

is far and away beyond that attending perforation of the alimentary canal from other causes, as, for example, perforative appendicitis, perforating gastric ulcer, gunshot and other wounds of the intestine, leads one, in the first place, to consider and try to improve upon our present methods of diagnosing typhoid perforation.

The first and great step in advance is to be made just here. Operations undertaken after a general septic peritonitis has developed, will not be more successful in the presence of the other unfavorable conditions always present in the third and fourth week of typhoid, than elsewhere. To obtain better results in the future than have been attained in the past, operations must be performed earlier, they must be done as soon as perforation occurs, and before the infection has spread.

The signs of perforation are sudden onset of abdominal pain, accompanied by localized abdominal tenderness, and in some cases nausea and vomiting. The pulse may become altered in rate and quality, but not always at first, to a marked degree, and the temperature may suddenly lower. Each of these symptoms must be separately and carefully estimated and collectively considered. They may be masked by typhoid toxæmia and the most careful clinician may occasionally err.

I have operated ten times for typhoid perforation, and in none of my cases was the occurrence of perforation marked by those well-marked, striking symptoms so generally mentioned in text-books. The symptoms often simulate very closely those of perforative appendicitis, even in the right-sided tenderness.

It would seem that the presence of leucocytosis may in the future prove to be a valuable sign of intestinal perforation in typhoid when considered together with the presence and absence of other symptoms. According to Thayer there is no increase in the proportion of white blood-corpuscles during the fever, but rather a slight diminution in their number which gradually diminishes until convalescence. During the fever the number may fall even below 2,000, and sometimes below 1,000 per cubic centimeter. The lowest count seems to be about the end of the third week. Sometimes the white blood-cells increase markedly in number with the fever, even without any complication. Four cases were observed by Cabot in which the count was over 11,000, and ran as high as 17,000, without any other than the typical typhoid lesion. But the effect of complications is very marked and undoubted. Cabot mentions one case of perforation in which five days before perforation the number of white cells was 8,300, and at the time of perforation, 24,000. In another case at the time of perforation the number of white blood-cells was 18,500. The increase of white blood-cells may be almost, if not quite, as great upon the occurrence of phlebitis or otitis media, or the development of a typhoid abscess. General bronchitis and cystitis.