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EPIDEMIOLOGICAL STUDIES ON OCULAR CAT-SCRATCH-DISEASE

By

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SUMMARY

. Outpatients visting opthalmic clinics of Kasr El-Eini Hospitals and Research Institute of Opthalmology (n=138) were examined for the presence of CSD.

. The clinical diagnosis of CSD was made in 14.49% of the examined patients on the bases of Hanger-Rose intradermal test, and confirmed by the indirect fluorescent antibody test.

. Age and sex susceptibility was studied, where females at age group 6-12 years were more susceptible to CSD.

. Suggestion to avoid CSD were given.

INTRODUCTION

Cast-Scratch-disease (CSD) is a new zoonotic disease with, the cat being main reservior. It is usually a benign lymphadenitis involving the lymph nodes draining dermal or conjunctival site of a cat scratch or a bite Accordingly, the disease is designated as "benign inoculation lymphoreticulosis (Acha and Szyfer, 1989), the health importance of CSD lies in the fact that it is always a complicated syndrome associated with severe systemic or recurrent infection resulting in encephalitis, neuroretinitis, osteomyelitis, arthritis, hepatitis, splenitis and pleurisy (Margileth et al., 1987).

Rochalimaea henselae has been implicated in the pathogenesis of CSD (Gerber et al., 1985; Regnery et al., 1992 and Dolan et al., 1993).

Outpatients of ophthalmic clinics are frequently presented with ocular manifestations together with regional lymphadenopathy and history of cat contact. This observation was a motive to establish a diagnosis of each cases on the bases of an intradermal allergic test and the application of indirect fluorescent antibody technique . Age and sex susceptibility was also investigated.

MATERIAL AND METHODS

Materials:

From January 1992 to January 1995, 138 outpatients of the Opthalmic clinic of Kasr El-Eini Hospitals and Research Institute of Ophthalmology at Giza were presented with ocular inflamation, unilateral or bilateral moderate loss of visual acuity. The ocular manifestations were always associated with regional lymphadenopathy involving the cervical, axillary or groin lymph nodes.

Aquestionnaire was used to obtain informatic about animal contact, and whether the patient wa

scretched or bitten by house pets, family history, medical history , physical examination for general systemic changes was also performed in addition to through ophthalmological examination. Biopsy from the conjunctival lesions was taken for histopathological examination. Swabbing of conjunctival nodules was subjected to polymears-chain - reaction.

Methods:

A) Hanger-Rose Intradermal Test:

The test was carried out according to the procedure described by Carithers (1985) using a commercial available antigen (producer Leima Laboratories USA : 0.1 ml of the antigen was intradermally injected into the volar aspect of the forearm. An induration and erythema of 5mm in diameter or greater developing after 48 hourse at the site of inoculation were considered a positive reaction.

B) Indirect Fluorescent Antibody test:-

Blood was obtained in amounts of 5 ml, allowed to clot and the separated serum samples were tested by the indirect florescent antinody technique as described by Wilkinson et al. (1979). A flurescin conjugated goat anti-human immunoglobulin (G,M, and A) was used. Antibody titers in the serum samples were determined and recorded - Antibody titers in serum of healthy control ranged from 1:2 to 1:6 (mean 1:8 - titers of 1:32 or greater (fourfold higher than the mean) were considered positive.

The diagnosis of CSD emphasized when 3 of 4 following criteria found:

1) Positive history of cat contact with characteristic skin or eye lesion.
2) Positive skin test of CSD.
3) Negative laboratory results for other causes of lymphadenopathy.
4) Characteristic histopathologic features o conjunctival lesions.

RESULTS AND DISCUSSION

From 138 manifesting ocular changes and othe signs suggestive of CSD, only 20 were positive t the test with an overall prevalence rate figuring u to 14.49% As regards sex susceptibility, 2 of 3 males (5.12%) and 18 of 99 females (18.18% were positive to the test. A clear femal susceptibility to CSD infection is thus evident However, positive reactions were found in 5% o the general population (Margileth, 1987).

The higher female susceptibility may be ascribe to the observation that females are at higher risk of infection than males, because the girls are always found of their pet animals and are more frequently associated with them.

Moreover, age susceptibility to CSD is also pronounced in females at the age group 6-12 years, a childhood age enjoying more intimate conatct with cats than other members of the family . Cats always defend themselves against tail pulling and other insults of these children at this age, by scratching or biting. At this age group (6-12 years) 11 of 12 tested girls were positive with the highest prevalence rate (64.7%), whereas only a single case of the five tested boys were positive . Only 2 women at the age group 50-60 were positive (20%). Under 6 years old, the female susceptibility was also higher than that of males with prevalence rates amounting to 50 and 25%, respectively. At the age group 13-18 , 3 of 32 (9.37%) females were positive , whereas none of the 11 tested males was positive . On the other hand, none of the tested patients at the age groups 19-24, 25-30, 31-40, 41-50 and over 60 years proved to be positive.

