

## PLAIN LANGUAGE SUMMARY

# Tezepelumab for early-onset severe allergic asthma with persistent airflow limitation and small airway dysfunction: a treatable traits approach

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## Case summary: tezepelumab for allergic asthma

This case report details the successful treatment of a young woman with severe allergic asthma using a new medication called tezepelumab.

## Patient's condition and treatment challenge

The patient was an 18-year-old woman with a long history of severe asthma that was not well-controlled, even with advanced inhaler therapy. A key challenge was that her condition didn't fit the typical profile for other biologic drugs. While she had high levels of a specific type of antibody (IgE) and had several allergies, she did not have elevated levels of other common asthma markers (eosinophils and FeNO (the FeNO test or exhaled nitric oxide test, in patients with allergic or eosinophilic asthma, is a way to determine how much Type 2 inflammation in the lung is present)). Furthermore, she had developed persistent airflow limitation and small airway dysfunction, two serious problems that older treatments often don't address.

## Why was tezepelumab chosen?

Instead of selecting other available biologics, like omalizumab or dupilumab, the doctors chose tezepelumab. This drug works differently: instead of just treating the symptoms of inflammation (like swelling or pain), this drug targets a key molecule called TSLP. Think of TSLP as an 'alarmin' molecule, which works as an alarm bell at the very start of a chain reaction.

When this 'alarmin' molecule gets triggered, it sets off a huge, cascading response that leads to inflammation. By targeting and stopping TSLP, the drug prevents the inflammatory chain reaction from happening in the first place. By blocking TSLP, tezepelumab can affect multiple downstream inflammatory pathways, making it a good choice for patients whose asthma doesn't respond to other therapies or doesn't have a clear inflammatory profile. The doctors hoped it would specifically help with the patient's airflow limitation and small airway dysfunction.

## Was treatment successful?

The treatment was highly successful. After just 1 month on tezepelumab, the patient showed significant improvement in both her symptoms and lung function. Her spirometry and other lung function tests returned to normal. She no longer experienced frequent coughing, chest tightness or nocturnal awakenings. The patient's asthma was considered to be in complete clinical remission. This improvement was maintained over a 6-month follow-up period.

## Conclusion

This case report demonstrates that tezepelumab is a powerful and effective option for treating severe allergic asthma, particularly in patients who have complications like persistent airflow limitation and small airway dysfunction. It highlights the importance of a comprehensive approach to asthma management that looks beyond standard biomarkers to identify the most effective, personalized treatment.