Metformin appeared to slow prostate cancer growth

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The use of metformin in men with prostate cancer before prostatectomy helped to reduce certain metabolic parameters and slow the growth rate of the cancer, according to the results of a phase II study.

Anthony M. Joshua, M.B.B.S., Ph.D., staff medical oncologist at the Princess Margaret Hospital, University Health Network in Toronto, Ontario, Canada, presented the data at the AACR Annual Meeting 2012, held here March 31 - April 4.

Metformin is the most commonly prescribed medication for diabetes. Prior laboratory research has suggested that metformin may also help to improve prognosis in patients with prostate cancer by slowing the growth of the cancerous cells.

To follow up on the laboratory clues, Joshua and colleagues evaluated 22 men with confirmed prostate cancer who had been assigned up to 500 mg of metformin three times a day prior to undergoing prostatectomy.

"This gave us the ability to compare what the prostate cancer looked like when it was first diagnosed to what it looked like when the prostate cancer was removed from the body," said Joshua. "We were able to directly measure the effect of metformin on the prostate cancer."

Patients were assigned metformin for a median duration of 41 days. During that time, none of the men reported grade 3 adverse events, and all of them underwent prostatectomy with no adverse effect related to

use of metformin.

The researchers found that metformin significantly reduced fasting glucose, insulin growth factor-1, body mass index and waist-to-hip ratio.

In addition, "although these are preliminary results, metformin appeared to reduce the growth rate of prostate cancer in a proportion of men," Joshua said. "Also, it appeared to reduce one of the main growth pathways that may have contributed to the overall growth of the tumor."

These results may have implications for men with prostate cancer who also have diabetes or early undiagnosed diabetes and for men with prostate cancer whose tumors have characteristics that make them sensitive to metformin, according to Joshua.

"This research builds on the hypothesis that metformin has a role in prostate cancer," he said. "Exactly what that role will be will depend on the results of the analysis currently being completed by our study team and others worldwide."

Joshua is particularly interested in better defining the precise mechanism of action and the subpopulation of patients with prostate cancer for whom metformin has the potential to improve outcomes.

More information: A phase II study of neoadjuvant metformin in prostatic carcinoma

Abstract
Background: Metformin is an inhibitor of the complex 1 in the respiratory chain, and is widely used in diabetes due to its effect on reducing insulin resistance. It has also been recently described to have effects via AMPK on inhibiting the mTOR kinase. Significant preclinical and epidemiological studies suggest its role in

chemoprevention. These actions provide significant rationale to evaluate its utility in prostate cancer. We conducted a phase II single centre study of neoadjuvant metformin in localised prostate cancer.
Methods: Men were required to have histologically confirmed prostate cancer involving at least 20% of at least 1 unfragmented biopsy core. Exclusion criteria included patients who on initial assessment are found to be on treatment with any drug used for the treatment of any form of diabetes, or patients that begin treatment for any form of diabetes during the course of the study. Pts were treated with up to 500mg tid of metformin. The primary objectives were to demonstrate safety and tolerability of neoadjuvant metformin administration in men with prostate cancer and to document changes in phospho-AKT signalling indices.
Results: 24 patients were enrolled with 22 evaluable; median age was 64 yrs (range, 45-70 yrs). Baseline characteristics included median PSA 6 ng/mL (range, 3.22-36.11ng/mL). Median duration of drug treatment was 41 days (range 18-81). No grade 3 adverse events were reported, all patients underwent subsequent radical prostatectomy with adverse effects related to metformin. Significant pre-and post changes were noted in serum IGF1 (p=0.02), fasting glucose (p=0.03), BMI (p