

Advertorial

Operate on fractures near the hip joint as soon as possible

Fractures close to the hip joint mainly affect people over 70 years of age. Prompt surgery is essential for a good prognosis.

However, if it is not possible to determine when a patient last took an anticoagulant drug - i.e. a direct oral anticoagulant (DOAC) - testing procedures should be used. This is provided for in the decision of the Joint Federal Committee of 22 November 2019. Dr. Michael Caspers, senior physician at the Clinic for Orthopaedics, Trauma Surgery and Sports Traumatology at the Cologne City Clinics and head of the Hippo-A study, in which reliable DOAC threshold values are defined for a safe start to surgery, explains what needs to be observed in detail.

Dr. Caspers, what is typical for fractures close to the hip joint?

Dr. Michael Caspers: Of the almost 120,000 people affected each year in Germany, about 80% are 70 years and older. Fractures close to the hip joint therefore play a very important role in the field of geriatric traumatology. Not only because it is a very common fracture, but also because it is a serious injury that massively changes the lives of those affected, limits their mobility and places a long-term burden on their health. Many who previously lived independently often need help and more intensive care from one day to the next.

How does the treatment work?

Caspers: Most patients are brought to us by the ambulance service and are first treated in the emergency room. An initial fracture diagnosis, a radiological diagnosis and then advice on the further procedure take place there. As part of the pre-operative preparations, concomitant diseases and the ability to undergo surgery are checked, and laboratory parameters are also determined.



The majority of hip fracture patients are over 70, so it is important to check whether they are taking anticoagulant medication.

Which laboratory parameters play a role?

Caspers: The small blood count and other blood cell parameters as well as the coagulation status are collected. Findings from the clinical chemistry with organ parameters such as kidney function and inflammation values are also important. In anticoagulated patients with direct oral anticoagulants, renal function determines how quickly substrates are excreted. In addition, it is important to determine the limitations of organ functions and to see whether, for example, an accompanying infectious disease such as pneumonia or a urinary tract infection is present, because they can influence the ability to perform surgery and the perioperative management.

What is the prognosis of patients?

Caspers: This depends on various factors. There are many studies that show that geriatric patients with fractures close to the hip joint benefit from a rapid fracture treatment.



Almost 21,500 patients are treated in the hospitals of the city of Cologne every year. Exterior view of Cologne hospitals.

Foto: Kliniken Köln, Rütten

It has been proven that the prognosis in terms of morbidity and mortality worsens as the disease progresses, the more time passes before the operation. For example, pneumonia or bedsores occur much more frequently, and the treatment is more prone to complications. And that is why the initially very positive approach of stipulating that patients with fractures close to the hip joint should be operated on as quickly as possible and at the latest within the first 24 hours after admission to hospital came about.

Is that always possible?

Caspers: Not always. Because in the patient clientele of the over 70s, there are many people who are anticoagulated with different substances, and anticoagulant medication is a frequent obstacle when it comes to operating on patients within 24 hours. In the past, many years ago, before the new oral anticoagulants were available, the main drug used was Marcumar. Thanks to an antidote, the anticoagulant effect could be abruptly reversed, so that nothing stood in the way of surgical treatment. That is no longer so easy today.

What has changed?

Caspers: The anticoagulant effect of DOACs cannot simply be reversed in an emergency. There are antidotes for some substances, but they are very expensive and absolutely not sufficient for the treatment of fractures close to the hip joint. In addition, most of these drugs have an effective kinetics of 24 hours with normal kidney function. This means that you have to wait 24 hours after the last dose before you can operate. If the kidney function is limited, it takes even longer depending on the preparation - sometimes 48 to 72 hours. In the worst case, depending on the preparation, kidney function and risk of bleeding, it can even take 96 hours until the substance is safely eliminated from the body.

How do you deal with this problem in everyday life?

Caspers: Our standard procedure up to now has been that patients with DOACs have waited for their operation depending on their renal function. This means that DOAC patients with normal kidney function were operated on by us exactly at the borderline, 24 hours after hospital admission.

Patients with impaired kidney function were operated on later than these 24 hours, knowing that the patient would wait a little longer for his operation. But the risk of bleeding was just too high for us.

Were there also exceptions?

