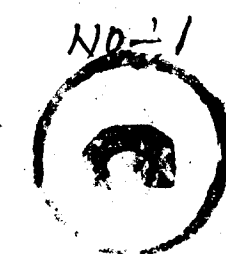


353

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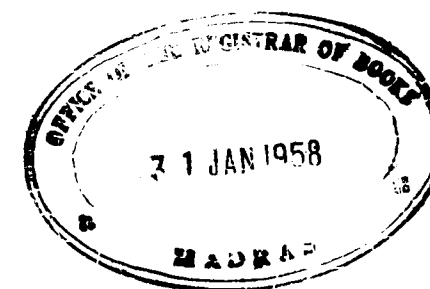
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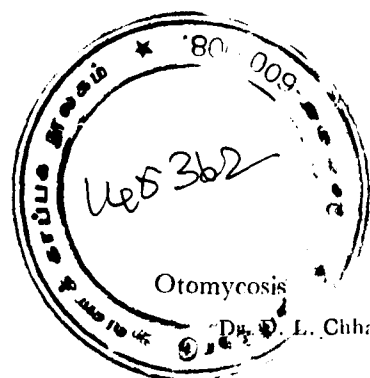
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CONTENTS

Otomycosis Dr. D. L. Chhangani, Dr. S. P. Gupta and Dr. R. N. Misra.	...	...	Page.
Scleroma Dr. A. L. Wahi, Dr. R. N. Misra and Dr. N. P. Gupta.	...	...	11
Two Cases of Abnormal Right Subclavian Arteries G. Hanmant Rao and Sukhanand Jain.	...	...	25
Otorhinolaryngological Complications Met with During The Recent Influenza Epidemic Dr. N. T. Matani.	...	...	32
Association Notes	...	...	36

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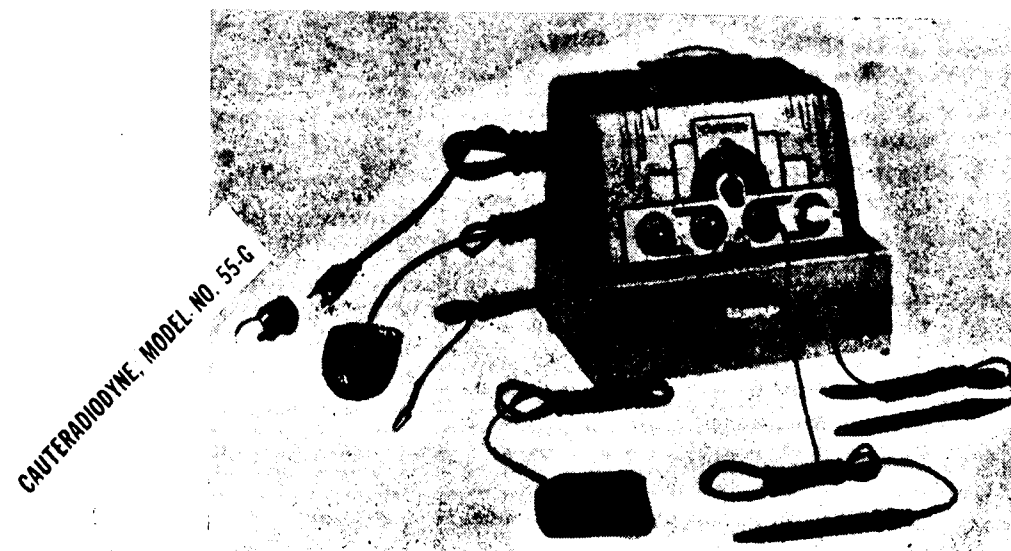
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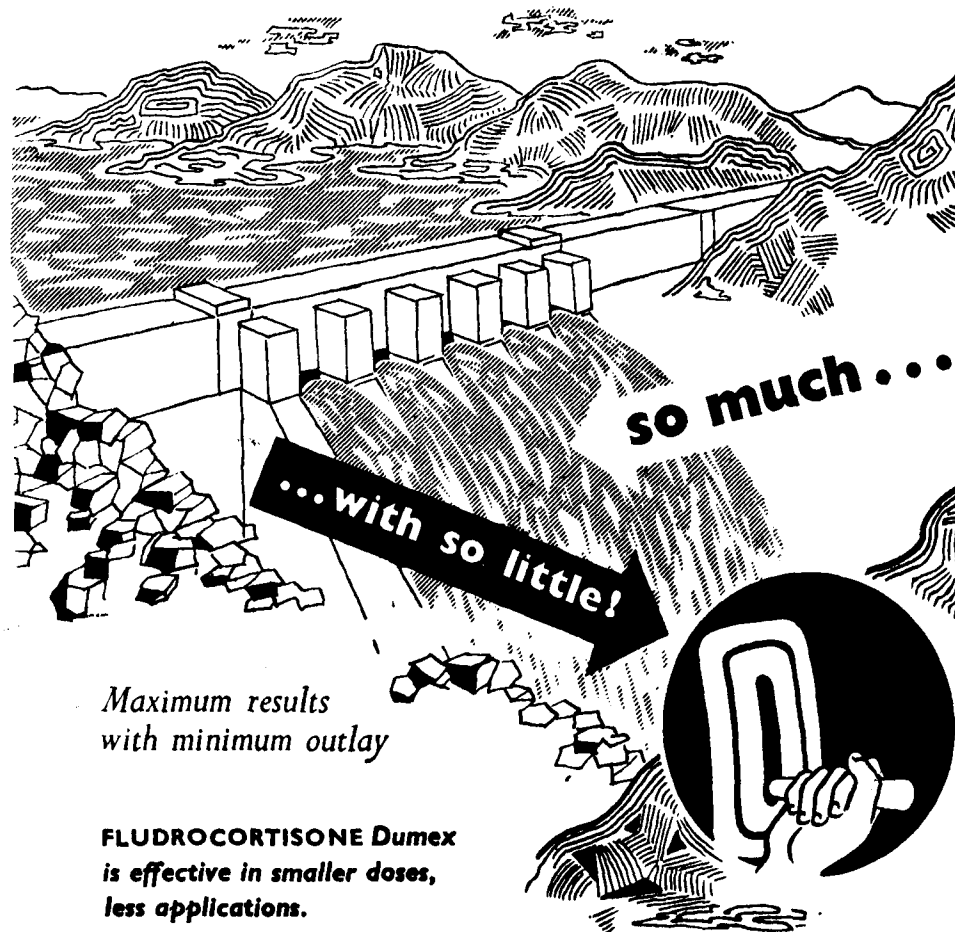


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Otomycosis

Dr. D. L. CHHANGANI, M.B.B.S., D.O.R.L., Dr. S. P. GUPTA, M.D., D.Bact.
(Lond.) and Dr. R. N. MISRA, M.S., D.L.O. (Lond.)

INTRODUCTION

Otomycosis or Mycotic otitis externa is an inflammatory condition of external ear canal which is caused by fungi or molds and is one of the commonest clinical types of otitis externa.

HISTORY AND REVIEW OF LITERATURE

Otomycosis was first recognised in 1844 by Mayer who reported the presence of a mycotic parasite in the ear discharge. Hall stated that the first fungus was isolated from ear in 1867 by Prof. Schwartz. Wolf reviewed the literature and found that at least 53 types of fungi have been reported to cause otomycosis.

There is much controversy in the literature regarding the significance of fungi which have been isolated from obviously infected ears as to their pathogenicity, as primary infective agents, secondary invaders or as harmless contaminants. Conley (1948) in a comprehensive review of the literature concluded that the frequency and prevalence of otomycosis have been overestimated, and expressed his doubts about their pathogenicity.

Haley studied the etiology of otomycosis and states that some fungi isolated from the meatus were found in both normal and pathological ears e.g. Aspergillus, penicillium etc. He

observed that pathogenic fungi exist in the meatus without causing symptoms and so suggested that mere absence or presence of symptoms cannot give any categorical clue regarding the pathogenicity of the organism, and so also a fungus cannot be considered non-pathogenic because it is a saprophyte and not a parasite.

Gill (Jackson & Jackson) described three types of molds causing mycotic otitis externa.

- (1) Budding forms—*e.g.* Monilia, Oidia, Coccidioides.
- (2) Filamentous forms *e.g.*, Aspergillus, Penicillium, Mucor.
- (3) Higher bacterial forms *e.g.* Actinomyces.

This discussion is based on a detailed study of 42 cases of mycotic otitis externa which was carried out in the otolaryngological section of Gandhi Memorial and Associated Hospitals, Lucknow.

The cases were studied regarding their clinical features, age, sex and seasonal incidence, predisposing factors and treatment.

