

cæmia. The germs probably very soon form metastatic foci, and from these shed their toxins into the blood-stream, e.g., in endocarditis there are probably metastatic foci involving the valvular tissue. The toxins of gonococci especially attack serous membranes; hence the symptoms here of meningitis and pleurisy.

The toxins also attack the central nerve ganglia; therefore the presence of the herpes facialis in this case.

Hence, since there was no tangible focus to be found except that in the prostate, after again giving anti-streptococcic serum 20 c.c. and getting no reaction, it was determined to persevere with the mixed gonococcal vaccine. Accordingly, acting upon the suggestion of Dr. George Ross, the patient was given 15 million g.c. in the mixed vaccine. There was a decided reaction. The condition generally improving. Encouraged by this, the dose was repeated, slightly smaller, 10 millions g.c. After this, with the exception of a slight rise in temperature, the improvement was continuous. Another 10 millions was given four days later. The condition improved without interruption, and the patient left the hospital Nov. 8, 1912, feeling quite fit.

There have been very few cases of gonococcal septicæmia reported in the literature.

Cases of endocarditis and arthritis are really metastatic diseases due to the deposit of the gonococcus in the tissues.

Those cases of arthritis, where many joints are involved, are probably due to the actions of the toxins upon the serous membranes of the joints, just as we had pleuritis and meningeal symptoms in this case.

The fact that the germ was not found in the blood-stream really means very little. Most diseases we now know have the germ present in the blood, provided one takes a sufficient volume of blood, e.g., the typhoid germ is in the blood very early in the infection.

In the case of the gonococcus, there are two good reasons for not easily finding it:

1. The large volume of blood required—2 to 3 c.c. at least².
2. The great difficulty in cultivating the germ *in vitro*.

That there is a septicæmic disease resembling typhoid fever in many aspects has been stated by Dieulafoy, who reported two cases in 1909³; also Muir and Ritchie⁴ state the same.