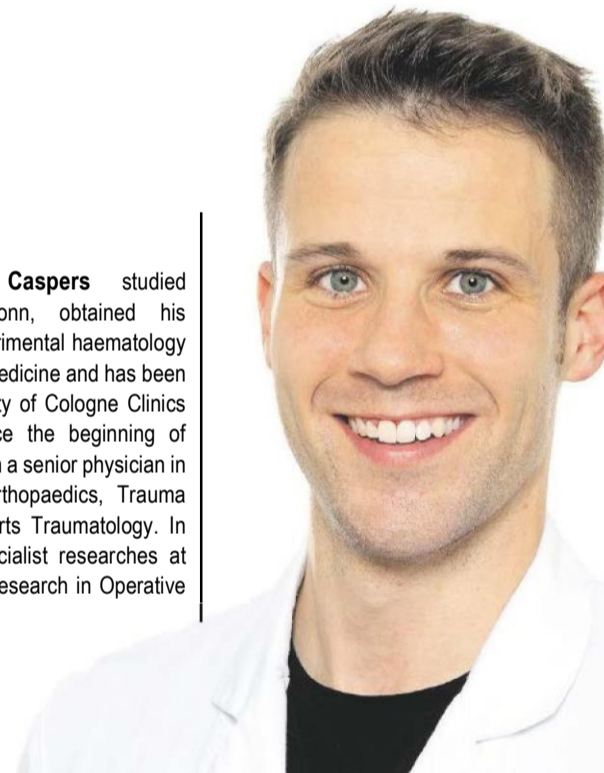
Caspers: Yes, we noticed that there was a large proportion of patients, for example from old people's homes, who were not exactly sure whether they were anticoagulated at all. There were DOACs in the medication plans, but the patients didn't even know in the emergency room whether they had taken the drugs. In these patients, we then started taking measurements and initially a plasma determination. When the point-of-care test with the Doasense test strip from the company Hitado came on the market, we used it to qualitatively examine whether anticoagulation with a DOAC was present or not. If this was the case, the patients waited depending on their kidney function, otherwise the patients were operated on immediately.

The G-BA has decided that such proof must always be provided. Why?

Caspers: The Federal Joint Committee has decided that coagulation diagnostics specific to DOACs must be carried out within the first 24 hours for patients on DOACs,

The person

Dr. Michael Caspers studied medicine in Bonn, obtained his doctorate in experimental haematology and transfusion medicine and has been working at the City of Cologne Clinics since 2013. Since the beginning of 2020, he has been a senior physician in the Clinic for Orthopaedics, Trauma Surgery and Sports Traumatology. In addition, the specialist researches at the Institute for Research in Operative



Dr. Michael Caspers

Foto: Kliniken Köln, Fürst-Fastré

to better quantify the risk of bleeding in these patients. Is a quick operation and thus one that takes place under full anticoagulation in the worst case the better choice for the patient? It is difficult to decide and involves a great risk for patients and practitioners because the consequences cannot be fully controlled. The aim of the Federal Committee is probably to maximise the advantages of a speedy operation. The aim of the Federal Committee is

probably to make the advantages of a quick operation available to as many patients as possible by prescribing diagnostics that make it easier to assess the perioperative risk.

What are the means of proof?

Caspers: In the case of DOAC detection, plasma tests for the direct Xa inhibitors as well as a sub strate-specific anti-Xa test or a determination of the

anti-Xa activity the gold standard. A direct thrombin inhibition test is suitable for the direct thrombin inhibitor. This allows the activity and also the substrate concentration in the plasma to be determined. Fractures close to the hip joint are not classic centre indications that are only treated in large clinics or in supra-regional clinics; these are also indications that can be well treated surgically by local standard care providers. And here these gold standards are not always possible, because laboratory capacities and structural requirements are different.

What solutions are there for small clinics?

Caspers: The POCT detection offers a quick decision criterion for clinics, as it has a very high negative predictive value, which has also been proven in studies. If the POCT detection in urine is negative, it can be assumed with a very high degree of certainty that no direct anticoagulation is present. This means that in the negative case, this test is helpful and the patients who were "false-positive" because they were prescribed anticoagulation but did not take it can be detected very easily and quickly with this POCT test.

And in the case of a positive test result?