The investigations carried out in these cases were :

- (1) Smear examination of aural discharge for fungi.
- (2) Culture examination of the aural discharge.
- (3) Histopathological examination of fungus mass removed from the meatus.

The results of the study can be briefly summarized as follows.

The cases of the present series can be classified into the following :

Sub Clinical Categories	No. of Cases
1. Otomycosis without any associated lesion ...	32
2. Otomycosis with suppurative Otitis Media ...	1
3. Otomycosis with wax ...	2
4. Otomycosis with Keratosis ...	3
5. Otomycosis with furuncle ...	3
6. Otomycosis with granulating condition of external auditory-canal ...	1
Total ...	42

AGE INCIDENCE

The cases of this series have been divided according to various age groups as given in the following table :

Ages in Years	No. of Cases
Below 10 years ...	2
Between 11 years to 20 years ...	11
„ 21 „ to 30 „ ...	14
„ 31 „ to 40 „ ...	4
„ 41 „ to 50 „ ...	6
Above 50 „ ...	5
Total ...	42

Thus in the above series although not a big one, it is observed that the incidence of otomycosis rises from infancy and

childhood reaching its maximum in adult age group *viz.*, (Between 21 years and 30 years) and then again diminishes with further rise of age. No definite reason for this observation can be stated but still it can be explained on the presumption that the patients between 11 years and 30 years being more active are exposed to atmosphere containing fungal spores.

SEX INCIDENCE

The number of females was 26 while that of males was 16 only.

SEASONAL INCIDENCE

The study extended from May 18, 1957, to September 5, 1957, thus covering summer and rainy seasons almost equally :

Season			No. of Cases
Rainy	...	...	41
Summer	...	...	1
Total	...		42

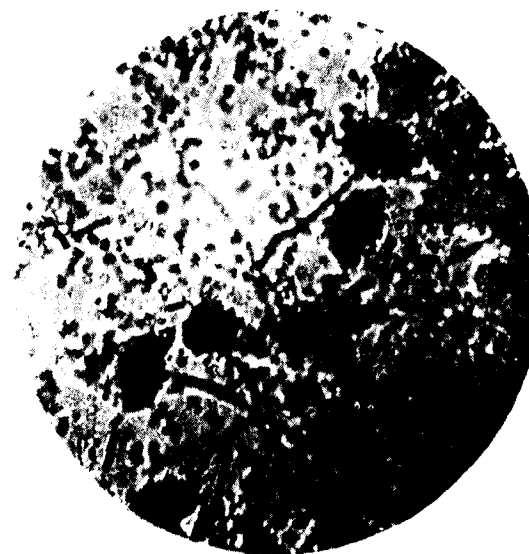
Thus almost all the cases were seen in rainy season.

OTHER PREDISPOSING FACTORS

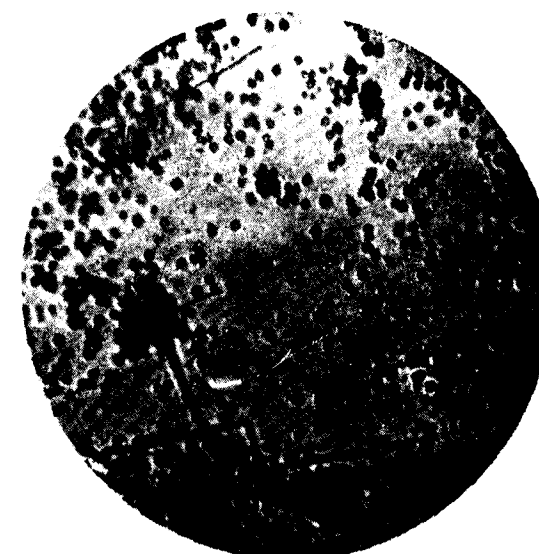
Enquiries were made regarding the following predisposing factors in all the cases and results revealed are as follows :

1. Swimming.
2. Picking the ear with some objects like match-stick, hair-pin etc.
3. Toilet habits.

		<i>Number of Cases.</i>
Swimmers	...	13
Non-Swimmers	...	29
Total	...	42



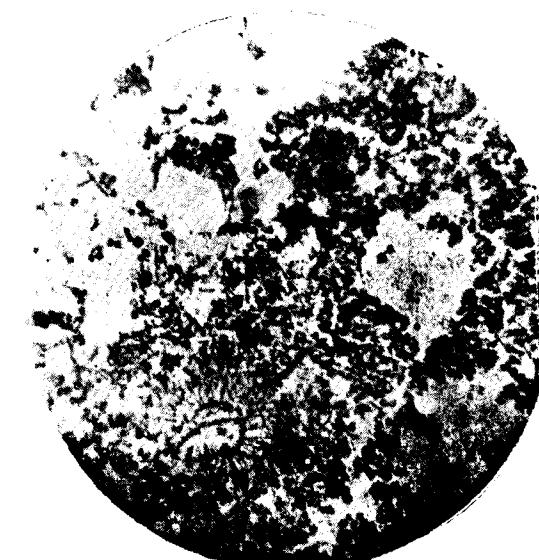
× Conidiophores.



× Conidiophores.



Keratosis with Otomycosis.



× Sun Ray Appearance.

PICKING HABIT

Positive history was obtained in 33 cases and in 9 cases no such history was elicited.

TOILET

In this enquiries were made regarding the use of soap for cleaning hands after nature's call. Only seven patients gave the positive reply while a large number were found to be lacking in this part of personal hygiene.

PATHOLOGY

In most of the cases the wall of external auditory canal was found to be erythematous and oedematous (of varying degrees) with excoriation of the skin lining the meatus. Varying sizes of fungus masses of a black or brown-black colour were revealed lying in the meatus.

On removal of these masses the tympanic membrane was found normal in all the cases except for slight injection and except in those cases where it was associated with a suppurative condition of middle ear cleft.

In three cases the fungus mass was found covered with brownish desquamated epithelium on its deeper surface, which was in contact with the deeper part of the meatus.

In one case granulating condition of the external auditory canal was encountered with the fungus mass. In 3 cases an associated condition of furunculosis was met within the outer part of the meatal canal;

Macroscopically, the fungus mass removed from the meatus appeared to be composed of a dirty greyish white membrane, cast in the form the meatus, which was speckled with blackish granules in almost all the cases.

In one case where otomycosis was found in association with wax it was observed as a thin dirty whitish film lying over the subjacent wax and also extending on to the adjoining meatal skin which on investigation revealed a monilia type of fungus.

INVESTIGATIONS

Smear examinations done in 37 cases for fungi revealed positive results, showing fungal spores or hyphae or both combined.

CULTURE

In 17 cases material was sent for culture and the results were as follows :

Aspergillus niger	...	13 cases
Monilia	...	2 „
Sterile	...	2 „
Total	...	17 cases

The material from smear was grown on sabouraud's medium. The examination of growth of aspergillus revealed typical conidiphores spores and mycelia. (Figure 1 & 2).

HISTOPATHOLOGICAL EXAMINATION

The fungus mass removed from the meatus, was subjected to histopathological examination in 8 cases and revealed aspergillic otomycosis. In 3 cases out of these histopathological examination showed Keratinised material with Aspergillic otomycosis. (Figure 3).

The microscopic examination revealed necrosed tissue in which numerous asperigillus fungi were seen extangled, comprising of filaments with numerous, brownish rounded spores and heads in which the spores were found arranged radially. The sporeheads resembled sun ray in appearance. The fungal hyphae were gram positive in staining. (Figure 4).

In cases of otomycosis with Keratosis, in addition to the above picture, the sections showed laminated keratinised material with hardly any inflammatory cells. (Figure 3).

CLINICAL FEATURES

Most of the patients presented themselves with varying subjective symptoms like mild discomfort to pain, a sense of fulness to deafness, pruritus, soreness and tinnitus in the ear, of varying durations. On further enquiries into the past histories of the cases, a history of single or a number of such episodes recurring at varying intervals was revealed. Patients who had associated furuncle or furuncle with cellulitis also complained of fever of some duration.

EXAMINATION

The clinical examination revealed typical fungus masses in the meatus either alone or with various associated conditions as discussed earlier.

In some cases brownish or black macroscopic colonies could be visualised in the meatus.

The hearing tests carried out revealed conductive type of deafness which improved dramatically after syringing out the fungus mass.

TREATMENT

The treatment carried out in the present series consisted of :

- (1) Regular, painstaking thorough cleansing of the external auditory meatus with special attention to the anterior meatal recess followed by careful swabbing with cotton wool wicks.
- (2) 3% Boric spirit was used as drops in all the cases.
- (3) The associated lesions were given necessary treatment.
 - (a) 10% Icthyol Glycerine with systemic antibiotics in cases of furuncles.
 - (b) Trichlor acetic acid for the granulating condition of the meatal canal.

