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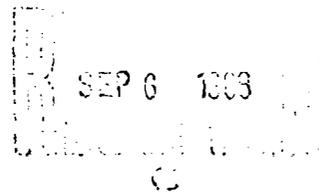
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HUMAN INFECTION WITH NEWCASTLE VIRUS

Gerhard, Schoop
7 April 1965

HUMAN INFECTION WITH NEWCASTLE VIRUS

Following is the translation of an article by Gerhard Schoop, Prof. z. Nv. and Honorary Professor of the Johann Wolfgang Goethe-University Frankfurt, a. M., published in the Deut. Tierärztliche Wochschr. 61(15/16): 162-64, 1954. Translation by B. MacDonald.

Two laboratory infections of two co-workers, with Newcastle disease, which recently in our own Institute gave rise to detection of the disease. This appears more essential than as yet was reported in the German literature. Next will be given a short picture of both disease cases.

Case 1. Dr. M., 42 years old, department worker for fowl disease in the Institute. During a time when, when Dr. M. experimented especially often with Newcastle virus, on 5/18/53 a severe conjunctivitis of the right eye set in. The conjunctival and scleral receptacle were severely injured, the mucous membrane was especially swollen under the edematous eyelid. The secretion was slightly augmented. In the eye foreign matter increased, combined with burning and itching. The pain increased slowly in the course of 1 day. Also a slight headache set in. On the 2nd day the symptoms attained their high point, pain was considerable. It consists also of heliophobia. The pre-auricular lymphnodes were swollen. From the 3rd day the appearance of the disease receded. All together the general disorder was bearable, so that the service could be performed. After 1 week the symptoms completely disappeared.

The virus identification succeed in rinsing liquid of the diseased eye during the 3rd stage of disease. On the 5th stage of disease the virus can be detected, neither in the nasal pharyngeal area nor in the conjunctiva nor in the blood and urine.

The antibodies detected with complement action with V and S antigens show a 40 fold increase. The high point was established on the 18 stage of disease. On the 28 stage of disease a decrease was already established. This investigation was carried out by Siegert, Haussmann and Mannweiler.

Case 2. Frau E. 56 years old, laboratory helper. She had cultivated for a questionable period of time experimental infected chicks and handled organs of dead animals. On 5/22/53 a conjunctivitis developed overnight in the right eye. The margin of the eyelids were severely swollen and stuck together in the morning. Particularly, secretion was dried up on the lashes. It consisted of foreign matter and pruritus. The conjunctiva as well as the sclera showed severe vascular reddening. There was less epiphora. The heliophobia was in comparison to the high degree of conjunctivitis slight. The illness of the conjunctival sac had its high point on the 2nd day. In the 3rd disease stage the mani-

festation of cold with sneezing and secretion appeared. On the 4th day a dry irritating cough with scratching came up. Slighter headache. Also in the case of Frau E the general condition was little disturbed with the local manifestation. After 1 week all symptoms disappeared.

Virus isolation was not possible by neither the above mentioned authors nor us. Complement fixing antibodies with V as well as S antigens were detected. The titer with V-antigen climbed 40 fold and those with S-antigen 80 fold. On the 40th day of the illness the 40 fold titer still existed. The anti-hemagglutinin showed no increase.

Both these cases are considered by Siegert, Haussmann and Mannweiler in their causistics.

The infections observed by us can be considerably typical for the average disease picture and disease progress. We cannot make observations on the time of incubation. Quinn, Hanson, Brown and Bradley, who advised on 5 cases, mentioned an incubation time of 18 to 24 hours. Slonim and Stranakova mentioned an incubation period of 36 hours, they have generally seen only one case.

The description of conjunctivitis, which always appears unilaterally, is fairly corresponding in all authors. Often there is follicle swelling. Almost all mentioned the swelling of preauricular lymph nodes. Correspondingly the submandibular lymph nodes seem to be enlarged. For the most part the illness remains local. Siegert, Haussmann and Mannweiler also observed an overlap of the nasal pharyngeal area, as in case 2, on another patient, moreover, a bronchitis set in. The diseased showed an influenza like picture of general sickness. Moreover, in the cases described by Quinn and co-workers ulcerations of the mucous membranes of the mouth were seen. Also they had a distinct sensation of being ill.

The course of disease, inasmuch as the phenomena remain confined to the optical apparatus, during 1 week. In the case of complication it can expand itself in about 3 weeks. The illness is overcome generally slowly and completely.