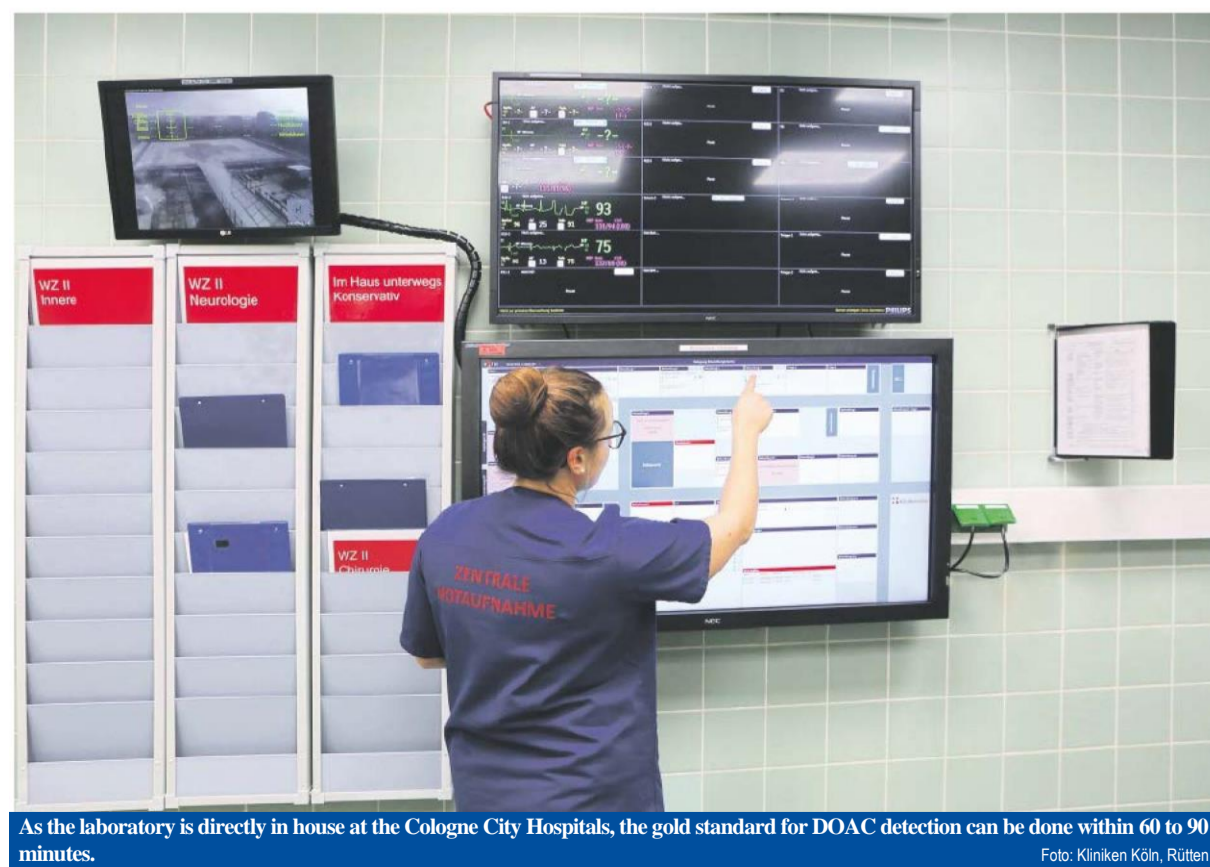
Caspers: Then we would recommend connecting the gold standard of coagulation analysis. Because, studies have also shown this: The POCT test is very sensitive. This means that it still detects DOACs in the urine even if there is no longer an active level of a full anticoagulation in the plasma because it is a cumulative excretion. This means that it can happen that the POCT test is positive, but the patient no longer has any anticoagulation clinically because, for example, he last took the medication 36 hours ago. By determining the plasma concentration, it is then possible to estimate when the best time for an operation is.

At what value is it safe to operate?

Caspers: Even though there is currently much discussion about the potential limit value of 30 nanograms per millilitre, there is still a lack of scientific evidence. In the extreme, the plasma value is very low or very high. Then it is safe to say whether surgery is possible or not. With all values in between, there are difficulties because one does not know exactly what to tell the clinician. Because the clear limit value cannot yet be determined with certainty.

The Hippo-A-Study, which you are leading, is about setting a clear threshold.

Caspers: Right. The study is just starting. This means that there was a pre-test monocentre study in which we first dealt with the POCT detection and the qualitative decision-making process of DOACs, and not only in relation to fractures near the hip joint, but to many clinical questions. In the area of cerebral haemorrhages and especially in strokes, DOACs are a particularly critical issue because the time corridor is much smaller with three hours of lysis time after the onset of symptoms. In addition, patients often cannot be amnestised because of their clinical picture, because they cannot speak or are consciousness-impaired. That was the first part of the study, and from this we looked at fractures close to the hip joint and evaluated exactly this procedure, which I have just described: i.e. to make a qualitative pre-test with the POCT test and then to bring patients with a negative result to surgical treatment more quickly and then, in the case of patients with a positive test, to determine the DOAC plasma level. DOAC plasma level in patients with a positive test. ■



As the laboratory is directly in house at the Cologne City Hospitals, the gold standard for DOAC detection can be done within 60 to 90 minutes.

Foto: Kliniken Köln, Rütten