With the above treatment carried out almost all the cases were relieved and cured.

RECURRENCE

The follow up of the cases showed recurrence of the condition in one case.

DISCUSSION

- (1) This study was carried out at Lucknow a place situated in the tropics where the climate is hot and humid especially in rainy season. 41 out of 42 cases of this series were seen in the rainy season. The climate of Lucknow during rainy season is hot and humid because even after the shower there is no steady fall in the temperature of the atmosphere, meaning thereby that the temperature again rises sometime after the shower, thus to humidity, the factor of heat is also added.
- (2) As suggested by Collins (1951) it is now known that the superficial epithelial pellicle of the skin in the deeper part of the meatus can easily desquamate.
- (3) A suggestion is put forward regarding the manner of action of this hot and humid weather on the epithelial pellicle of the meatus.

The constant contact of this moist air with the deeper part of the meatus plus the augmented activity of the sweat and sebaceous glands (under the influence of heat of the atmosphere) results in maceration and desquamation of the thin pellicle, thus predisposing to otomycosis or any other form of otitis externa.

- (4) Review of the literature almost unanimously opine that the hot and humid climate favours growth of fungi. There has been a very interesting observation confirming the view *viz.*, that during rainy season fungal growths were observed on various objects like books, shoes and even purse if left uncleaned even for a day.

Combining the above factors it can be logically concluded, that preparation of the soil in the meatus suitable for fungal growths during rainy season, which also favours growth of fungi, accounts for the frequency of incidence of mycotic otitis externa in the rainy season in Lucknow. Here a very important argument shall have to be met with before finally confirming the pathogenesis of otomycosis as explained above. The argument will be that all people in Lucknow are exposed to the same climate and are liable to be exposed to fungal infection as living under uniform conditions. This can be explained as suggested by Haley, who has emphasized the role of trauma and previous sensitivity to fungal spores. He carried out an experimental study on induction of otomycosis in rabbits where he found that a slight amount of trauma must accompany the introduction of fungal spores in the external auditory canal and the animal should be sensitised to bring about an allergic reaction.

Once the otomycosis results in formation of a fungus mass, it leads to exfoliation of epithelium, desquamation and even superficial ulceration if the pathological process continues. The ulceration thus produced will be covered by granulations in an attempt of nature to repair it resulting into granulating condition of the meatal canal. If the process stops short at desquamation only the condition of Keratosis results.

In the treatment of otomycosis various medicines like thymol, salicylic acid, in spirit have been suggested by Conley. Senturia and Wolff found that sulfanilamide had a marked fungi static effect on the culture of *Aspergillus*, and *Penicillia* and while *Mucor* remained unaffected. This observation was confirmed by Philip S. Spence in his clinical practice. Gaving Young (President Roc. Roy. Soc. Medi. (Otology) 1950) observed that Surgical Spirit would clear otomycosis in a day or two and found the use of salicylic acid as unnecessary. The treatment carried in this series was with 3% Boric spirit and it was observed that thorough cleansing of the meatus with special attention to the anterior meatal recess should constitute a very important step in the treatment without which the cure shall not be obtained and recurrences will be seen more often.

RECURRENCES

The histories of these case revealed that the condition is recurrent occurring in every rainy season. These can be explained as follows :

- (a) Absence of proper treatment,
- (b) It is suggested that the fungi especially spores which have invaded the sub-epithelial tissue (Morrison) become dormant for sometime in presence of unfavourable circumstances (which include climatic other factors) to become active again in favourable circumstances resulting in recurrence.

SUMMARY AND CONCLUSION

A review of 42 cases of Otomycosis studied in otolaryngological section of K. G. Medical College Hospital. A discussion regarding its aetiology, pathology, clinical feature, and treatment is submitted. That rainy season which is hot and humid appears to be a very important predisposing factor in the causation of otomycosis. Thorough cleansing with 3% boric spirit was found satisfactory in the treatment.

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Scleroma

BY

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Dr. R. N. MISRA, M.S., D.L.O. (LOND.) & Dr. N. P. GUPTA, M.D.

INTRODUCTION

Scleroma is a disease of poor people, living in insanitary surroundings in the villages or slums of cities and has been aptly described as the disease of the "great unwashed". The etiology of the disease is uncertain and the treatment until recently has been unsatisfactory. Though not very often fatal, it causes a lot of discomfort and disfigurement in the patients afflicted with this. Patients are even driven to attempt suicide as in the case reported by Niblock in the Indian Medical Gazette (1907). His patient a Eurasian when discharged from the hospital for indecent conduct attempted to drown himself, was rescued and sent to jail for the offence.

The publications in India upto now include a series of six cases published by B. T. Rao and T. B. Menon (1941) and one of 10 cases by Rege (1951) and cases reported by Keegan (1889), Raye (1889), Mohanty (1945), Ghosh (1945), Tulsidas and Chaddah (1954) and Goyal, Sarin and Narayanan (1956).

In the following pages an attempt has been made to state the observations based on the study of 85 cases who reported to Gandhi Memorial and Associated Hospitals, Lucknow either as out-patients or were admitted and treated in the hospital. In addition letters were addressed to 20 prominent Otolaryngologists of India enquiring about the number of cases seen by them in the last 5 years and about the age and sex incidence. The information received from them has also been incorporated in this study. The routine bookish type of description and detailed review of literature has been avoided.

ETIOLOGY

Incidence.—As in different parts of the world, so in India, the incidence of Scleroma differs in different parts. In the present study 85 cases have been recorded from Lucknow in the period 1952-57. Going by the published records one gets an impression that the disease is rare in India. Starting from the first case published by Keegan in 1889, upto now 29 cases have been reported. This however gives a very incorrect picture of the true state of affairs if one considers that 85 cases reported at G. M. and Associated Hospitals, Lucknow alone in the period 1952-57.

In the same period (1952-57) 40 cases of Scleroma reported to S. M. S. Hospital, Jaipur for treatment. Dr. Tulsidas and Chaddah (1954) reported 2 cases from the Punjab, and considered the disease was rare in the Punjab.

As a result of the replies received to the *questionnaire* addressed to 20 prominent Otolaryngologists of India, the following information was received :

Dr. P. Narasimha Rao saw 9 cases at Visakhapatnam in the last five years.

12 cases could be traced from the records of K. E. M. Hospital, Bombay.

Dr. R. A. F. Cooper from Bombay wrote he remembered to have seen roughly 12 to 15 cases in the last 5 years.

Dr. J. Gulati from Bhopal wrote that he saw 11 cases in the last 3 years.

Dr. G. S. Grewal told me personally that he saw on an average 20 cases a year at Indore.

Dr. Chatar Singh Anand saw 14 cases at Gwalior in the last 4 years.

Dr. H. Hazra (Cuttack) and Dr. S. K. Sen Gupta (Calcutta) gave an impression that the disease was very rare in their respective stations and so no records were kept of their incidence.

Dr. M. M. Nath from Jamshedpur wrote that he did not see any case in the last 6 years.

Dr. D. L. Chhangani saw 2 cases of the disease during his 1½ years stay at Jodhpur (Rajasthan).

AGE

Out of the present series of 85 cases 59 cases *i.e.* 69% belong to the age group 16 to 35 years.

Age Group years.	No. of cases.	Percentage.
1 to 15	3	3.5%
16 to 25	24	28.5%
26 to 35	35	41%
36 to 45	18	21%
Above 46	5	6%

The oldest case was 70 years and the youngest 10 years of age, the average age being 31.1 years.

The probable reason why the disease is uncommon in children is that it is very slow to evolve and needs prolonged contact for infection to occur as in case of leprosy.

SEX

In the present series there were 51 males (60%) and 34 females (40%) *i.e.* the males predominate by 20%. This is contrary to the observations of European Workers. In Belinoff's series females predominate by some 17% and according to Zalewski the proportion of women to men is 3:2 and in 100 cases reported by Borowicz 43 were males and 57 were females.

CLIMATE

The disease occurs in all sorts of climates. It is prevalent in some of the coldest countries like Russia and Poland on one hand and tropical countries like Guatemala, Dutch Indies and India on the other. In India the disease appears to be quite common in Lucknow (85 cases in 6 yrs.), Indore (about 20 cases a year) and Jaipur (40 cases in 6 yrs.), less common in Bombay (about

27 cases in 5 yrs.), Bhopal (11 cases in 3 yrs.) and Visakhapatnam (9 cases in 5 yrs.), rare in Calcutta and Cuttack, and Jamshedpur enjoys immunity (no cases seen in last 6 yrs.). This is difficult to explain on the grounds of climate. A case has been seen at Bikaner, a place with 6" rainfall and cases are also met with at Bombay and Visakhapatnam with annual rainfall, exceeding 60". So the humidity in the atmosphere or lack of it do not appear to be predisposing factors.

