

Delayed Hypersensitivity to Titanium causing Pacemaker Allergy Anne Ellis, Peter Hollett, Chris Simpson, James Brennan, James Day. Divisions of Allergy and Cardiology, Queens University, Kingston, Ontario

BACKGROUND

Component allergy is an extremely rare, but documented complication of pacemaker insertion.

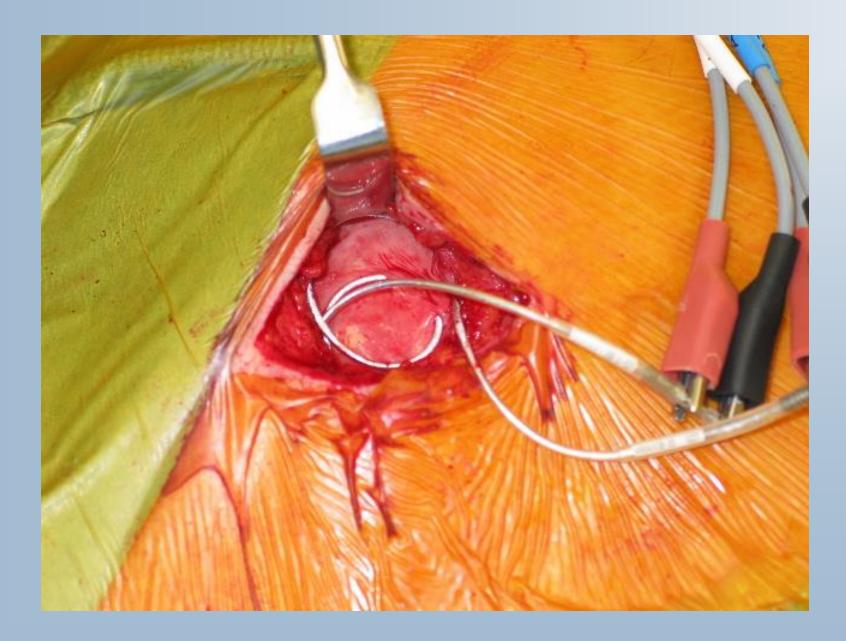
Based on case reports and company data, this translates into approximate incidence of 1 in 2,000,000

CLINICAL MANEFESTATIONS

Type IV Hypersensitivity Reaction Delayed onset T-Cell mediated Inflammatory

Many cases present as contact dermatitis over the site of the pacemaker – so called "pacemaker dermatitis" Other presentations include: Pain, swelling, erythema/discoloration over pacer site Isolated erythema Pompholyx (distinctive form of eczema, characterized by eruption of very itchy vesicles)

POCKET SITE WAS NOT INFECTED



PRESENTATION OF THE CASE

obtained

PATCH TESTING COMPONENTS (GUIDANT TEST KIT)



reactive.

A 33y old male with a 28y history of pacemaker dependence presented to cardiology complaining of pain and redness at his pacemaker site. He had a history of recurrent pocket site infections leading to the replacement of multiple transthoracic and later transvenous pacing systems, the most recent having been inserted 3 years ago. He additionally had a history of atopy including anaphylaxis to latex, kiwi, and methylparaben.

Approximately 2 months previously, he developed tenderness, swelling and redness overlying his pacer site. Examination revealed erythema and minimal edema, but no localized warmth or systemic fever. Multiple blood cultures were negative. No pacemaker pocket fluid or other abnormalities were identified with ultrasound or computed tomography scanning. A 5-day course of prednisone produced partial relief but symptoms recurred. Empiric courses of ciprofloxacin and carbamazepine yielded no response. His pain ultimately required intravenous opiates to control. Repeat investigations were unremarkable including an ESR of 1 mm/hr, and antibiotics were discontinued with no worsening of symptoms.

The Senior Cardiologist questioned a pacemaker allergy. An allergy consultation was

Patch testing was performed to the four components of the device (titanium, polyurethane, silicone, and polyurethane insulation)

> titanium, polyurethane, silicone, and polyurethane insulation [pictures of same will go in here]

RESULTS

The patch testing to titanium was clearly positive. All other materials produced no response, and a control application of titanium to a non-allergic individual was non-

The patient was diagnosed with Type IV hypersensitivity to titanium resulting in a "pacemaker allergy" syndrome. His pacemaker was removed and a gold-coated replacement system was inserted. Cultures from the original pacer were negative and the patient has done well subsequently.



GOLD PLATED PACEMAKER IMPLANTED WITH RESOLUTION OF SYMPTOMS



CONCLUSIONS

Type IV hypersensitivity reactions to normally inert compounds can result in the syndrome of pacemaker allergy, and this diagnosis should be considered in the setting of recurrent pacemaker infections or prolonged irritation at the pacer site.

While this disease is rare, the lack of widespread knowledge of this disorder may lead to delay in diagnosis in patients with chronic "pacemaker pocket irritation."

This has lead to consideration of this disease in other patients with similar presentations.

BIBLIOGRAPHY

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