As a source of infection virus egg cultures were mentioned. (Kujungiev, Gustafson u. Moses, Slonim and Stranakova as well as Siegert, Haussmann and Mannweiler). Consequently laboratory infections are frequent. Moreover, also the contact with diseased fowl especially apparent with slaged fowl results as the infections in question. Under certain conditions a great number of people can become ill simultaneously. Yatom observed 17 cases of conjunctivitis in the kitchen personnel of an agricultural school, in whose poultry there was an outbreak of Newcastle disease. Another report not finished is under consideration by Rodnot and Wallner

(cited according to Siegert, Haussmann and Mannweiler). A mass illness of 40 people appeared after the report by Nelson and co-workers in the personnel of fowl slaughterhouses. Keeney and Hunter thereupon indicated that the disease perhaps gained in significance by the increasing consumption of fowl products during population circulation which do not come in contact with living fowl.

The Newcastle disease of humans accompanied frequently with a short lasting viraemia which appears in a detected leucopenia in relative lymphocytosis. A succession of authors obtained the direct virus detection, in the blood. The viraemia is limited to the early stages of illness.

The virus detection in the rinsing liquid of the conjunctival sack is easiest. Also nasal secretion and saliva can contain the virus. The successful isolation from the urine has been reported only once to be sure by Quinn and co-workers.

Antigens are also formed during the disease. It must be amazing since Howitt in 1943 found in mumps-immunsera and antibodies a different power against Newcastle virus. It is used for neutralizing and hemagglutination arresting factors. Jungherr and co-workers are more precisely concerned with these factors. They found the neutralizing antibodies thermostable. From 22 serums, which have been obtained from mumps patients, 13 neutralizing and 11 hemagglutination arresting antibodies were contained. Only 2 neutralizing materials can be detected from 23 control serums but never anti-hemagglutination. The authors therefore exhort caution in the valuation of serological results with virus detection. Since then one has been concerned with the relation between Newcastle and mumps virus. Whereas some i.e. Jordan and Feller as well as Evans, think in respect to analogous or similar antigen components of both virus, this view is rejected by other authors, especially Wenner, Jenson and Monley. According to the latter the hemagglutination inhibitor as well as the other "apparent" antibodies of mumps serum against Newcastle virus are unspecific and also occasional in non-diseased people and Rhesus monkeys. The authors did not believe that corresponding antigens in Newcastle and mumps virus for the observed reactions have been made answerable. Furthermore, also Bang with co-workers has detected on such neutralizing materials in the serum of healthy people as well as apes, rats, rabbits and at times also in fowl; these serum components were considered by him as the cause of breed resistance. Siegert, Haussmann and Mannweiler have worked with the exhaustively elaborated bound virus and soluble antigens in the complement fixation detected by Schaefer and Munk. Both antibodies in the course of disease show a characteristic increase. Also the complement fixation proceeds in the use of detected V and S antigens when it also occurs in essentially lower titers as in mumps antigen. However these

authors also remark on the caution in the evaluation of results without virus isolation.

In conclusion it may be indicated by the experiments by Wehner and co-workers. They saw in apes after intracerebral inoculation a chorio-meningo-encephalitis. Suitable observations were made by Collier, Polak and Verhaart. In general the disease of the central nervous system was non-malignant. Since also in the case of spontaneous fowl contagion the central nervous system m.o.w. always has sympathetic illness, it also shows in the case of the disease lapse in a natural host a known neurotropism. Suitable diagnosis in man were to be considered in the eventuality.

One surveys the communication of world literature on the appearance of Newcastle virus infections in man, so their number increases regularly. The Newcastle disease of fowl is distributed throughout the world. The infection occasionally occurs everywhere. According to Burnet as well as Erster in 1943, who diagnosed the susceptibility of humans to Newcastle virus, it lasted a long time, until suitable observations were made by another author. But at present a larger circle of investigation on the zoonosis seems to have become attentive. Till now the reports increase slowly.

In addition to the local illness of the optical apparatus a difficult aspect of the disease appears which draws attention to the influenza. All transitions can be observed. Particularly the personal circle can be endangered who come in contact through their professional contact with the virus or can come in contact. Therefore in the first line belong veterinary and laboratory personnel, besides workers in fowl handling, fowl farmers and finally farmers. For all, the Newcastle disease is regarded as an occupational disease. The fact that in the meantime occasionally also other people especially housewives can be infected in the course of cooking fowl for consumption, is obvious; however, it is handled in many random cases.

The Newcastle infection of humans shows all the characteristics of zoonosis. As yet the transmission from human to human or reverse transmission from human to fowl is acknowledged. It is also always concerned in dull ending ramifications from its infection of the natural host. On account of these characteristics the single illnesses were surpassed, mass diseases are only relatively seldom and appear only under special conditions. In which frequency specific single illnesses occur, up till now can still not be overlooked, since up until now little of this infection was observed.

Till now the diagnosis caused even certain difficulties. One can only there undertake virus isolation, where virological working institutes are near. The serology applicable

regarding positive mumps innumserum is limited. Specific treatments are as yet unknown, but are also not necessarily revealed. The aureomycin salve treatment employed in our cases of conjunctivitis was apparently without influence on the course of the disease.

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