ENVIRONMENTAL, HYGIENIC AND SOCIAL FACTORS

Most of the cases in the present series came from the lower stratum of society. 8 of them could be classed as belonging to the lower middle class while the rest were peasants and labourers. A vast majority of the cases come from rural areas but quite a member of cases came from Lucknow City. Author No. 1 (A. L. W.) visited the houses of 5 of the patients. They all live in different parts of Lucknow City and follow different occupations *viz.* a Dhobi, wife of a painter, hotel waiter, wife of a mason, and shopkeeper respectively. Poverty and poor hygiene were of course found to be common factors in all these cases. Families of these cases averaging about 8 to 10 in each case were also examined but a second case in the same family was not detected.

All the cases with one exception had never left U. P. for their entire lives. Most of them had not left their districts or even their villages till they got the disease; Belinoff states that there are three autochthonous foci; the first, Galicia, Poland; second Sumatra; third Central America particularly Guatemala. The other epidemic centres in isolated cases are usually secondary to immigrants from the original foci. As most of our cases came from rural areas who have practically no contact with the rest of the world, it appears they form an autochthonous focus by itself.

It is felt there are a number of such foci in India as it is very unlikely that they all arise from one focus because the contact among the villagers of different parts of India separated by hundreds of miles is very poor indeed.

SYMPTOMS

The various symptoms complained of were as under:

(1) **Nasal obstruction.**—This was the commonest symptom complained of and occurred in 78 cases. This was the first symptom in 53 cases while in others it developed later. In most of the cases it was due to the presence of infiltrative or nodular lesions, while in a small number of cases it was due to the presence of crusts only and disappeared if the crusts were removed.

(2) **Crusting and Epistaxis** was present in 19 cases in the present series at some stage. These symptoms usually go together; the patient gets crusting in the nose and separation of crusts causes repeated attacks of epistaxis. These may be the first symptom, disappearing later when the case develops granulomatous lesions.

(3) **Smarting and Burning on taking spicy food** is a constant symptom in all the cases involving the palate and was present in 18 cases in the present series. Though ulceration is not a feature of the disease, it has been noticed that superficial erosions of the mucous membrane occur on the palatal lesions, thus accounting for this symptom.

(4) **Dysphagia** is an uncommon symptom occurring in only 3 cases. It occurred due to fibrous contracture of faucial pillars pulling up the tongue and causing marked narrowing of the oropharyngeal isthmus.

(5) **Dyspnoea** was present in 10 cases in the present series, in 9 of whom it was due to involvement of the larynx. The remaining one case showed marked narrowing of the nasopharyngeal and oropharyngeal isthmus.

(6) **Hoarseness of voice** was present in 12 cases and was due to laryngeal involvement. It resembles the rough and raucous voice of syphilitic laryngitis.

(7) **Cough** was a feature of all cases with involvement of the larynx. It is more marked in the earlier stage with crust formation. It is dry and paroxysmal, the paroxysm often ending only with the expulsion of the crusts.

(8) **Tinnitus, pain and discharge from** the ears was present in 8 cases. In all these cases the nasopharynx was involved predisposing to infection of the eustachian tube and middle ear.

(9) **Epiphora** occurred in 12 cases and was due to the presence of Ch. dacryocystitis, scleroma of the lacrymal sac or lower eye lid.

SIGNS

Szmurlo (1933) has described three stages of its development as follows:

(1) A diffuse stage presenting a picture similar to atrophic rhinitis, characterised by widening and infiltration of the mucosa, formation of crusts and exudation of a watery, foul smelling discharge.

(2) A circumscribed state marked by the emergence of reddish blue nodules from the oedematous surface, these nodules soon coalescing into granular masses which are so firm that they give a sensation similar to that of touching cartilage.

(3) A cicatricial stage wherein the involved nasal tissues become hard and tense, owing to the formation of the scar tissue, adhesions and deformity due to shrinkage.

Cases in all the above three stages were seen.

The various sites of involvement with their frequency are as under:—

Location.	Percentage of involvement.
Nose	... 95
Upper lip	... 21
Pharynx	... 25

Location.	Percentage of involvement.
Nasopharynx	... 25
Palate	... 21
Larynx	... 16
Tongue	... 2
Lacrymal Sac.	... 2
Lower eye lid	... 1
Gums	... 1

(1) **Nose.**—Nose was involved in 81 cases out of which in 36 cases, this was the only organ involved. Most of the cases had practically complete nasal obstruction, and the disease was in the granulomatous stage. The lesions were red, nodular, fleshy looking, firm or hard in consistence and protruded out of the nostrils.

Posterior choanae showed concentric narrowing or even complete blockage in a big percentage of cases.

Three cases showed the features of atrophic rhinitis. All these three cases showed infiltrative or granulomatous lesions in other parts of the upper respiratory tract. One case showed the appearance of atrophic rhinitis on anterior rhinoscopy and concentric narrowing of posterior choanae on posterior rhinoscopy.

One case showed a nodular lesion in the right nasal fossa and infiltrative lesion in the left nasal fossa.

(2) **Upper lip.**—The upper lip was involved in 18 cases. This usually starts as a subcutaneous infiltration and is in direct continuity of the nasal lesion. It is this lesion which is responsible for the hideous deformities produced by disease.

(3) **Nasopharynx and Pharynx.**—The nasopharynx and pharynx were involved in 21 cases. All the cases showing involvement of the pharynx, also showed involvement of the nasopharynx. The lesions may be seen in the atrophic, infiltrative or nodular stages. Later adhesions between the soft palate and posterior wall of pharynx and fibrosis cause narrowing of the

nasopharyngeal and oropharyngeal isthmus and base of the tongue is pulled up. This causes dysphagia and dyspnoea and in one case tracheotomy was needed.

(4) **Palate and gums.**—Palate was involved in 18 cases. The whole area looks red and there are a number of discrete nodules which may later coalesce. A number of superficial ulcers are seen on the surface of the palate which are probably due to trauma during mastication rather than breaking down of the nodules. In the late stages soft palate and uvula are fibrosed and may occasionally cause nasal regurgitation of fluids and rhinolalia aperta.

The lesion from the hard palate may spread to the gums. This was seen in one case.

(5) **Larynx.**—The larynx was involved in 14 cases, in 3 of whom it was the primary site of the disease. Subglottic region was involved in 9 cases, involvement of the ventricular bands, vocal cords, arytenoid cartilages and aryepiglottic folds was seen in other cases. Dyspnoea was present in 9 cases and 4 of them needed tracheotomy. One case (Fig. 1) showed broadening of the thyroid cartilage. One case showed no symptoms pertaining to the larynx while examination showed a white scar in the subglottic region suggesting healed lesion.

(6) **Lacrymal Sac.**—Scleroma involving the lacrymal sac was observed in 2 cases (Fig. 2). The infection probably travels along the nasolacrymal duct.

(7) **Lower Eye lid.**—The right lower eye lid was involved in one case (Fig. 3). The history suggested that the patient had primary involvement in the eye lid and that the disease spread to the nose afterwards either along the nasolacrymal duct or by lymphatics surrounding it.

RELATIONSHIP WITH TUBERCULOSIS

In the present series 4 cases showed tuberculosis of other organs. Lungs were the site of disease in 3 cases and cervical glands in 1 case. Sputum was positive for A.F.B. in all the

Scleroma



Fig. 1.

Shows broadening of thyroid cartilage.

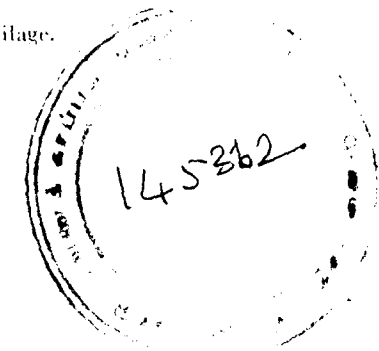


Fig. 2.

Shows scleroma of the lacrymal sac.



Fig. 3.

Shows scleroma of the right lower eyelid.

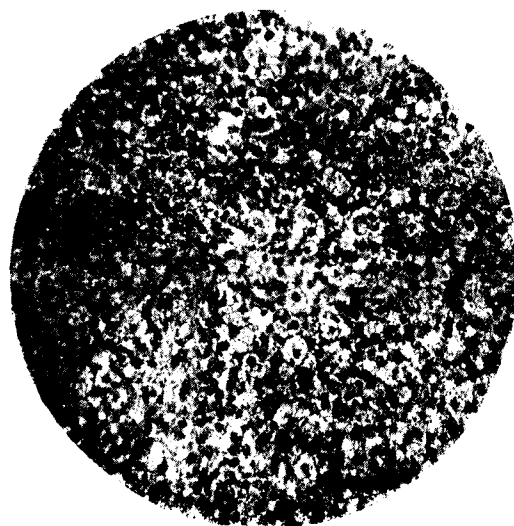


Fig. 4.
M—Mikulicz cells
R—Russell bodies.

