Microscopic Polyangiitis (MPA) with Hepatic Infarct

Vinaya B Shah*, Pallavi Patil**

Abstract
A case of microscopic polyangiitis (MPA) with hepatic infarct diagnosed at autopsy is described. The patient had renal, skin, lung and pancreas involvement along with hepatic infarct. Necrotizing glomerulonephritis along with necrotizing small to medium sized vessel vasculitis in lung, skin, and pancreas were also present. A highly elevated ESR and C-reactive protein was observed. The diagnosis of MPA is based on histopathology of necropsy organs. The literature and differential diagnosis of MPA is discussed. This case serves to emphasize that hepatic infarct, a very unusual feature can occur in MPA.

Introduction
Microscopic polyangiitis (MPA) is a systemic disorder characterized by necrotizing vasculitis with few or no immune deposits, affecting small vessels. Necrotizing glomerulonephritis and pulmonary involvement has been known to occur commonly, however liver infarct has not been yet clearly documented. We describe a case of histologically confirmed MPA with rare hepatic infarct.

Case Report
A 60 year old male patient, chronic smoker, alcoholic, hypertensive, admitted to our hospital with two months history of fever, weakness in extremities, cough with expectoration and streaky hemoptysis, history of low to moderate grade fever with chills since two months which responded to antimalarials. The patient also had complaints of tingling in glove and stocking distribution and history of weakness of right upper limb and both lower limbs since 15 days. He also had complaints of distension of abdomen and altered behaviour since five days. The patient had oedema of feet and oliguria since 2 days. On admission, physical examination revealed a fever of 101°F, with BP of 140/80 mm Hg, multiple spotty papular lesions on both legs. There was moderate pallor and clubbing. On CNS examination, patient was drowsy with hypotonia in extremities. Respiratory system examination revealed bilateral crepitations. Abdominal distension was present, but no hepatosplenomegaly. Haematological examination revealed white cell count 25.6 x 10^9/L (higher count) with differential count of 84% segmented neutrophils and 1% eosinophils, 15% lymphocytes, a haemoglobin level of 10.6 gm/L and a platelet count of 335 x 10^9/L. The erythrocyte sedimentation rate (ESR) was 115 mm/hr and serum C-reactive protein (CRP) concentration was 17.1 mg/dl which were higher than normal levels. Liver enzyme levels and renal function test were normal. Repeated blood culture was negative for bacteria, mycobacteria. Urinalysis showed 10-15 pus cell per high power field, and the serum creatinine level increased to 2.5 mg/dl. JVP was raised and bilateral oedema feet was present. The clinical impression was fever of unknown origin with possibilities of 1) pneumonia, 2) malaria with acute renal failure. Patient developed breathlessness and succumbed to death 3 days after she was admitted. A complete autopsy was performed.

Gross Examination
Liver had an infarct of 4 cm by 3 cm in the right lobe and rest of the parenchyma was congested. Both the lungs were enlarged, congested and firm in consistency and few calcific areas in the parenchyma were noted which were suggestive of old tuberculosis. Kidney was mildly enlarged with oedematous external surface and pale. Rest of the organs were unremarkable.
Histopathology

Kidney showed features of necrotizing glomerulonephritis in the tuft (Fig. 1). There was no granulomatous inflammation which ruled out the Wegener's granulomatosis. Lung showed extensive haemorrhages within the parenchyma and vasculitis of medium sized vessels (Fig. 2). The liver section showed vasculitis of medium size vessels with thrombosis and infarct of the parenchyma. (Fig. 3). The medium size vessels in the pancreas, adrenals showed evidence of vasculitis. The cause of death was attributed to pulmonary haemorrhage in a case of vasculitis of Microscopic polyangiitis (MPA) with multiorgan involvement and hepatic infarcts.

