

Brief Report

Risk of Lactic Acidosis in Diabetic Patients Taking Metformin and Who Receive Intravascular Iodinated Contrast Media

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The prevalence and incidence rate of diabetes mellitus type 2 is currently increasing; in most patients, the disease's treatment is still based on the administering of metformin, along with a change of life style. Also, the number of patients who undergo radiological examinations, in which some form of intravascular iodinated contrast media is used, is increasing every day. Traditionally, metformin was withdrawn from those patients who needed to undergo studies involving intravascular iodinated contrast media due to the risk of developing lactic acidosis which, although not very frequent, has a very high mortality rate (40%). However, the evidence supporting this is based on isolated cases which have been researched using heterogeneous studies [1].

Intravascular iodinated contrast media are not a stand-alone risk factor of lactic acidosis in patients that take metformin, but rather they become relevant when other underlying kidney disorders are also present [2].

Taking this into account, we can establish a causal link because the use of intravascular iodinated contrast media does suppose a risk of developing kidney failure; this risk can be stratified depending on each patient's characteristics. According to this there is a possibility of developing contrast-induced nephropathy. A set of variables were established and given a value; according to the total sum, the risk of developing a nephropathy can be calculated. The variables were: systolic blood pressure below 80mmHg, intra-aortic balloon pump, grade 3-4 heart failure or a history of acute lung edema, being over 75 years of age, packed cell volume below 39% in men or below 36% in women, diabetes mellitus, contrast volume and glomerular filtration (which greatly affects the final assessment) [3].

Therefore, a risk of lactic acidosis depending on the risk of kidney failure due to intravascular iodinated contrast media could exist.

Abstract

Due to the large number of patients who develop diabetes mellitus type 2 and the tendency to use radiological methods to avoid invasive procedures, it is becoming increasingly frequent to find patients undergoing metformin treatments who are being given intravascular iodinated contrast media. Traditionally, the fear that this can be linked to lactic acidosis has always existed, despite no proven evidence to support this theory.

Table 1:

	Intravenous	Intra-arterial
Do not withdraw metformin	Glomerular filtration > 44ml/minute	Glomerular filtration > 60ml/minute
Withdraw metformin 48h before administering the contrast medium and reintroduce metformin 48h later if kidney function has not worsened	Glomerular filtration < 45ml/minute	Glomerular filtration 30-59ml/minute

According to current knowledge, guidelines on the administering or withdrawal of metformin can be established depending on contrast administration and the patient's kidney function. This is summarized in the following table 1 [4,5].

Conclusions

There number of patients with diabetes mellitus type 2 that have been prescribed metformin and undergo radiological tests with intravascular iodinated contrast media is increasing every day.

Intravascular iodinated contrast media are not the direct cause of lactic acidosis in these patients.

Intravascular iodinated contrast media can cause kidney failure and indirectly favor the possibility of the development of lactic acidosis; however, more research on this subject is necessary.

It is essential that the risk of kidney failure be established in order to determine whether or not metformin should be withdrawn from patients with type 2 diabetes who have undergone radiological testing with intravascular iodinated contrast media.

References

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