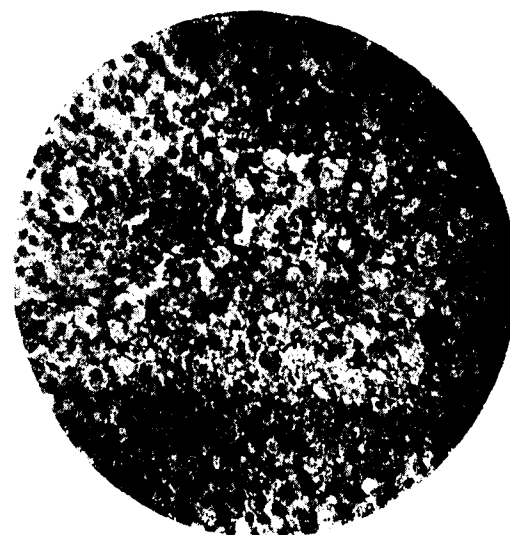


Fig. 5.
M—Mikulicz cells
R—Russell bodies.



Fig. 6.
Shows increased fibrous tissue.

pulmonary cases and tuberculosis was revealed on biopsy in the case with glandular involvement. Putschowsky as reported by Eggston and Wolff (1947) stated after observing 700 cases that quite a few of his patients with scleroma had tuberculosis of other organs particularly of the cervical glands. The occurrence of tuberculosis in 4 cases in the present series of 85 cases can be regarded as more than coincidental. It is possible the catarrhal state of upper respiratory passage in scleroma favours infection by the tubercle bacillus.

DIAGNOSIS

The diagnosis is obvious in the typical cases, but in atypical cases the growth must be distinguished from syphilis, tuberculosis, lupus, leprosy, and from neoplasms. The features to be kept in mind are its endemicity in certain areas, the great chronicity of its course, the hardness of the lesion, absence of pain or systemic involvement and the ultimate cicatricial deformities and stenosis.

Biopsy. Biopsy is of great value in doubtful cases, it was positive in 74 cases in the present series *i.e.* the tissue showed Mikulicz cells and Russell bodies (see Fig. 4, 5) in addition to cells of chronic inflammation *viz.* lymphocytes, plasma cells and mononuclear cells. Biopsy may have to be repeated a number of times before positive evidence can be obtained. In one case biopsy was negative twice, but later when the nose was canalized the excised masses from the interior of the nasal fossa when examined histologically showed typical Mikulicz cells. Old lesions may not show the typical cells, hence biopsy from freshly advancing portion of the growth should be taken. Two cases refused biopsy and in 9 cases it was negative *i.e.* Mikulicz cells and Russell bodies were not seen and the tissue only showed evidence of chronic inflammation. Old lesions show increased fibrous tissues (Fig. 6). In conclusion it is felt that though a positive biopsy is very helpful, a negative one does not rule out the diagnosis and that the diagnosis should mainly be based on clinical features and course of the disease.

Isolation of Klebsiella Rhinoscleromatis.—An attempt was made to isolate *Klebsiella rhinoscleroma* from 11 cases. The growth of a *klebsiella* was obtained in only 4 cases. This shows it is difficult to isolate the organism and it may not be very useful in diagnosis.

Complement fixation test.—Complement fixation test was carried out in 11 cases. In the first instance the antigen was prepared from *Klebsiella* isolated from a patient with scleroma. The test was negative in 10 cases, and positive in one case (Dulari) in dilutions of 1 in 5 and 1 in 10 only. This was the case from whom the organisms were isolated and the antigen prepared.

The test was then repeated with the antigen prepared from cultures of standard *Klebsiella Rhinoscleromatis* No. C 5046. This time the test was positive in dilutions upto 1 in 80 in one case (Mrs. Mohd. Isa Khan) and in dilutions of 1 in 5 in another 2 cases. It was negative in all other cases. The standard serum prepared in rabbit fixed complement with the antigen in a dilution of 1/160.

Sivak (1942), Neuber (1937) and Levine and Hoyt (1947) all attach a great value to complement fixation test in diagnosis. Levine (1951) found that the serum of rhinoscleroma cases fix complement with all the rhinoscleroma bacilli isolated as well as strains of the *Aerobacter*. Kauffmann (1949) has classified, *Klebsiella* into groups on the basis of the 'O' (smooth somatic) antigen and the K (capsule) antigen. *Klebsiella rhinoscleromatis* falls into his antigenic classification 2:3 or 'O' antigen 2, 'K' antigen 3. According to him all rhinoscleroma organisms have this antigenic structure.

Our results however do not conform with those of the above workers. It may be possible that *Klebsiella* organisms having different somatic and capsular antigens are able to cause the disease. It is also possible that *Klebsiella rhinoscleromatis* may not have a uniform antigenic structure as has been recognised so far.

It may be that *Klebsiella rhinoscleromatis* is not the etiological agent, in the disease. Gray stated, "*K. rhinoscleromatis* bears as yet some obscure relationship with the disease rhinoscleroma. It appears, however, commonly to be a secondary invader in the lesions characteristic of the disease". Wilson and Miles (1948) said, "There is very little evidence to show that this organism is primarily responsible for it. There is no means by which it can be distinguished with certainty from other members of the capsulated group; and since we know that members of this group may be present in the nose of healthy persons, it is difficult to prove that they play any part in the production of rhinoscleroma. The probability is that they are mere secondary invaders which grow freely in the nose of patients suffering from the disease". According to Cuning (1942), the complement fixation test is yet to prove its value. Our observations lend support to this view.

Treatment.—Follow up was possible in only 51 cases in the present series and the following remarks are based on the observations in these cases. The various forms of treatment given to these patients are discussed.

(1) **X-Rays.**—The patients were given this form of treatment before the advent of antibiotics. A course of 6 exposures was given. Two cases given this form of treatment were followed up; both of them showed no improvement for a period of 6 months and 4 years respectively. One of them was subsequently treated with 20 G. of streptomycin and cured. This case was followed up for 5 years. Dosage of deep x-rays in general was not found satisfactory, hence it was not given to other patients.

(2) **Antibiotics (a) Streptomycin**—This has been given in different dosage in the present series. The dosage was rather small in earlier cases as they had to buy the drug and expressed inability to do so after a few days. Four cases were given 15 G. or less, 3 of them were cured after a follow up of 3 to 5 years,

while one showed no improvement. 13 Cases were given 20 G. of streptomycin, 5 of them showed activity of the disease subsequently which responded to another 30 G. of the drug. In 2 of them the disease recurred in the nose, while in the other 3 though the nose showed no signs of active disease the disease progressed in the palate and fauces. This was however controlled by further treatment with 30 gms. of streptomycin.

All the 16 cases treated with 30 G. of streptomycin showed improvement and this was maintained during the period of follow up varying from a few months to 4 years.

Though cures have been observed with a dosage of less than 15 G. the high relapse rate of 5 out of 13 with a 20 G. dose shows this to be an inadequate dose. 30 G. appears to be a good average dose, though the recurrence in a certain number of cases cannot be ruled out.

(b) **Aureomycin.**—First group of 3 cases received 14, 10 and 15 G. respectively in the dosage of 1 capsule of 250 mgm. every 6 hrs. It is interesting to observe that all these cases showed improvement and maintained it for periods varying for 1 to 2½ years. The second group of 9 cases received a dosage between 20 to 25 G. All the cases showed good response with a follow up of from a few months to 2 years and 9 months.

(c) **Streptomycin and Aureomycin.**—8 cases were treated with a combination of the two drugs, 7 of them were given streptomycin for the first 20 days followed up by aureomycin for 10 days, while one case was given aureomycin for 12 days followed up by streptomycin for 30 days. All showed good response to treatment and this was maintained for a follow up period of a few months to 1 year and 9 months.

(d) **Streptomycin vs. Aureomycin.**—Both drugs are therapeutically effective. Aureomycin has the advantage of being given orally but it is more costly and produces side effects such as

abdominal discomfort, nausea, diarrhoea and occasionally fever. Streptomycin is less costly but has to be given by injection and there is a possibility of eighth nerve damage, though no evidence of toxicity was seen in the present series.

