CRITICAL REVIEW

A STATISTICAL SURVEY OF TUBERCULOSIS OF THE SKIN.

By F. GARDINER, M.D., F.R.C.S.E.

The question of tuberculosis of the skin is to a great extent that of tuberculosis generally. The worst cases are found in debilitated persons, but there are many points of origin and spread which are passed lightly over by most writers and are far from clear. The case of a surface lesion becoming infected with tubercle bacilli is simple, as in the post-mortem wart, but even in the case of local injury it is quite possible that the lowering of the vitality of the part by the injury will produce a suitable nidus for the growth of the tubercle bacillus which is in the circulation or the lymphatics.

From the observation of many cases during past years the impression is left that there are only two methods of infection, either (1) direct infection locally, or (2) through the lymphatic system, and the writer has analysed the statistics drawn from 146 male and 209 female cases coming under his observation at the Royal Infirmary, Edinburgh.

Age at Onset.—Up to twenty years, roughly 90 per cent. of all the cases occur in the male, and 80 per cent. in the female—more minutely between the ages of one and ten 68 per cent. in the male and 44 per cent. in the female; while at ages above twenty there is only 10 per cent. in the male and 20 per cent. in the female.

Leloir\(^1\) finds 70 per cent. of the cases under twenty and 55 per cent. up to eleven and a half years.

Hamlyn and Jones,\(^2\) quoting from Sequeira's cases, only give details of the age of commencement of 92 cases, and 90 of these commenced before twenty, and 63 before ten years of age.

These figures all agree in pointing out that the infection is rare after twenty, and that most cases commenced before ten years of age with the probability of later development in the female cases.

Leloir mentions certain periods of life which are the most frequent times of onset. These are three years, six years, ten years, fourteen years, and twenty years. He offers as explanation the lymphatic disturbances occurring at these times.

Sites affected at Onset.—In the personal cases, 102 males and 149 females—roughly 71 per cent. of both—were affected primarily on the face. The nose was affected in 15 per cent. of males and 30 per cent. of females.
Statistical Survey of Tuberculosis of the Skin

The total statistics of the sites affected at age of onset are:

| Site            | Males | Females |
|-----------------|-------|---------|
| Face and nose   | 102   | 149 = 71 per cent. |
| Nose alone      | 22    | 63 = 23 per cent. |
| Scalp           | 0     | 2 = 0.05 per cent. |
| Hands and arms  | 47    | 40 = 24 per cent. |
| Legs            | 35    | 23 = 16 per cent. |
| Body            | 10    | 4 = 4 per cent. |

It is to be noticed that some of these cases had lesions on several areas.

When comparing other statistics it is found that, especially on the Continent, what the writer regards as an almost impossible distinction is attempted to be drawn between lupus vulgaris and tuberculosis of the skin generally, so that some cases are excluded, but that need not affect the percentages.

In a recent article by Carl With the figures deduced from the Finsen Institute are given. He states he is dealing only with lupus vulgaris, and so far as can be made out from his figures, which in fairness it may be said are not expressly given for this purpose, less than 55 per cent. originated on the face in adults over sixteen, and 32 per cent. on the nose, probably becoming less in younger years. Max Bender reports 76 per cent. on the face and 25 per cent. on the nose. Leloir's figures appear to show 68 per cent. originating on the face region while the nose was affected in 34 per cent. Méneau and Frèche give a percentage of 78.5 affecting the face. Forschammer finds 81 per cent. affecting the face.

The next most frequent sites are the arms and hands affecting about 30 per cent. of males and 19 per cent. females. Carl With lays stress on the extremities being more frequently attacked in younger children. Leloir's figures show about 15 per cent. affecting the limbs.

Many explanations have been given for the frequency of attacks on the face. Carl With, while admitting its relation to the mucous membrane of the nose, suggests such factors as make the skin of the face the place of predilection of many skin diseases, these being changes in the weather affecting the finer structure of the skin, and light having a particularly injurious effect, which is worse in early spring.

**Mucous Membrane**.—The importance of the affection of the mucous membrane has long been emphasised.

Bender, for instance, out of 380 cases found that 31 per cent. had commenced in the mucous membrane while 45.5 per cent. involved the mucous membrane. Finsen reports 70 to 80 per cent. of lupus shows tuberculosis of the mucous membrane of the nose and mouth.

