble those experimentally produced in laboratory animals by alcohol and lead, and those described as resulting from certain acute infections in man (typhoid fever, influenza and pneumonia). Whether, in the five cases here studied, the testicular changes were a direct or an indirect result of the acute alcoholism can not now be stated. A causal relationship of some sort seems evident from the constancy of the changes and from the supporting experimental evidence. The changes found are in excess of those which it is necessary to produce in the testis experimentally in order to demonstrate a blastophthoria by breeding experiments. It seems quite certain that in an earlier stage spermatozoa must have been produced still capable of fertilization, but incapable of producing normal offspring. The observation here recorded is therefore considered an additional contribution to the subject of human alcoholic blastophthoria.

66 (1813)

A statistical study of the form and growth of a spore-bearing bacillus.

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The rate of growth of *Bacillus megatherium* has been measured by direct counting of the cells, using a hæmocytometer; and the average length of the cells has been determined by measurements