Discussion

The first description of a patient with the illness now known as microscopic polyangiitis (MPA) appeared in the European literature in the 1920s. The concept of this disease as a condition that is separate from polyarteritis nodosa (PAN) and other forms of vasculitis did not begin to take root in medical thinking, however until late 1940s. Confusion regarding the proper nomenclature of this disease led to references to “microscopic polyarteritis nodosa” and “hypersensitivity vasculitis” for many years. The Chapel Hill Consensus Conference recognized MPA as its own entity distinguishing it in a classification scheme clearly from PAN, Wegener's granulomatosis (WG) and other diseases which MPA has been confused with through the years. Much of the explanation for the difficulty in separating MPA from other forms of vasculitis has stemmed from the numerous areas of overlap of MPA with other diseases. Many signs and symptoms are associated with MPA. The disease can affect many of...
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the body organ systems including the kidney (~80%), nervous system (particularly the peripheral nerves), skin and lungs. In addition, generalized symptoms such as fever and weight loss are very common. Kidney is involved in the form of necrotizing glomerulonephritis.\(^4\) Patients with inflammation may experience fatigue, swelling of legs and active urine sediment in form of red blood cells and casts in the urine as seen in our case. Neurologic symptoms like numbness and tingling in arms and legs occur due to damage to peripheral nerves which were also noted in our case. Lung involvement can be dramatic and life threatening manifestation of MPA. When lung disease takes the form of alveolar haemorrhage: bleeding from small capillaries, the condition may pose a threat to the patient's respiratory status and therefore to patients life as was seen in our case and was the immediate cause of death. The Chapel Hill Consensus Conference defined classic PAN as necrotizing inflammation of medium sized or small arteries, excludes glomerulo-nephritis or vasculitis in arterioles, capillaries or venules and no lung involvement.\(^5\) Microscopic polyangiitis is defined as pauci-immune necrotizing vasculitis affecting small vessels i.e. capillaries, venules or arterioles with or without medium sized arteries involvement and necrotizing glomerulo-nephritis and lung involvement.\(^4\) ANCA is used to differentiate between the two. ANCA is rare in PAN; however ANCA is present in MPA and Wegener's granulomatosis (Table 1).\(^1,2\) Being an autopsy case with no suspicion of MPA antemortem, there was no ANCA test done. But the diagnosis of MPA was established by the pathologic findings of necrotizing vasculitis of small vessels of the kidney with necrotizing glomerulonephritis along with skin, lung and peripheral nerve involvement. Infarction and ischaemia of organs occur in PAN. There have been reports of massive hepatic infarct, which are rare in PAN.\(^5\) There are reports of unusual organ involvement with MPA; e.g. takotsubo cardiomyopathy, a unique type of cardiomyopathy which resolved with therapy.\(^6\) There is report of liver dysfunction developing before glomerulonephritis in MPA.\(^7\)

This report, documentation of hepatic infarct in histologically confirmed MPA, Table 1: The similarities and differences between PAN, WG and MPA are highlighted

<table>
<thead>
<tr>
<th>Blood vessel size</th>
<th>MPA (Microscopic polyangiitis)</th>
<th>WG (Wegener's Granulomatosis)</th>
<th>PAN (Polyarteritis nodosa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood vessel type</td>
<td>Arterioles to venules, sometimes arteries and veins</td>
<td>Arterioles to venules, sometimes arteries and veins</td>
<td>Medium Muscular arteries</td>
</tr>
<tr>
<td>Granulomatous inflammation</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Lung symptoms</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Glomerulonephritis</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Renal hypertension</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Skin lesions</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>GI symptoms</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>ANCA positivity</td>
<td>75%</td>
<td>65-90%</td>
<td>No</td>
</tr>
</tbody>
</table>
serves to emphasize that hepatic infarct may be one of the features of multiorgan involvement in MPA, in addition to the well known renal and pulmonary involvement. It is imperative for the clinician to timely diagnose the disease to avoid serious morbidity or mortality by early treatment of MPA.

References

METABOLIC SYNDROME
Metabolic syndrome is a highly prevalent and complex clustering of risk factors for diabetes and CVD. The risk of developing CVD was increased 2-fold.
More than 50% of obese subjects have metabolic syndrome. Many more will have one feature, e.g. abnormal lipids. GPs should measure BP, fasting lipids and glucose in all obese individuals.
Lifestyle modifications such as control of body weight. Patients with metabolic syndrome will often require drug treatment for obesity, atherogenic dyslipidaemia and hypertension and will sometimes need antithrombotic therapy.
Patients with uncontrolled hypertension warrant referral as do those with CKD stage 4 or 5, or with suspected rare or genetic kidney disease. Those with suspected renal artery stenosis, complex disease, or where management of complications is difficult, will also require specialist intervention.