Leloir found out of 312 cases 109 affected, but in only 21 of these
F. Gardiner

did it arise originally from mucous membrane. He confesses, however, that he did not always make a rhinoscopic examination, and suggests the possibility of many cases being overlooked and being treated as coryza or eczema.

In 1897 Méneau and Fréche discussed the nasal origin of lupus of the face. As lupus of the face is much commoner its importance is very evident. Their conclusions are that this arises, in the majority of cases, in the mucous membrane, whether it be the nose or the lachrymal sac. Their statistics are based on 121 cases, of which 95 involved the face, giving a percentage of 78.5.

Hamlyn and Jones, in a paper which deals with cases arising secondarily to tuberculosis of the skin, purposely exclude those in which tuberculous glands are an accompaniment only. Like Carl With they lay great stress on the area in the middle of the cheek. Of their 923 cases 47.3 per cent. arose on the face and 28.9 per cent. on the nose or the nostril and 1.8 per cent. from mucous membrane other than the nose, generally the margin of the lips.

In the personal cases very few were found showing a definite tuberculosis of the naso-pharynx. The writer can only say in reference to this that, if it is not in agreement with other statistics, the cases were examined by experts of the Ear and Throat Department of the Royal Infirmary. The last 54 cases were taken very particularly, and of these 41 affected the face, including 16 affecting the nose, and only 9 (16½ per cent.) were reported to have definite tuberculosis of the naso-pharynx. Of great significance, however, was the number of cases which came back with a report of slight pharyngitis and often complaining of nasal catarrh. Probably the diminished vitality of the mucous membrane leads to ready permeation by the tubercle bacilli into the adjoining glands of the neck or cheek.

Strausse is quoted by Méneau and Fréche as stating that "the tubercle bacillus may occur upon a healthy mucous membrane, and otherwise it is often very difficult to affirm the existence of lupus when there is only irregularity of the mucous lining." The discharge is often ignored by the patient for many years.

Carl With finds that lupus of the mucous membrane is comparatively rare in children. He asserts that probably about the age of puberty the nose becomes more susceptible. He gives 149 cases in which lupus occurred first on the mucous membrane of the nose, compared with 55 in which it started on the surface of the nose. Thirty-one per cent. of all the cases affected the nose, and in women it is much more frequent, but under the age of eleven the percentage is only 15.

Glandular Affection.—The next point to be considered is the question of origin in the glands. Hartzell 6 quotes from Fox that
Statistical Survey of Tuberculosis of the Skin

30 per cent. of 96 cases suffered from glandular disease. Hamlyn and Jones' 923 cases—which again, it is to be remarked, exclude those in which tuberculosis of the glands is an accompaniment only—find 11.4 per cent. secondary to tuberculosis of the glands. They lay stress on the buccinator gland of the cheek. Fox finds 30 per cent. of his cases suffered from glandular disease. Carl With finds 258 cases affecting the neck, and 151 of these were due to spread from deeper lymphatic glands. 212 cases involved the masseter region and 49 from glandular suppuration. The pre-auricular region was affected in 59 cases and 49 originated from glands. He also emphasises the importance of the area in the centre of the cheek, and while quoting Lewandowski as maintaining that this arises from an underlying lymphatic gland in the middle of the cheek, he personally believes that the focus here has a haematogenous origin.

Leloir in one table reports 32 out of 312 cases, and elsewhere 41 as originating from the deeper glands, and he gives a list of the glands most commonly affected in the order of precedence. These are the sub-maxillary, parotid, pre-auricular, retro-auricular, and sub-auricular, the chain of the sterno-mastoid, epitrochlear, and axillary.

In the writer's own cases a record of the commencement of 200 has been obtained, and of these 35 males and 59 females—total 94—gave histories of origin in the glands, generally about the neck.

To continue to follow up the writer's statistics on these lines it is important to go to the 9 males and 23 females who give histories of a nasal mucous membrane being the original site. These, with 2 starting in the conjunctiva and lachrymal sac, form a total of 128 out of 201 where infection has come through the mucous membrane of the naso-pharynx as we may well presume that glands in the neck mostly originate from this.

Another interesting group is that of 12 males and 17 females, in which the disease followed one of the eruptive fevers. The explanation generally given, and probably correct, is that the fever breaks down some old central focus and allows the passage of the tubercle bacilli into the lymphatics and blood supply. This last type is very characteristic in the simultaneous appearance of nodules on various parts of the body.