(3) **Surgical Treatment.**

(a) **Canalization of the nasal fossa and plastic operations on the nose.**—Most of the nasal cases need canalization of the nasal fossae as they rarely report for treatment in early stages. In most of the cases this was done in the last week of the antibiotic treatment. The fleshy masses were dissected out from the nose and rubber tubes put in to maintain the patency of the nasal fossae. This helps in reestablishing nasal respiration and it is maintained except in cases where the patient discards the rubber tubes very early. It is a good adjunct to antibiotic therapy; though by itself it does not give lasting improvement.

Plastic operations on the nose are indicated to reestablish the airway or to correct the deformities some months after the activity of the disease has died down, on an average 3 months.

(b) **Tracheotomy.**—Tracheotomy was done in 5 cases in the present series. In 4 cases it was done for laryngeal obstruction while in 1 case it was necessitated by marked narrowing of the nasopharyngeal and oropharyngeal isthmus. The patient was pregnant and had a full term normal delivery afterwards. Tracheotomy had no adverse effect on the labour.

(c) **Plastic Operation on the larynx.**—This was carried out in 3 cases. The larynx was split in the midline and a lumen of suitable size created by excising scar tissue. Having restored the airway, it was lined by a Thiersch graft held in place by a rubber tube adapted to the size of the lumen. All the three cases showed improvement.

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Two Cases of Abnormal Right Subclavian Arteries

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During the routine dissection by students, anomalous origin of right subclavian artery, arising from the left end of the arch of the aorta distal to the left subclavian and passing behind the oesophagus forming an arterial ring round the trachea and oesophagus, was noted simultaneously in two cadavers which created an interest to report these cases. Due to rarity of the condition, possibility of giving rise to clinical manifestations of obstructive signs on oesophagus and trachea, known as Dysphagia Lusoria and the importance of keeping in mind the origin and course of the great vessels arising from the aorta in Blalock-Taussig Operation in cradiovascular surgery, it has attracted the attention of anatomists, clinicians and surgeons equally and is very often reported in literature. This condition is essentially due to variation in developments of aortic arches and generally associated with various other developmental anomalies of the heart, blood vessels, nerves and thoracic duct.

In view of lack of any clinical history the cases referred to herewith as No. 1 and 2 are reported mainly from anatomical aspect and the specimens are preserved in the Museum of the Department of Anatomy, Osmania Medical College, Hyderabad.

DESCRIPTION

Case No. 1. (Figs. 1-A & 1-B):—The body belongs to an adult male. The heart and the origin of the aorta and pulmonary trunk appear normal with left aortic arch and left descending

aorta. But from the arch of the aorta the great vessels from right to left are, the right common carotid, left common carotid, left subclavian and the right subclavian having slight dilatation at its origin. The distance between the right common carotid and left common carotid on the outer surface is 4 mm. that between the left common carotid and left subclavian is 13 mm. and between the left subclavian and the right subclavian is 12 mm. The external diameters at origin of all the four vessels in order from right to left in mm. are 7, 8, 8 and 12 respectively. The right subclavian arises at the level of disc between 3rd and 4th thoracic vertebrae, passes behind the oesophagus at the level of disc between 2nd and 3rd thoracic vertebrae and goes to the right side and takes the usual course in the root of the neck. The branches of subclavian on both the sides are also as usual except that left vertebral is 5 mm. and right vertebral artery is 2 mm. in diameter. The right recurrent laryngeal nerve is not hooking the right subclavian but takes a high origin from the vagus and passes directly to the larynx as inferior laryngeal nerve. The left recurrent laryngeal nerve hooks round the ligamentum arteriosum. The right phrenic nerve could not be traced in its upper part but the middle part was seen communicated to the left nerve. So was the case with pericardiophrenic vessels. The thoracic duct could be traced from below upwards only upto the level of angle of Louis. It had not crossed to the left upto that place. The ligamentum-arteriosum appeared thick and prominent by external examination but on opening the aorta and pulmonary trunk the lumina at both the ends were found to be closed. The vertebral, coronary and superior intercostal vessels were normal. Marks of pressure on oesophagus and vertebral bodies at the point of crossing of the right subclavian could be detected. Interior of the heart did not reveal any abnormality.

Case No. 2. (Figs. 2-A & 2-B):—The body belongs to an adult male. The heart and the origin of aorta and pulmonary trunk appear normal with left aortic arch and left descending aorta. An internal examination of the heart shows a slit patent foramen ovale. From the arch of the aorta only 3 big trunks take origin, from right to left they are bicarotid trunk which

Two cases of Abnormal Right Subclavian Arteries



Fig. 1-A. Specimen No. 1. Ventral Aspect.

1. Abnormal right subclavian artery.
2. Right common carotid
3. Left common carotid.
4. Left subclavian.
5. Right vagus.
6. Inferior laryngeal nerve.
7. Tracheal and oesophageal branches.
8. Left vagus.
9. Left recurrent laryngeal nerve.

Fig. 1-B. Specimen No. 1. Dorsal aspect.

1. Abnormal right subclavian artery.
2. Left subclavian artery.
3. Left common carotid artery.
4. Right common carotid artery.
5. Right vagus.
6. Right inferior laryngeal nerve.
7. Tracheal and oesophageal branch.
8. Left vagus.
9. Left recurrent laryngeal nerve.

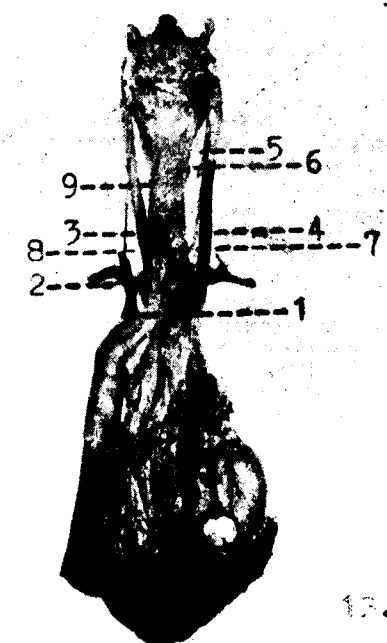


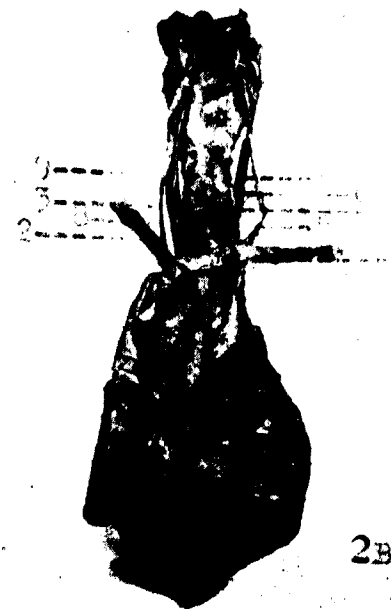


Fig. 2-A. Specimen No. 2. Ventral aspect.

1. Abnormal right subclavian artery.
2. Bicarotid trunk.
3. Right common carotid artery.
4. Left common carotid artery.
5. Left Subclavian.
6. Right vagus nerve.
7. Tracheal and oesophageal branch.
8. Left vagus nerve.
9. Left recurrent laryngeal nerve.

Fig. 2-B. Specimen No. 2. Dorsal aspect.

1. Abnormal right subclavian artery.
2. Left subclavian artery.
3. Left common carotid artery.
4. Right common carotid artery.
5. Right vagus nerve.
6. Tracheal and oesophageal branch.
7. Tracheal and oesophageal branch.
8. Left vagus.
9. Left recurrent laryngeal nerve.



divides into right and left common carotid, left subclavian and then the abnormal right subclavian. The left subclavian arises 11 mm. away from the bicarotid trunk and the right subclavian 2 mm. after the left subclavian at the level of disc between 4th & 5th thoracic vertebrae and crosses at the level of body of the 3rd thoracic vertebra. The external diameters of the three trunks from right to left are 12, 7, and 10 mm. The branches of the subclavian arteries on the right and left side are as usual. The vertebral arteries are equal on both sides and are 4 mm. in diameter. The existence or position of the right recurrent laryngeal nerve could not be ascertained but no nerve was seen hooking round the right subclavian artery and few twigs were seen passing directly to the interval between the upper end of trachea and oesophagus. The left recurrent laryngeal nerve was hooking round the ligamentum arteriosum and both the phrenic nerves, thoracic duct, vertebral arteries, superior intercostal vessels and coronary arteries were normal. Pressure mark on the oesophagus was present at the site of crossing of the abnormal right subclavian artery.

Discussion:—The condition of anomalous right subclavian artery though rare is very often reported in anatomical and clinical literature. The incidence as stated by Grant (1947) is 1% i.e. 14 in 1457 cases and according to Goldbloom (1922, cited by Asherson 1953) it is 1 in 80. Stebbins (1949) while reporting a case states that in 1899 Holzapflet collected from literature 198 cases. Abbot (1936) has included 5 in her analysis of 1000 cases of cardiac anomalies. Ramachandra Rao and Hari Rao (1956) have reported one case.

