

Bier's Hyperaemia.

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Bier's Hyperaemia, or "Stauung's Hyperaemie," is briefly a determination of an increased amount of blood to that part of the body we wish to affect. There are two forms of hyperaemia, an active and a passive form. Both kinds are of great therapeutic value in various acute and chronic conditions. As a general rule, the active hyperaemia is valuable for the cure or relief of chronic inflammatory conditions, *e.g.*, some forms of chronic arthritis, old sprains, old fractures around or in joints with loss of motion and organised exudate, etc., while the passive form is used for the cure of acute conditions, such as abscesses and some of the acute inflammatory troubles with or without abscess formation, especially when we have an involvement of tendon sheaths and wish to do no destructive operation and preserve the maximum amount of motion. There is, however, one notable exception to the above rule—namely, tuberculosis. Here we have a slow, chronic inflammation, for the cure of which we use the passive form. The principal difference between active and passive hyperaemia is that in active hyperaemia we have an increased amount of both arterial and venous blood, with an acceleration of the speed with which the blood flows through the part, while in passive hyperaemia we retard the flow of venous blood through the part and increase its quantity without affecting the arterial flow.

We have various ways of producing the different forms of hyperaemia—for instance, if we "bake" an ankle or wrist or any other part of the body we produce an active hyperaemia of the part, or, again, if we put the hand or foot in a vacuum we produce an active hyperaemia of the hand or foot. Passive hyperaemia is produced by putting an elastic bandage around the arm or leg we wish to affect. The bandage being tight enough to retard the venous flow, but not interfering with the pulse. Pain should never be produced in obtaining passive hyperaemia, and if present it is usually relieved. As might be expected, the parts of the body which are amenable to treatment by the elastic bandage are the extremities, but by means of especially devised bandages this treatment can be used on a shoulder. The hip, however, has so far resisted our efforts. The technic employed should be explained to the nurse by the surgeon

in each case, as it differs materially. In acute conditions, for instance, the bandage is often left on continuously for twenty-four hours at a time, with occasional short intervals of rest and changing of its position; while in tuberculosis the bandage is rarely left on for more than two hours in each twenty-four, and often a much shorter period. The appearance of an extremity which has had a bandage on for eight or ten hours is often quite alarming to one who has never seen this treatment before, and of course it should never be used except under the guidance of a surgeon. It is, however, one of the therapeutic measures in which the assistance of an intelligent nurse is almost invaluable.

Bier's attention was first directed to the value of hyperaemia during his studies of the observations of the late Prof. V. Rokitsky, a celebrated Viennese pathologist, who found that patients who had suffered from stasis in the pulmonary circulation, due to heart disease, or curvature of the spine, never showed an active tuberculous lung affection on *post mortem* examination. On the other hand, it had often been seen that patients suffering from diseases of the heart that produced a certain amount of anaemia of the lungs (*e.g.*, stenosis of pulmonary artery) are especially subject to tuberculous disease of the lungs. Bier claims a very large field of usefulness for hyperaemia, and reports from those who are most familiar with this treatment substantiate his claim in a large measure. In the fifth edition of Bier's book, "Hyperaemia als Heilmittel," he reports 88 per cent. of cures in 17 consecutive cases of tuberculosis of the wrist, 17.2 per cent. of cures in 11 cases of tuberculosis of the elbow, and 61.5 per cent. of cures in 13 cases of tuberculosis of the foot. Some of the advantages which Bier claims for his method in tuberculosis are a lessening of the duration of time in curing a case, the average being about nine months, less atrophy to the part, and a greater preservation of the function of the joint, with consequently a less disabling and more useful joint. Bier himself regards his method as superior to all others in obtaining a useful joint after tubercular infection.

In acute surgical infections, hyperaemia has effected some really wonderful cures, for which the following cases may serve as examples:—Compound fracture of the hand, with dirty wound and opening of the tendon sheaths, in cases of paronychia, acute gonorrhoeal inflammation of wrist, etc. In furunculosis of the face, tooth fistula of lower jaw, fistula from infected sutures after opera-

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