Ten male and 7 female cases give a previous history of bone infection, the discharge from which, like that from the glands, readily infects the skin.

With regard to cases of direct external infection, 18 males and 5 females give a history of previous injury. With these we may well associate the 4 cases in males where the disease is reported to have followed vaccination. Apart from the vaccination these male cases occur up to thirty years of age, and we may explain the greater
frequency in males by the greater activity and liability to injury of the sex.

To summarise we might say that with the exception of this last group all the other cases originate from the infection of the glands or bones, and secondary infection of the skin. The characteristic spread of tuberculosis on the face is strongly suggestive of its lymphatic origin. Recently, the writer saw a case in which the naso-pharynx had been scraped with evident imperfect occlusion of the lymphatics, and numerous lesions appeared on the face, and another in which a perfect scar on the neck with removal of underlying enlarged glands was noted in a boy with multiple lesions over the body appearing a few weeks after the operation.

The following statistics are instructive—injury and, curiously enough, vaccination infection are more common causes in the male. Fevers, except during the ages from one to five, more commonly affect the female, and the nasal affection is not only more common in the female but also appears later in life. Bone disease is apparently more common in the male.

**Source of Infection.**

*Taken from Age at Onset.*

| Age | Glands | Injury | Vaccination | Fever | Nasal | Bone | Eye |
|-----|--------|--------|-------------|-------|-------|------|-----|
|     | M. F.  | M. F.  | M. F.       | M. F. | M. F. | M. F. | M. F. |
| Under 1 | 2 3 | 0 0 | 4 0 | 0 2 | 0 0 | 0 0 | 0 0 |
| 1 to 5 | 8 9 | 4 3 | 0 0 | 10 6 | 0 0 | 5 3 | 0 0 |
| 5 to 10 | 11 24 | 5 0 | 0 0 | 2 3 | 2 5 | 5 3 | 0 1 |
| 10 to 15 | 8 5 | 3 1 | 0 0 | 0 4 | 2 5 | 2 3 | 0 0 |
| 15 to 20 | 3 7 | 0 0 | 0 0 | 0 0 | 4 6 | 0 1 | 0 0 |
| 20 to 25 | 1 3 | 4 0 | 0 0 | 0 1 | 0 2 | 0 0 | 0 0 |
| 25 to 30 | 1 2 | 1 1 | 0 0 | 1 1 | 0 2 | 0 0 | 1 0 |
| 30 to 35 | 0 3 | 0 0 | 0 0 | 0 0 | 1 0 | 0 0 | 0 0 |
| 35 to 40 | 0 2 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 1 0 |
| 40 to 45 | 1 1 | 0 0 | 0 0 | 0 0 | 0 0 | 1 0 | 0 0 |
| 45 to 50 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| 50 to 55 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| 55 to 60 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| 60 to 65 | 0 0 | 1 0 | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| Total | 35 59 | 18 5 | 4 0 | 12 17 | 9 23 | 10 7 | 1 1 |

The conclusions to be drawn from these statistics are, first, that if the system can be kept free up to twenty years the liability of development is very slight. The risk of continuance, however, is greater in the female than the male.

As regards the sites affected the percentage of cases involving the face is about the same in these as it is in other statistics. When the
Statistical Survey of Tuberculosis of the Skin

site of origin is considered the high proportion of glandular disease is very marked, and also equally remarkable is the number of cases in which there was no definite tuberculosis of the naso-pharynx.

It follows then that apart from the prevention of infection through a local wound, the main point is the provision of healthy mucous membrane, and one of the products of civilisation is undoubtedly the unhealthy mucous membrane—generally perhaps the naso-pharynx, but also the gastro-intestinal. At this stage one need scarcely mention the greater liability to air-borne infection through the naso-pharynx, and to milk-borne infection of the gastro-intestinal mucous membrane.

REFERENCES.—1 Leloir, La Scrofulo-tuberculose, 1892. 2 Hamlyn and Jones, British Journal of Dermatology, September 1907. 3 Carl With, British Journal of Dermatology, October 1920. 4 Max Bender, see Crocker’s Diseases of the Skin. 5 Méneau and Frêche, Annales de Dermatologie, 1897. 6 Hartzell, Diseases of the Skin.