Based on the work of Congdon (1922), the origin of right subclavian artery as the 4th branch of the aortic arch passing behind the oesophagus is explained, in most of the standard text books of Anatomy and Embryology, as due to result of disappearance of right 4th aortic arch and persistence of the right dorsal aorta, (Fig. 3). Hamilton, Body, and Mossman (1946) mention one more factor as failure of migration of the 7th segmental artery forwards. It is evident that the abnormal artery is originally

a branch of the descending thoracic aorta but is described generally as a branch of aortic arch. The two dorsal aortae meet at the level of 7th thoracic vertebra (Keith, 1948) as such one should expect this to be the level of origin of the anomalous right subclavian artery. But from the specimens described here and by others in literature the origin of right subclavian is close to and distal to the left subclavian from the left end of the aortic arch corresponding to the level of disc between the 4th and 5th thoracic vertebrae. Brown (1950) states that rarely it may arise from the descending thoracic aorta below the ligamentum arteriosum. No explanation could be found for the apparent shift of level of origin from 7th thoracic to the disc between 4th and 5th thoracic vertebrae. However, to the authors it appears that due to the direction of flow of blood from the anomalous right subclavian, the dynamic forces (Current) acting in the channel the segment of the aorta between 5th to 7th segment may get shortened.

The various combinations of vascular anomalies in origin and size of the great vessels arising from the aorta, vertebral arteries, the left subclavian the superior intercostal and inferior thyroid have been mentioned and discussed by Stebbins (1949). The vertebral arteries may arise from the arch of the aorta or subclavian or even the common carotid and may be equal or unequal in size, the subclavian or the bicarotid trunk may show aneurysmal dilatation at their origin as seen in case No. 1. According to Streeter (cited by the Taussig, 1948) "The blood vessels develop in response to the stress and strain placed on the primitive vascular bed". The underlying cause of all these and the main anomaly may be the effect of "stress and strain" under which the aortic arches develop from the primitive vascular bed. Taussig further adds that slight variation in rotation and position of heart during development may markedly affect the process resulting in various anomalies in the development of vessels from the aortic arches associated with malformation of heart. However, no gross cardiac anomalies could be found in specimens under report except slit foramen ovale in the case No. 2.

The right recurrent laryngeal nerve in such cases invariably takes high origin in the neck, as seen from the cases reported in the literature, and goes directly to the larynx and in fact is called inferior laryngeal nerve and not recurrent laryngeal because it does not hook round the subclavian artery and go up. In both the cases reported here it is so. It is a recognised fact that recurrent laryngeal nerve enters the larynx distal to the 6th aortic arch. On the right side normally the dorsal part of the the and the whole of the 5th aortic arch disappears and the nerve hooks round the 4th aortic arch and this being the proximal part of the right subclavian artery the right recurrent laryngeal nerve hooks round it but in cases of abnormal right subclavian as stated earlier because the right 4th aortic arch (proximal part of normal right subclavian) also disappears and the anomalous artery is persistent right dorsal aorta the nerve appears to take high origin as inferior laryngeal nerve.

The left recurrent nerve is generally normal in all cases reported in literature and also here but in the case reported by Ramchandra Rao and Hari Rao (1956) it is hooking round the left subclavian but we do not find any explanation for that. The absence of upper part of the right phrenic nerve and the accompanying vessels and presence of communication between the middle part of the right and the left nerves leaves in doubt whether the right nerve and vessels are branches of the left or only communicated with the left side representing the crossed phrenic phenomenon.

CLINICAL SIGNIFICANCE

The term *lusoria* has been coined by Bayford (Asherson, 1953) in 1789 to describe a case of anomalous right subclavian artery.

(1) Dysphagia *Lusoria* means difficulty in swallowing due to pressure from outside caused specially by congenital anomalies of great blood vessels like double aortic arches, right aortic arch with descending aorta etc. which form vascular ring round the trachea and oesophagus. The abnormal right subclavian

generally passes from behind the oesophagus and in front of the vertebral column mostly but in some cases it may pass between the trachea and oesophagus or in front of trachea and in combination with the right and left common carotid and the arch of the aorta may form a complete vascular ring round the trachea and oesophagus giving rise to pressure effects in some cases.

(2) The level of obstruction may be the site of lodgement of foreign bodies in the oesophagus.

(3) The pressure on the trachea may give rise to signs of stridor and brassy cough in the infant.

(4) Blalock-Taussig operation aims at anastomosis of one of these vessels with the pulmonary artery, so it is important to keep in mind the possibility of such anomalies to avoid disastrous sequelae.

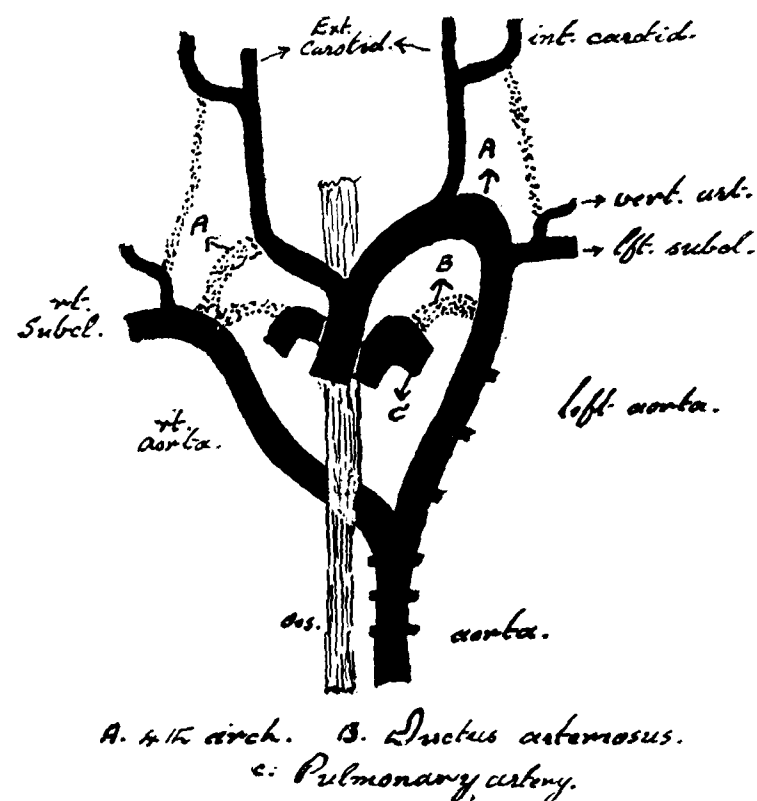


Fig. 3.

(5) Anson (cited by Hollinshead) observed that the right common carotid in such cases lies more in front of the trachea as it is not pulled laterally by the subclavian artery. This has to be kept in mind in tracheotomy operation.

SUMMARY

Two cases of anomalous right subclavian artery arising from the left end of the aortic arch distal to left subclavian, taking a retro-oesophageal course and forming a vascular ring have been described with other associated anomalies. Their anatomical, embryological and clinical aspects have been discussed.

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Otorhinolaryngological Complications Met with During The Recent Influenza Epidemic

BY

Dr. N. T. MATANI, M.S., D.O.R.L.

We have just passed through a fairly severe epidemic of influenza and its varied complications.

Several oto-rhino-laryngological complications were met with. In view of the poor notification, the incidence of the disease and its complications has been under estimated.

We thought it would be worthwhile to record our experiences and so this data was collected. However, studies such as these serve only to record our personal experiences.

I may say that the importance of the disease lies more in its complications and perhaps still more in the sequele than in the stage of infection proper.

In this article, are presented 39 cases of influenza (diagnosed clinically) that developed Oto-rhino-laryngological complications.

As the facilities for Virus Culture were not available, diagnosis was made solely on clinical grounds.

In all these cases, there was typical history of fever associated with malaise, head-ache, pain in the back and limbs, catarrh of upper respiratory tract and prostration.

There also was associated history of Influenza in other members of the family.

Nature of complication		No. of cases	Adults	Children
1.	Septal Abscess ...	14	8	6
2.	Acute Otitis Media ...	8	8	—
3.	Acute Sinusitis ...	6	5	1
4.	Epistaxis ...	6	3	3
5.	Acute Mastoiditis ...	3	2	1
6.	Cavernous Sinus Thrombosis.	1	1	—
7.	Haemetemosis ...	1	1	—
Total ...		39	28	11

The table above shows the complications encountered in the order of the frequency.

In two cases, there were more than one complication.

The complications came up during the 2nd week after the onset of the acute symptoms.