The relability of Hanger-Rose test in the diagnosis of CSD was confirmed by Spires and Smith

Table 1 : Results of Hanger - Rose Skin test in the patients showing clinical manifestation of CSD (n = 138)

Age groups (years)	No. examined		Results	
	Male	Femal	Male	Femal
Under 6	4	4	1	2
6 - 12	5	17	1	11
13 - 18	11	32	-	3
19 - 24	6	6	-	-
25 - 30	2	8	-	-
31 - 40	4	4	-	-
41 - 50	3	8	-	-
51 - 60	2	10	-	2
over 60	2	10	-	-
Total	39	99	2	18

Table (2) Clinical findings of 138 cases of CSD :

Symptoms and signs	% of positive cases	Mean duration days
1- Lymphadenopathy	45	35
2- Myalgia, arthralgia	15	4
3- Skin eruption	3	10
4- Fever	22	15
5- Spleiromyall	8	11
6- Mediastinal mass	43	40
7- Weight loss	8	23

R. henselae are projecting from the endothenial cells into the lumina. This internal relationship between the organism and the lumen lead to hematogenous spread of the bacilli .

Table (3) Ocular findings of the 138 cases of CSD

Clinical finding	% of positive cases	Mean duration (days)
Conjunctival nodule	18	15
Corneal epithelial defect	2	4
Afferent pupillary defect	2	12
V itreous inflammation	5	10
Aqueous flare	4	7
Optic nerve head swelling	9	22
Retinal lesions	12	18
Macular star of exudate	9	16

(1986) who found about 94% of patients with CSD reacting positive to Hanger-Rose antigen. Moreover, August (1988) stated that the test is considered a safe, reliable and highly specific method of confirming the presence of CSD and is especially valuable in atypical cases, and that biopsy of affected lymph node is not necessary if Hanger-Rose antigen is available.

The skin test, together with a history of cat scratch or bite and exclusion of other causes of lymphadenitis are valuabole tools in establishing diagnosis of CSD (Margileth et al., 1987).

It is worthy to mention that the findings of the indirect immuno fluorescence carried out on the sera of the patients were exactly in accordance with the results of Hanger-Rose intradermal test.

The antibody titers of the examined sera ranged from 1:32 to 1:256 . These results are comparable with those reported by Golnik et al.. (1994) who reported antibody titers equal to 1:256 in four cases of ophthalmic manifestations: Parinaud's oculoglandular syndrome, (granulomatous conjunctivitis and preauricular adenopathy).

Similarly, Regency et al. (1992) found high antibody titers (> 1:64) to R hensilae in sera from 36 (88%) of 41 patients with CSD. Zangwill et al. (1993) recorded 84% sensitivity and 96% specificity of the indirect fluorescent antibody test in identifying CSD in 45 tested patients.

The causative agent of CSD is proved to be *Rochalimeae henselae*, pleomorphic, gram negative , rodshaped bacterium, the epidemiologic cycle of transmission from cats to human contact is not clear. The transmission may be via flea bites (Koehler et al., 1994: Le et al., 1994), but most probably through a cat scratch or bite, since it is assumed that R. henselae may be a part of the feline oral flora transmitted to the claws during

grooming (Hainer, 1987) The disease also may arise when a cat licks an area of abraded skin. ALthough CSD has been reported in individuals that had been scratched by dogs, rabbits, monkeys, thorns and wooden splinters (Spires and Smith, 1986), yet careful history taking often reveals that these wounds were contaminated later by contact with cats.

The examination for distant systemic lesion associated with CSD proposed by Hadfield et al., (1985) who found the R.henslae are projecting from the endothenial cells into the lumina. This internal relationship between the organism and the lumen lead to hematogenous spread of the bacilli.

Due to the marked drop of vision of cases of CSD and the common retinal as well as optic nerve lesions, Golnik et al., (1994) stated that R. species should be considered in the differential diagnosis of intra ocular inflammation and inflammatory optic neuropathy.

Histopathological examination of conjunctival nodules showed multinucleated giant cells and chronic inflammatory cells (plasma cells, lymphocites histocytes). Steiner stain showed the organisms (bacilli) suggestive of CSD.

Conjunctival swelling was positive for only 3 cases out of the 18 patients presented with conjunctival nodules . This could be explained by the slowly growing nature of the organisms as well as the difficulty in its isolation. R. is pleomorphic gram negative bacilli, slightly curved or rod like with bulbous ends.

To minimize the possibility of contracting CSD, it is suggested to have home cats declawed, to wash promptly any scratches, to prevent cats from licking any open wounds, to wash hands after petting the cat, and to handle cats gently to avoid scratches or bites. The disease is curable and the appropriate therapeutic and surgical approach is indicated.

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