As is shown in the chart, the commonest complication in this series has been septal abscess which accounts for 14 out of 39 cases—a percentage of about 36.

These cases came with complaint of

Fever,

Malaise,

Heaviness and blocking of nose.

The situation of the septal abscess was in most cases anterior with fluctuation on either side. In all these cases, incision was made and abscess drained. The incision was unilateral similar to sub-mucous resection going through the cartilage, but not incising the mucosa of the other side.

Out of 14 cases, in two cases, free pieces of necrotic cartilage were encountered. These cases were kept under cover of antibiotics with antipyretics and when necessary, hydrotherapy. In all these cases, the progress was satisfactory.

One case developed saddle deformity of nose in which we propose to undertake plastic repair.

It is worth recording that as compared to 3 cases of septal abscess seen over the period of 12 months preceding the epidemic, the number seen during the short period of epidemic is almost five times.

The second common complication was Acute Otitis Media. Contrary to the expectations, number of cases of Acute Otitis Media encountered was small. They all ran a normal course and were treated on routine lines.

Of 6 cases of Acute Sinusitis, five had acute maxillary sinusitis and one ethmoiditis.

Of these six cases, two had marked cellulitis of face, with oedema of eyelids on the affected side.

This is however not a common feature during these days of antibiotics and has become only a sign of academic interest.

It was the first time during my four years of internship, I came across such severe cellulitis complicating acute sinusitis.

The case of ethmoiditis had associated septal abscess.

In the cases of epistaxis, the site of bleeding was little's area and could be easily controlled by packing and with subsequent cautery.

The three cases of acute mastoiditis on operation showed air cells full with Sanguino-purulent discharge. It may be noted that such a discharge is not commonly seen in acute mastoiditis.

The case of Cavernous sinus thrombosis was admitted with hyperpyrexia cellulitis of face and obstructed breathing.

This case was admitted on surgical side and I was called in to look into the cause of the obstructed breathing. There was huge septal abscess blocking both nares.

In spite of vigorous treatment, the patient expired two days after the admission. Autopsy revealed thrombosis of left cavernous sinus.

Haemetemesis which is listed last in the table was seen in a solitary case.

The cause of haematemesis could not be ascertained but it is known that severe influenzal oesophagitis and gastritis may give rise to haemetemesis.

This is a bare field study but it reveals the varied otorhinolaryngological complications that the past epidemic brought in its wake.

We do not know how soon the second wave may touch our shores, but if and when it does, perhaps this article will have shown some of the complications one may look for.



Association Notes

PROGRAMME OF 10th ANNUAL CONFERENCE OF THE ASSOCIATION OF OTOLARYNGOLOGISTS OF INDIA (DELHI-1958)

at Sir Ganga Ram Hospital, New Delhi-5

Thursday, the January 30th 1958

7-0 p.m. Governing body meeting.

Friday, the January 31st 1958

9-30 a.m. Registration of Delegates.
10-0 a.m. Photograph of the Association members.
10-30 to 1 p.m. Inauguration etc.
1 to 2 p.m. Lunch.
2 to 5 p.m. Scientific session :
Symposium on laryngeal paralysis :
Opener ... Dr. V. S. Subramanian, Madras.
Anatomical aspects. Dr. S. N. Jain, Hyderabad.
Neurology ... Dr. Tulsi Dass, Aligarh.
Aetiology ... Dr. P. N. Sinha, Patna.
Medical aspects ... Dr. A. B. N. Rao, Hyderabad.
Surgical aspects ... Dr. R. A. F. Cooper, Bombay.
5-0 p.m. Tea
8-30 p.m. Dinner (President's)

Saturday, the February 1st 1958

9-30 a.m. Principles of treatment of Ch. S. O. M. Major
N. Srinivasan, Baroda ... 20 mts.
Discussion ... 5 mts.
9-55 a.m. Tympanoplasty Dr. C. M. Leelavathi, Madras ... 30 mts.
Discussion ... 5 mts.
10-30 a.m. Tympanoplasty Dr. R. N. Misra, Lucknow ... 15 mts.
Discussion ... 5 mts.
10-50 a.m. Rhinoplastic approach for the sub-mucous resection
Dr. J. V. DeSa, Bombay ... 20 mts.
Discussion ... 5 mts.
11-15 a.m. Drug reactions in Ear, Nose and Throat Practice
Dr. N. K. Apte, Bombay ... 10 mts.
Discussion ... 5 mts.
11-30 a.m. My Experiences in treatment of Allergic Rhinitis.
(With follow up of 2-9 years) Dr. S. R. Rege,
Bombay ... 20 mts.
Discussion ... 5 mts.

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Association Notes

37

11-55 a.m. Abnormal styloid process of the temporal bone and
its relations to the tonsillar fossa Dr. T. Manickam,
Bangalore ... 15 mts.
Discussion ... 5 mts.
12-15 p.m. Tonsillectomy for Quinsy, Dr. Surya Narayan Rao,
Mysore ... 15 mts.
Discussion ... 5 mts.
12-35 p.m. Radical Dissection neck for cervical metastatic cancer
Dr. N. T. Matani, Bombay ... 20 mts.
Discussion ... 5 mts.
1-2 p.m. Lunch.
2-00 p.m. Premedication and Anaesthesia in Endoscopy with a
review of 100 cases Dr. B. P. Apte, Poona ... 15 mts.
Discussion ... 5 mts.
2-20 p.m. Foreign bodies in oesophagus and Respiratory
passages Dr. S. Balakrishna, Coimbatore ... 15 mts.
Discussion ... 5 mts.
2-40 p.m. Orbital complications of Sinus infections with special
reference to a case of right orbital cellulitis result-
ing from an acute right pansinusitis Dr. H. L.
Anand, Delhi ... 15 mts.
Discussion ... 5 mts.
3-00 p.m. Carcinoma tongue Dr. O. Chandra, Bombay ... 10 mts.
Discussion ... 5 mts.
3-15 p.m. Otogenic Brain Abscess by Fusiform Bacillus
Dr. C. Choudhary, Patna ... 10 mts.
Discussion ... 5 mts.
3-30 p.m. Surgery of Otogenic Brain Abscess
Dr. N. R. Merchant, Bombay ... 10 mts.
Discussion ... 5 mts.
3-45 p.m. Rhinoplasty Dr. C. S. Anand Gwalior ... 10 mts.
Discussion ... 5 mts.
4-0 p.m. Demonstration of Fenestration operation by film
Dr. I. S. Gupta, Delhi ... 35 mts.
4-35 p.m. Film on surgical technique of Laryngectomy with
block dissection Dr. T. N. Matani, Bombay ... 25 mts.
5-0 p.m. Tea.
5-30 p.m. Medical films.
8-30 p.m. Dinner (Association Dinner by Subscription).
Sunday, the February 2nd 1958
9-30 a.m. Business meeting.
1-0 p.m. Lunch.
2-0 p.m. Tour for sight-seeing.
5-0 p.m. Tea (Tea according to circumstances).

Account of the Journal of the Association of Otolaryngologists of India with the Honorary Treasurer at Madras
Receipts and Payments Account for the Year ending 30th September, 1957

RECEIPTS	Rs.	nP.	Rs.	nP.	PAYMENTS	Rs.	nP.	Rs.	nP.
To Opening Balance :									
On S. B. Account with Canara Banking Corporation, Ltd. as on 1-10-1956					By Printing Charges			2,903	04
Suspense Account			2,872	22	" Establishment Charges			360	00
Securities with Lloyds Bank Ltd. Bombay			85	00	" Postage			184	49
Cheque of Messrs Raptakos, Brett & Co., Ltd., Bombay			5,500	00	" Bank Charges			12	75
Cheque of Head Office contribution to Journal			65	00	" Auditors' Honorarium			50	00
			791	00					
Interest :					Closing Balance :				
From Securities					On S. B. Account with Canara Banking Corporation Ltd. as per Pass Book as on 30-9-1957	3,257	65		
From Canara Banking Corporation Ltd.			154	13	Securities with Lloyds Bank Ltd., Bombay	5,500	00		
			62	00	Cheque of Head Office contribution to Journal	660	00		
Head Office Contribution					Cash with Clerk (Contingencies Account	20	73		
								9,438	38
Total					Total			12,948	66

Examined and found correct.

Madras 16th January, 1958	R. A. F COOPER, <i>President.</i>	TULSI DAS, <i>Hony. Chairman.</i>	C. M. LEELAVATHI, <i>Hony. Treasurer.</i>	K. JOHN & CO., <i>Chartered Accountants</i> (Hony. Auditors.)
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Folic Acid	5 mg.	Betain H Citrate	25 mg.
Procaïn Hcl	10 mg.	Chlorobutol as Preservative	0.5%

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